BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

# BOARD OF DIRECTORS
# SPECIAL MEETING

## October 2, 2019

A special meeting of the Bay Area Air Quality Management District Board of Directors will be held at 10:30 a.m. in the 1st Floor Spinnaker Room at the Waterfront Hotel, 10 Washington Street, Oakland, California 94607.

**Questions About an Agenda Item**

The name, telephone number and e-mail of the appropriate staff Person to contact for additional information or to resolve concerns is listed for each agenda item.

**Meeting Procedures**

The public meeting of the Air District Board of Directors begins at 10:30 a.m. The Board of Directors generally will consider items in the order listed on the agenda. However, any item may be considered in any order.

After action on any agenda item not requiring a public hearing, the Board may reconsider or amend the item at any time during the meeting.

## Public Comment Procedures

Persons wishing to make public comment must fill out a Public Comment Card indicating their name and the number of the agenda item on which they wish to speak, or that they intend to address the Board on matters not on the Agenda for the meeting.

**Public Comment on Non-Agenda Matters, Pursuant to Government Code Section 54954.3** Speakers wishing to address the Board on non-agenda matters will be heard at the end of the agenda, and each will be allowed up to three minutes to address the Board at that time.

Members of the Board may engage only in very brief dialogue regarding non-agenda matters, and may refer issues raised to District staff for handling. In addition, the Chairperson may refer issues raised to appropriate Board Committees to be placed on a future agenda for discussion.

**Public Comment on Agenda Items** The public may comment on each item on the agenda as the item is taken up. Public Comment Cards for items on the agenda must be submitted in person to the Clerk of the Boards at the location of the meeting and prior to the Board taking up the particular item. Where an item was moved from the Consent Calendar to an Action item, no speaker who has already spoken on that item will be entitled to speak to that item again.

Speakers may speak for up to three minutes on each item on the Agenda. However, the Chairperson or other Board Member presiding at the meeting may limit the public comment for all speakers to fewer than three minutes per speaker, or make other rules to ensure that all speakers have an equal opportunity to be heard. The Chairperson or other Board Member presiding at the meeting may, with the consent of persons representing both sides of an issue, allocate a block of time (not to exceed six minutes) to each side to present their issue.

# BOARD OF DIRECTORS SPECIAL MEETING AGENDA

**WEDNESDAY**
**OCTOBER 2, 2019**
**10:30 A.M.**

**WATERFRONT HOTEL**
**SPINNAKER ROOM**
**10 WASHINGTON STREET**
**OAKLAND, CA 94607**

**<u>CALL TO ORDER</u>** **Chairperson, Katie Rice**

1. **Opening Comments**
   **Roll Call**
   **Pledge of Allegiance**

   *The Chair shall call the meeting to order and make opening comments. The Clerk of the Boards shall take roll of the Board members. The Chair shall lead the Pledge of Allegiance.*

**<u>PUBLIC COMMENT ON NON-AGENDA MATTERS</u>**

2. **Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3**
   *For the first round of public comment on non-agenda matters at the beginning of the agenda, ten persons selected by a drawing by the Clerk of the Boards from among the Public Comment Cards indicating they wish to speak on matters not on the agenda for the meeting will have two minutes each to address the Board on matters not on the agenda. For this first round of public comments on non-agenda matters, all Public Comment Cards must be submitted in person to the Clerk of the Board at the location of the meeting and prior to commencement of the meeting.*

**<u>CONSENT CALENDAR</u> (ITEMS 3-7)** **Staff/Phone (415) 749-**

3. Minutes of the Board of Directors Meeting of September 18, 2019 **Clerk of the Boards/5073**

   *The Board of Directors will consider approving the draft minutes of the Board of Directors Regular Meeting of September 18, 2019.*

4. Board Communications Received from September 18, 2019 through October 1, 2019
   **J. Broadbent/5052**
   **jbroadbent@baaqmd.gov**

   *A copy of communications directed to the Board of Directors received by the Air District from September 18, 2019 through October 1, 2019, if any, will be at each Board Member's place.*

5. Set a Public Hearing for November 6, 2019 to Consider Adoption of Proposed Amendments to Regulation 5: Open Burning, Adoption of Proposed Amendments to Regulation 6: Particulate Matter and Visible Emissions, Rule 3: Wood Burning Devices; and Approval of Filing a Notice of Exemption from the California Environmental Quality Act (CEQA)

**J. Broadbent/5052**
**jbroadbent@baaqmd.gov**

*At the November 6, 2019 meeting, the Board of Directors will consider adopting proposed amendments to Regulation 5: Open Burning, proposed amendments to Regulation 6: Particulate Matter and Visible Emissions, Rule 3: Wood Burning Devices; and approval of filing a Notice of Exemption from the California Environmental Quality Act (CEQA). The proposed amendments are part of the Air District's Wildfire Air Quality Response Program, intended to prepare for, prevent, and respond to future wildfires and ensure health-protective measures and strategies are in place.*

6. Authorization of a One-Year Intergovernmental Personnel Act Agreement with U.S. Environmental Protection Agency (EPA) Region 9 **J. Broadbent/5052**

**jbroadbent@baaqmd.gov**

*The Board of Directors will consider authorizing the Executive Officer/APCO to enter into a one-year Intergovernmental Personnel Act (IPA) with U.S. EPA Region 9 in the amount of $224,775 for Daniel Meer to work on the Air District's Continuity of Operations Plan, and other duties as assigned.*

7. Authorization for Air District Payment to Hilltop Commercial Condominium Association (HOA) for Security Fencing and Gates at Richmond Headquarters East

**J. Broadbent/5052**
**jbroadbent@baaqmd.gov**

*The Board of Directors will consider authorizing the Executive Officer/APCO to make a payment to the HOA for the Air District's portion of the HOA costs for security fencing and gates at Richmond Headquarters East in an amount not to exceed $200,000.*

## COMMITTEE REPORTS

8. Report of the Climate Protection Committee Meeting of September 19, 2019

**CHAIR: T. Barrett** **J. Broadbent/5052**
**jbroadbent@baaqmd.gov**

*The Committee received the following reports:*

**A) Briefing on the City of Berkeley's Ordinance Banning Natural Gas in New Construction**

*1) None; receive and file.*

**B) Update on Region-Wide Fluorinated Gases (F-Gas Strategy)**

*1) None; receive and file.*

For the full Committee agenda packet and materials, click on the link below:
www.baaqmd.gov/bodagendas

9. Report of the Mobile Source Committee Meeting of September 26, 2019

**CHAIR: D. Canepa** **J. Broadbent/5052**
**jbroadbent@baaqmd.gov**

*The Committee received the following report:*

**A) Projects and Contracts with Proposed Grant Awards Over $100,000**

1) *Approve recommended projects with proposed grant awards over $100,000 as shown in Attachment 1;*

2) *Approve a recommended update to fiscal year ending (FYE) 2020 Transportation Fund for Clean Air (TFCA) Regional Fund Policies to clarify the requirement regarding vehicle weight classification; and*

3) *Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects.*

**B) Proposed Charge! Program Grant Awards Over $100,000**

1) *Approve recommended Charge! Program projects with proposed grant awards over $100,000 as shown in Attachment 1; and*

2) *Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects.*

**C) Update on Volkswagen Environmental Mitigation Trust Grant Program**

1) *Authorize the Executive Officer/APCO to enter into agreements with eligible applicants for all projects approved by the California Air Resources Board (CARB) and funded by Volkswagen Environmental Mitigation Trust.*

**D) Update on Proposed Safe Affordable Fuel-Efficient Vehicles (SAFE) Rule**

1) *None; receive and file.*

For the full Committee agenda packet and materials, click on the link below:
www.baaqmd.gov/bodagendas

**PUBLIC HEARING**

10. Public Hearing to Consider Certification of Final Environmental Impact Report and Adoption of Proposed Plan *Owning Our Air: The West Oakland Community Action Plan*

**J. Broadbent/5052**
**jbroadbent@baaqmd.gov**

*The Board of Directors will consider certification of the Final Environmental Impact Report and adoption of the proposed plan Owning Our Air: The West Oakland Community Action Plan.*

## CLOSED SESSION

11. **CONFERENCE WITH LEGAL COUNSEL**

**A. EXISTING LITIGATION (Government Code Section § 54956.9(a))**

*Pursuant to Government Code Section 54956.9(a), a need exists to meet in closed session with legal counsel to consider the following case:*

Michael Bachmann and Sarah Steele v. Bay Area AQMD, Contra Costa County Superior Court, Case No. C17-01565

## OPEN SESSION

## PUBLIC COMMENT ON NON-AGENDA MATTERS

12. **Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3**

*Speakers who did not have the opportunity to address the Board in the first round of comments on non-agenda matters will be allowed two minutes each to address the Board on non-agenda matters.*

## BOARD MEMBERS' COMMENTS

13. *Any member of the Board, or its staff, on his or her own initiative or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on his or her own activities, provide a reference to staff regarding factual information, request staff to report back at a subsequent meeting concerning any matter or take action to direct staff to place a matter of business on a future agenda. (Gov't Code § 54954.2)*

## OTHER BUSINESS

14. Report of the Executive Officer/APCO

15. Chairperson's Report

16. Time and Place of Next Meeting:

    *Wednesday, November 6, 2019, at 375 Beale Street, San Francisco, CA 94105 at 9:30 a.m.*

17. Adjournment

    *The Board meeting shall be adjourned by the Board Chair.*

**CONTACT:**
**MANAGER, EXECUTIVE OPERATIONS** **(415) 749-4941**
**375 BEALE STREET, SAN FRANCISCO, CA 94105** **FAX: (415) 928-8560**
**vjohnson@baaqmd.gov** **BAAQMD homepage:**
**www.baaqmd.gov**

- To submit written comments on an agenda item in advance of the meeting. Please note that all correspondence must be addressed to the "Members of the Board of Directors" and received at least 24 hours prior, excluding weekends and holidays, in order to be presented at that Board meeting. Any correspondence received after that time will be presented to the Board at the following meeting.

- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.

- Any writing relating to an open session item on this Agenda that is distributed to all, or a majority of all, members of the body to which this Agenda relates shall be made available at the District's offices at 375 Beale Street, Suite 600, San Francisco, CA 94105, at the time such writing is made available to all, or a majority of all, members of that body.

**Accessibility and Non-Discrimination Policy**

The Bay Area Air Quality Management District (Air District) does not discriminate on the basis of race, national origin, ethnic group identification, ancestry, religion, age, sex, sexual orientation, gender identity, gender expression, color, genetic information, medical condition, or mental or physical disability, or any other attribute or belief protected by law.

It is the Air District's policy to provide fair and equal access to the benefits of a program or activity administered by Air District. The Air District will not tolerate discrimination against any person(s) seeking to participate in, or receive the benefits of, any program or activity offered or conducted by the Air District. Members of the public who believe they or others were unlawfully denied full and equal access to an Air District program or activity may file a discrimination complaint under this policy. This non-discrimination policy also applies to other people or entities affiliated with Air District, including contractors or grantees that the Air District utilizes to provide benefits and services to members of the public.

Auxiliary aids and services including, for example, qualified interpreters and/or listening devices, to individuals who are deaf or hard of hearing, and to other individuals as necessary to ensure effective communication or an equal opportunity to participate fully in the benefits, activities, programs and services will be provided by the Air District in a timely manner and in such a way as to protect the privacy and independence of the individual. Please contact the Non-Discrimination Coordinator identified below at least three days in advance of a meeting so that arrangements can be made accordingly.

If you believe discrimination has occurred with respect to an Air District program or activity, you may contact the Non-Discrimination Coordinator identified below or visit our website at www.baaqmd.gov/accessibility to learn how and where to file a complaint of discrimination.

Questions regarding this Policy should be directed to the Air District's Non-Discrimination Coordinator, Rex Sanders, at (415) 749-4951 or by email at rsanders@baaqmd.gov.

# BAY AREA AIR QUALITY MANAGEMENT DISTRICT
## 375 BEALE STREET, SAN FRANCISCO, CA 94105
## FOR QUESTIONS PLEASE CALL (415) 749-4941

## EXECUTIVE OFFICE:
## MONTHLY CALENDAR OF AIR DISTRICT ANTICIPATED MEETINGS

# OCTOBER 2019

| TYPE OF MEETING | DAY | DATE | TIME | ROOM |
|---|---|---|---|---|
| **Board of Directors Special Meeting** | **Wednesday** | **2** | **10:30 a.m.** | **The Waterfront Hotel<br>Spinnaker Room<br>10 Washington St.<br>Oakland, CA 94607** |
| **Board of Directors Technology Implementation Office (TIO) Steering Committee** | **Friday** | **4** | **9:30 a.m.** | **1st Floor Board Room** |
| **Board of Directors Legislative Committee** | **Wednesday** | **9** | **9:30 a.m.** | **1st Floor, Yerba Buena Room #109** |
| **Board of Directors Executive Committee - CANCELLED** | **Wednesday** | **16** | **9:30 a.m.** | **1st Floor Board Room** |
| **Board of Directors Personnel Committee** | **Wednesday** | **16** | **9:30 a.m.** | **1st Floor Board Room** |
| **Board of Directors Budget & Finance Committee - CANCELLED** | **Wednesday** | **23** | **9:30 a.m.** | **1st Floor, Yerba Buena Room #109** |
| **Board of Directors Mobile Source Committee** | **Thursday** | **24** | **9:30 a.m.** | **1st Floor Board Room** |
| **Advisory Council Meeting** | **Monday** | **28** | **10:00 a.m.** | **1st Floor Board Room** |
| **Board of Directors Community & Public Health Committee** | **Wednesday** | **30** | **9:30 a.m.** | **1st Floor Board Room** |

# NOVEMBER 2019

| TYPE OF MEETING | DAY | DATE | TIME | ROOM |
|---|---|---|---|---|
| **Board of Directors Legislative Committee** | **Monday** | **4** | **9:30 a.m.** | **1st Floor Board Room** |
| **Board of Directors Nominating Committee** | **Wednesday** | **6** | **9:00 a.m.** | **1st Floor Board Room** |
| **Board of Directors Regular Meeting** | **Wednesday** | **6** | **9:30 a.m.** | **1st Floor Board Room** |
| **Board of Directors Stationary Source Committee** | **Monday** | **18** | **9:30 a.m.** | **1st Floor Board Room** |
| **Board of Directors Regular Meeting** | **Wednesday** | **20** | **9:30 a.m.** | **1st Floor Board Room** |
| **Board of Directors Climate Protection Committee - CANCELLED** | **Thursday** | **21** | **9:30 a.m.** | **1st Floor Board Room** |
| **Board of Directors Budget & Finance Committee** | **Monday** | **25** | **9:30 a.m.** | **1st Floor Board Room** |
| **Board of Directors Mobile Source Committee - CANCELLED** | **Thursday** | **28** | **9:30 a.m.** | **1st Floor Board Room** |

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Katie Rice and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 26, 2019

Re: Minutes of the Board of Directors Regular Meeting of September 18, 2019

RECOMMENDED ACTION

Approve the attached draft minutes of the Board of Directors Regular Meeting of September 18, 2019.

DISCUSSION

Attached for your review and approval are the draft minutes of the Board of Directors Regular Meeting of September 18, 2019.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Marcy Hiratzka
Reviewed by: Vanessa Johnson

Attachment 3A: Draft Minutes of the Board of Directors Regular Meeting of September 18, 2019

Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
(415) 749-5073

Board of Directors Regular Meeting
Wednesday, September 18, 2019

**DRAFT MINUTES**

*Note: Audio recordings of the meeting are available on the website of the Bay Area Air Quality Management District at* www.baaqmd.gov/bodagendas

## CALL TO ORDER

1. **Opening Comments:** Board of Directors (Board) Chairperson, Katie Rice, called the meeting to order at 9:38 a.m.

**Roll Call:**

Present: Chairperson Katie Rice; Vice Chairperson Rod Sinks; Secretary Cindy Chavez; and Directors Margaret Abe-Koga, Teresa Barrett, David J. Canepa, Carole Groom, Scott Haggerty, David Hudson, Tyrone Jue, Liz Kniss, Gordon Mar, Karen Mitchoff, Mark Ross, Jim Spering, Shamann Walton, Lori Wilson, and Shirlee Zane.

Absent: Directors John J. Bauters, Pauline Russo Cutter, John Gioia, Nate Miley, Doug Kim, and Brad Wagenknecht.

## PUBLIC COMMENT ON NON-AGENDA MATTERS

2. **Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3**

Public comments were given by Robert Bamford, Northern Sonoma County Air Pollution Control District; Clare Valderama-Wallace, California State University at East Bay; Tiara Azubuike, California State University at East Bay; Monica Ascencion, California State University at East Bay; and Abhijit Basu, Milpitas resident.

Board Comments

The Board and staff discussed the history of the Bay Area Clean Air Foundation’s Oakley Generating Station Mitigation project, why the project was cancelled, and the revocation of the project’s funding.

NOTED PRESENT: Director Wilson was noted present at 9:53 a.m.

**CLOSED SESSION –** Brian Bunger, District Counsel, said that there was no longer a need for Closed Session on this date.

3. **CONFERENCE WITH LEGAL COUNSEL**

   **EXISTING LITIGATION (Government Code § 54956.9(a))**

   *Pursuant to Government Code Section 54956.9(a), a need exists to meet in closed session with legal counsel to consider the following cases:*

   Michael Bachmann and Sarah Steele v. Bay Area AQMD, Contra Costa County Superior Court, Case No. C17-01565

**OPEN SESSION**

**CONSENT CALENDAR (ITEMS 4 - 9)**

4. Minutes of the Board of Directors Meeting of September 4, 2019
5. Board Communications Received from September 4, 2019 through September 17, 2019
6. Notices of Violations Issued and Settlements in Excess of $10,000 in the Month of August 2019
7. Air District Personnel on Out-of-State Business Travel
8. Quarterly Report of California Air Resources Board Representative – Honorable John Gioia
9. Quarterly Report of Executive Office and Division Activities for the Months of April 2019 to June 2019

Public Comments

No requests received.

Board Comments

None.

Board Action

Director Hudson made a motion, seconded by Director Zane, to **approve** the Consent Calendar Items 4 through 9, inclusive; and the motion **carried** by the following vote of the Board:

| | |
|---|---|
| AYES: | Barrett, Canepa, Groom, Haggerty, Hudson, Jue, Kniss, Mitchoff, Rice, Sinks, Ross, Spering, Walton, Wilson, Zane. |
| NOES: | None. |
| ABSTAIN: | None. |
| ABSENT: | Abe-Koga, Bauters, Chavez, Cutter, Gioia, Kim, Mar, Miley, Wagenknecht. |

NOTED PRESENT: Secretary Chavez and Director Abe-Koga were noted present at 9:55 a.m.

## COMMITTEE REPORTS

### 10. **Report of the Executive Committee Meeting of September 5, 2019**

Executive Committee Chair, Katie Rice, read the following Committee report:

*The Executive Committee met on Wednesday, September 5, 2019, and approved the minutes of March 20, 2019.*

*The Committee received the presentation* Hearing Board Quarterly Reports: January – March 2019 and April – June 2019.

*The Committee then received the presentation* Bay Area Regional Collaborative Executive Director's Update*, given by Executive Director, Allison Brooks.*

*The Committee then reviewed and discussed the staff presentation* My Air Online Status Update.

*Finally, the Committee reviewed and discussed the staff presentation* 2019 Summer Spare the Air Season Summary and Winter Spare the Air Season Overview.

*The next meeting of the Executive Committee will be on Wednesday, October 16, 2019 at 9:30 a.m. This concludes the Chair report of the Executive Committee.*

<u>Public Comments</u>

No requests received.

<u>Board Comments</u>

None.

<u>Board Action</u>

None; receive and file.

### 11. **Report of the Personnel Committee Meeting of September 6, 2019**

Personnel Committee Chair, Jim Spering, read the following Committee report:

*The Committee met on Friday, September 6, 2019, and approved the minutes of February 20, 2019.*

*The Committee then reviewed and discussed the vacant position of Hearing Board Principal member in the Professional Engineer category. A second vacancy on the Hearing Board, of Alternate member in the medical category, will be considered at a subsequent Committee meeting. The Committee and staff discussed the recruitment process and then interviewed Catherine Fortney and Sakcheat Chet Monh for the Hearing Board Principal position in the Professional Engineer category. The Committee recommends the Board approve:*

1. *The appointment of Catherine Fortney, as Principal Member in Professional Engineer category of the Hearing Board.*

*Although the Committee's recommendation of Ms. Fortney to the Principal position left a vacancy in Ms. Fortney's current role of Alternate member in the Professional Engineer category, and the Committee had the authority to recommend the second candidate for the alternate seat, the consensus of the Committee members present was to re-open the recruitment for the position of Alternate member in the Professional Engineer category of the Hearing Board.*

*The next meeting of the Personnel Committee will be held at the call of the Chair. I move that the Board approve the Personnel Committee's recommendation. This concludes the Chair Report of the Personnel Committee.*

<u>Public Comments</u>

No requests received.

<u>Board Comments</u>

The Board and staff discussed the request to send Hearing Board recruitment opportunities to the Board members for distribution within their jurisdictions.

<u>Board Action</u>

Director Spering made a motion, seconded by Director Hudson, to **approve** the appointment of Catherine Fortney as Principal Member in the Professional Engineer category of the Hearing Board; and the motion **carried** by the following vote of the Board:

| | |
|---|---|
| AYES: | Abe-Koga, Barrett, Canepa, Chavez, Groom, Haggerty, Hudson, Jue, Kniss, Mitchoff, Rice, Sinks, Ross, Spering, Walton, Wilson, Zane. |
| NOES: | None. |
| ABSTAIN: | None. |
| ABSENT: | Bauters, Cutter, Gioia, Kim, Mar, Miley, Wagenknecht. |

12. **Report of the Community and Public Health Committee Meeting of September 12, 2019**

Community and Public Health Committee Chair, Shirlee Zane, read the following Committee report:

*The Community and Public Health Committee met on Thursday, September 12, 2019, and approved the minutes of June 20, 2019.*

*The Committee reviewed and discussed the staff presentation* Community Grant Updates: School Community Grants, James Cary Smith Community Grants, and Assembly Bill (AB) 617 Community Health Protection Grants.

*The Committee then reviewed and discussed the presentation from staff and from Ms. Margaret Gordon and Brian Beveridge of the West Oakland Environmental Indicators project regarding the West Oakland Community Action Plan.*

*Finally, the Committee reviewed and discussed a presentation from staff and Richmond co-lead Linda Whitmore regarding Implementing AB 617: Richmond-San Pablo Area.*

*The next meeting of the Community and Public Health Committee will be held on Wednesday, October 30, 2019, at 9:30 a.m. This concludes the Chair Report of the Community and Public Health Committee.*

<u>Public Comments</u>

No requests received.

<u>Board Comments</u>

The Board and staff discussed the fact that the October 2, 2019, Board of Directors meeting will take place in Oakland, at which the Air District staff will reiterate points from the presentation that was given at the September 12, 2019, Committee meeting regarding the West Oakland Community Action Plan, as the Plan will be considered for adoption by the Board.

<u>Board Action</u>

None; receive and file.

13. **Report of the Stationary Source Committee Meeting of September 16, 2019**

Stationary Source Committee Chair, Rod Sinks, read the following Committee report:

*The Committee met on Monday, September 16, 2019, at Milpitas City Hall, and approved the minutes of July 8, 2019.*

*The Committee reviewed and discussed the staff presentation* South Bay Odor Update and Air District Odor Attribution Study. *The Committee requested Air District staff to provide an update on the Odor Mitigation efforts to date.*

*The Committee then reviewed and discussed the staff presentation* Particulate Matter Rules Implementation Update.

*Finally, the Committee reviewed and discussed the staff presentation* Update on Organic Material Handling and Composting Rules.

*The next meeting of the Stationary Source Committee will be held on Monday, November 18, 2019, at 9:30 a.m. This concludes the Chair report of the Stationary Source Committee.*

At this point, Jack P. Broadbent, Executive Officer/Air Pollution Control Officer, introduced Wayne Kino, Deputy Air Pollution Control Officer of Operations, who introduced Tracy Lee, Compliance and Enforcement Manager, who gave the staff presentation *South Bay Odor Improvements.*

NOTED PRESENT: Director Mar was noted present at 10:12 p.m.

Public Comments

No requests received.

Board Comments

The Board and staff discussed the prospect of a tour of the three closely-located facilities with similar odor profiles (landfill and associated composting facility, sewage treatment plant and a dry anaerobic food waste digester facility) that are part of the Air District's South Bay Odor Attribution Study, and the request that the tour not be scheduled on a day on which rain is anticipated; the concern that compost emissions controls that may improve one part of the Bay Area may result in negative impacts in other parts of the Bay Area; the status of the Newby Island Material Recovery Facility's permit application to enclose and abate operations, and the request to provide links to permit applications on the Air District's website; the level of aggression of California's current waste diversion goals; the request for an inventory of best practices of successful, local waste-processing facilities and transfer stations; and appreciation of Air District staff for holding offsite meetings in parts of the Bay Area other than San Francisco.

Board Action

None; receive and file.

14. **Report of the Ad Hoc Building Oversight Committee Meeting of September 18, 2019**

Ad Hoc Building Oversight Committee Vice Chair, David J. Canepa, read the following Committee report:

*The Ad Hoc Building Oversight Committee met on Wednesday, September 18, 2019, and approved the minutes of April 3, 2019.*

*The Committee received and discussed the staff presentation* Contract Extension: Build-Out of a Portion of the Richmond, Lakeside Drive Building. *The Committee recommends the Board:*

1. *Authorize the Executive Officer/Air Pollution Control Officer to obtain bids and execute contracts to build out approximately 7,300 square feet of the Richmond, Lakeside building with cubicles and offices, in an amount not to exceed $250,000, in addition to the initial $1,800,000 authorization in April 2019.*

2. *Authorize the Executive Officer/Air Pollution Control Officer to obtain bids and execute contracts to install video conferencing capabilities at the Richmond Lakeside building, in an amount not to exceed $235,000.*

*The next meeting of the Ad Hoc Building Oversight Committee will be at the call of the Chair. I move that the Board approve the Ad Hoc Building Oversight Committee's recommendations. This concludes the Chair report of the Ad Hoc Building Oversight Committee.*

Public Comments

No requests received.

Board Comments

None.

Board Action

Director Canepa made a motion, seconded by Director Ross, to approve the recommendations of the Ad Hoc Building Oversight Committee; and the motion **carried** by the following vote of the Board:

| | |
|---|---|
| AYES: | Abe-Koga, Barrett, Canepa, Chavez, Groom, Haggerty, Hudson, Jue, Kniss, Mar, Mitchoff, Rice, Ross, Sinks, Spering, Walton, Wilson, Zane. |
| NOES: | None. |
| ABSTAIN: | None. |
| ABSENT: | Bauters, Cutter, Kim, Gioia, Miley, Wagenknecht. |

## PRESENTATION

15. **Summary of the 2019 Summer Spare the Air Program and an Update of the 2019-20 Winter Spare the Air Campaign**

Mr. Kino introduced Lisa Fasano, Communications Officer, who gave the staff presentation *2019 Summer Spare the Air Season Summary and Winter Spare the Air Season Overview,* including: (2019 summer) advertising; campaign highlights; social media; media relations; (2019 winter) advertising; social media; door-to-door outreach; and Wood Smoke Reduction Grant (WSRG) program results.

Public Comments

Public comments were given by Jed Holtzman, 350 Bay Area.

Board Comments

The Board and staff discussed how Air District staff acknowledged the Committee's request that "Bay Area Air Quality Management District" be connected to Spare the Air advertisements (all media types) but that this change cannot be incorporated until 2020; the need for additional funding for Spare the Air and WSRG programs; the suggestion of making pet jackets with Spare the Air logos available to the public to generate more social media attention to Spare the Air programs; the suggestion of posting content to social media platforms that are used by young people for messaging purposes; which printed publications advertise Air District programs; permit requirements for door-to-door outreach in some jurisdictions; whether the Air District has held competitions for fireplace repurposing among residents; whether the Air District advertises on the Waze (GPS navigation) application; the awareness levels of new regulations and best sustainability practices among different age groups; and the request for Spare the Air apparel for cyclists and runners.

Board Action

None; receive and file.

16. **Update on Assembly Bill (AB) 617 Richmond-San Pablo Area Air Monitoring Plan**

Gregory Nudd, Deputy Air Pollution Control Officer on Policy, introduced Kristen Law, Community Engagement Specialist, and Community Co-Leads, Dr. Naama Raz-Yazeef and Nain Lopez, who gave the joint presentation *Implementing Assembly Bill 617: Richmond-San Pablo Area*, including: AB 617 communities; AB 617 community-driven programs; community-led in Richmond-San Pablo area; discussion of focus areas; Steering Committee focus area discussions; timeline; and what's next.

Public Comments

Public comments were given by Jed Holtzman, 350 Bay Area; and Abhijit Basu, Milpitas resident.

Board Comments

The Board and staff discussed when Aclima, the contractor the Air District has conducting air quality mapping of the entire Bay Area, will finish collecting data in Richmond; appreciation of the exemplary AB 617 implementation efforts of West Oakland and Richmond; lessons learned by the Richmond Steering Committee and Co-Leads thus far; claims that the composition of the Richmond Steering Committee does not fairly represent Richmond residents (versus non-residents and industry representatives); the request to include representatives from public schools on the Steering Community; the request for a list of Steering Committee members and their affiliations from both the West Oakland and Richmond communities; and the upcoming Richmond community summit.

Board Action

None; receive and file.

## PUBLIC COMMENT ON NON-AGENDA MATTERS

17. **Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3**

Public comments were given by Kim Le, California State University at East Bay.

## BOARD MEMBERS' COMMENTS

18. **Board Members' Comments**

Director Mitchoff reiterated her request for embedded links to presentations on Board meeting agendas, rather than Air District staff names and contact information next to each agendized item.

Vice Chair Sinks reported that many people attended the Stationary Source Committee meeting that was held on September 16 in Milpitas, and added that, on that same evening, Air District staff addressed the public's complaints about Lehigh Permanente Quarry at a town hall meeting in Cupertino.

Director Kniss expressed her concern about President Trump's plan to revoke California's emissions waiver.

Director Walton said that he was looking forward to working with the Board in his new capacity as Board member.

## OTHER BUSINESS

### 19. Report of the Executive Officer/Air Pollution Control Officer

Mr. Broadbent announced the following:

- To date, the Bay Area has exceeded National Ambient Air Quality Standard levels nine times in 2019.
- The Air District has issued a press release in response to the Trump Administration's intent to revoke California's emissions waiver. Mr. Bunger explained the process by which the waiver may be revoked and gave a history of it as well, adding that the Board has authorized Air District staff to take legal action on this matter, and that the State may request a stay.
- The United Nations Secretary General is hosting a Climate Action Summit in New York on September 23, 2019, and the Air District sent a commitment letter to the summit detailing its efforts on air quality and climate change.
- The California Legislature adjourned its session and AB 836 (Wildfire Smoke Clean Air Centers for Vulnerable Populations Incentive Pilot Program), the bill championed by the Air District and Assemblymember Buffy Wicks, is on the Governor's desk. The Air District is also monitoring the status of AB 423 (Composition of San Diego County Air Pollution Control District).
- The Air District's Advisory Council will host the first of several meetings of its 2019 Particulate Matter Symposia, starting October 28, 2019, with Gina McCarthy, Former Administrator of the United States Environmental Protection Agency to give a keynote address.

Board Comments

Vice Chair Sinks asked if the Air District can focus mobile source grant money on vehicle manufacturers, and whether the California Air Resources Board would allow this.

Directors Groom and Zane stated that the Counties of San Mateo and Sonoma, respectively, declared a state of climate change emergency on September 17, 2019.

Secretary Chavez suggested that the Air District reaches out to hospitals for support and data in response to the Trump Administration's threat to revoke the California waiver, as quantifiable reparation may be owed to Bay Area residents.

### 20. Chairperson's Report

Chair Rice announced that Director Kim resigned from the Board of Directors, effective September 13, 2019, and that Director Abe-Koga, who currently serves as Vice Chair of the Legislative Committee, will become the Chairperson of the Committee.

## 21. Time and Place of Next Meeting

Wednesday, October 2, 2019, at The Waterfront Hotel, Spinnaker Room, 10 Washington Street, Oakland, CA 94607 at 9:30 a.m.

## 22. Adjournment

The meeting adjourned at 11:57 a.m.

Marcy Hiratzka
Clerk of the Boards

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Katie Rice and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 26, 2019

Re: Board Communications Received from September 18, 2019 through October 1, 2019

RECOMMENDED ACTION

None; receive and file.

DISCUSSION

Copies of communications directed to the Board of Directors received by the Air District from September 18, 2019, through October 1, 2019, if any, will be at each Board Member's place at the October 2, 2019, Board meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Justine Buenaflor
Reviewed by: Vanessa Johnson

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Katie Rice and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 26, 2019

Re: Set a Public Hearing for November 6, 2019 to Consider Adoption of Proposed Amendments to Regulation 5: Open Burning, Adoption of Proposed Amendments to Regulation 6: Particulate Matter and Visible Emissions, Rule 3: Wood Burning Devices; and Approval of Filing a Notice of Exemption from the California Environmental Quality Act (CEQA)

RECOMMENDED ACTION

Request that the Board of Directors set a Public Hearing for November 6, 2019, to consider adoption of proposed amendments to Regulation 5: Open Burning; Regulation 6: Particulate Matter and Visible Emissions, Rule 3: Wood Burning Devices; and approval of filing a CEQA Notice of Exemption.

BACKGROUND

California experienced some of the deadliest and most destructive wildfires in its history over the last two years. Wildfire events are becoming the new normal and new wildfire prevention initiatives and actions are needed. The proposed amendments are part of the Air District's *Wildfire Air Quality Response Program*, intended to prepare for, prevent, and respond to future wildfires and ensure health-protective measures and strategies are in place.

The proposed amendments to Regulation 5 complement statewide efforts to prevent catastrophic wildfires through prescribed burning. The proposed amendments would exempt public agencies from incurring Open Burning Fees when conducting prescribed burns for the purpose of wildfire prevention.

The proposed amendments to Rule 6-3 aim to further protect public health when wildfire smoke affects air quality in the Bay Area. The proposed amendments would allow the Air District to announce a Spare the Air Alert on any day throughout the year to notify the public when particulate matter is forecast to exceed the national ambient air quality standard (35 micrograms per cubic meter ($\mu g/m^3$)) and prohibit wood burning during this time.

RULE DEVELOPMENT PROCESS

The rule amendment process included extensive outreach to ensure as many stakeholders as possible were involved in the development of this proposal. Outreach was made to the Bay Area Prescribed Fire Council, local units of California Department of Forestry and Fire Protection (CAL

FIRE), local fire agencies, private and public land managers, Rule 6-3 stakeholders, and any interested members of the general public.

On June 25, 2019, the Air District issued a notice for a public workshop to discuss initial drafts of amendments to Regulation 5 and Rule 6-3 with interested parties. On July 11, 2019, the Air District issued a news release to inform the media about the scheduled workshop. On July 24, 2019, a public workshop and simultaneous webcast was held to solicit comments from the public on the initial proposal.

The Air District published draft rule language for both rules and a workshop report on July 1, 2019, and those documents were available for an interim public comment period from July 1 to August 12, 2019. The comments received during the workshop and 30-day comment period have been considered by the Air District and changes have been incorporated into this proposal where appropriate.

The Air District has determined that these amendments to Regulation 5 and Rule 6-3 are exempt from provisions of CEQA (Public Resources Code Section 21000 et seq.) pursuant to CEQA sections 21080(b)(4) and 21080(b)(8), and State CEQA Guidelines, sections 15061(b)(3), 15307 and 15308. The amendments to Regulation 5 are necessary to prevent or mitigate wildfire-related public health and natural resource emergencies and constitute the modification of a public agency operating fee. The amendments to Rule 6-3 are necessary to prevent or mitigate a public health emergency during wildfire events. The amendments to both rules help assure the protection of the environment and there is no possibility that the Air District's action will have a significant effect on the environment. The Air District intends to file a Notice of Exemption/ Determination pursuant to CEQA section 21152.

A public hearing notice, the proposed rules, staff report, and socioeconomic analysis are available at Air District headquarters or on the Air District's website at http://www.baaqmd.gov/ruledev.

## BUDGET CONSIDERATIONS/FINANCIAL IMPACTS

Provisions in these proposed amendments will have minor impacts on Meteorology and Measurements, Compliance and Enforcement, and Communications. In each case, the organization will fit small intermittent increases in work into existing workload priorities. No increase in personnel or costs is anticipated.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Patrick E. Wenzinger and Tracy Lee
Reviewed by: Wayne Kino

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Katie Rice and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 26, 2019

Re: Authorization of a One-Year Intergovernmental Personnel Act Agreement with U.S. Environmental Protection Agency (EPA) Region 9

RECOMMENDED ACTION

Recommend the Board of Directors authorize the Executive Officer/APCO to enter into a one-year Intergovernmental Personnel Act (IPA) agreement with U.S. Environmental Protection Agency (EPA) Region 9 in the amount of $224,775 for Daniel Meer to work on the Air District's Continuity of Operations Plan, and other duties as assigned.

BACKGROUND

The Air District has initiated the creation of a formal Continuity of Operations Plan (COOP). Such a plan is advisable in any circumstance, but becomes increasingly important, in conjunction with the Emergency Operations Plan, in areas at risk of natural disasters (earthquakes) or other events that strain resources (wildfires). While substantial work on the COOP has been accomplished, its completion would benefit from prior experience, at the senior management level, that is specific to the creation of such plans.

DISCUSSION

Daniel Meer is the Assistant Director for the Superfund and Emergency Management Division, U.S. EPA, Pacific Southwest Region. Therefore, his experience is very well suited for the tasks described above. Under the IPA, he will continue to be compensated at his current rate by the EPA, and the Air District will reimburse the EPA for those costs.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Funding for this IPA will come from the General Fund budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Jeff McKay

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Katie Rice and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 26, 2019

Re: Authorization for Air District Payment to Hilltop Commercial Condominium Association (HOA) for Security Fencing and Gates at Richmond Headquarters East

RECOMMENDED ACTION

Recommend the Board of Directors authorize the Executive Officer/APCO to make a payment to the Hilltop Commercial Condominium Association (HOA) for the Air District's portion of costs for security fencing and gates at Richmond Headquarters East, in an amount not to exceed $200,000.

BACKGROUND

Security-related events at the Headquarters East site in Richmond necessitate the installation of fencing and gates. All members of the HOA desire the expeditious installation of these barriers, both for safety and to prevent loss of property.

DISCUSSION

The HOA process resulted in selection of a bid. The Air District's proportionate share is approximately $200,000.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Funding for this work will come from the General Fund budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Jeff McKay

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Katie Rice and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 26, 2019

Re: Report of the Climate Protection Committee Meeting of September 19, 2019

RECOMMENDED ACTION

The Climate Protection Committee (Committee) received only informational items and have no recommendations of approval by the Board of Directors (Board).

BACKGROUND

The Committee met on Thursday, September 19, 2019, and received the following reports:

A) Briefing on the City of Berkeley's Ordinance Banning Natural Gas in New Construction; and

B) Update on Region-Wide Fluorinated Gases (F-Gas Strategy)

Chairperson Teresa Barrett will provide an oral report of the Committee meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

A) None; and

B) None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Justine Buenaflor
Reviewed by: Vanessa Johnson

Attachment 8A: 09/19/2019 – Climate Protection Committee Meeting Agenda #4
Attachment 8B: 09/19/2019 – Climate Protection Committee Meeting Agenda #5

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Teresa Barrett and Members of the Climate Protection Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 9, 2019

Re: Briefing on the City of Berkeley's Ordinance Banning Natural Gas in New Construction

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

Use of natural gas in buildings for space and water heating and for powering appliances is a major source of greenhouse gas (GHG) emissions in the Bay Area and California. In 2018, Governor Brown signed Senate Bill (SB) 100, which calls for 100 percent zero-carbon electricity in California by 2045. Today, nearly all Bay Area electricity customers are served by community choice energy programs or municipal utilities that are on a path toward achieving the State's zero-carbon electricity target ahead of schedule. As the electricity supply becomes less carbon intensive, switching building end uses away from natural gas to electricity becomes an increasingly important GHG mitigation strategy. In September 2018, Governor Brown signed SB 1477 into law, which will provide $200 million in funding to support zero- or near-zero carbon buildings in California.

DISCUSSION

Air District staff works with local governments, building sector experts and key stakeholders to reduce GHG emissions from the buildings sector. Through the Air District's Climate Protection Grant Program, the Air District is funding numerous projects to reduce carbon dioxide and other GHG emissions from buildings through fuel switching from natural gas to electricity.

On July 16, 2019, Berkeley became the first city in the United States to ban the use of natural gas in new low-rise buildings. Berkeley's Ordinance 7,672–N.S. adds a new chapter to the municipal building code prohibiting natural gas infrastructure in new buildings effective January 1, 2020. The legislation's sponsor, Berkeley Council Member Kate Harrison, will present to the Committee on the key components of the ordinance, important stakeholder groups and outreach methods, and next steps for implementing the new building requirements.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Abby Young
Reviewed by: Henry Hilken

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Teresa Barrett and Members of the Climate Protection Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 9, 2019

Re: Update on Region-Wide Fluorinated Gases (F-Strategy)

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The regional 2017 Clean Air Plan, *Spare the Air – Cool the Climate*, serves as the Air District's blueprint for mitigating climate pollutants in the Bay Area. The Air District is strategically prioritizing and implementing the many control measures and implementation actions contained in the Clean Air Plan. This approach includes developing a region-wide strategy to reduce fluorinated gases (F-gases).

F-gases include a variety of human-made compounds; they are especially potent, and they play an important role in heating the climate in the near term. F- gases include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). F-gas emissions are generated in refrigeration, air conditioning and by a variety of industrial processes. Emissions of F-gases are small on a mass basis, but they are potent agents of climate change on a per-unit basis, in many cases thousands of times more potent than carbon dioxide. These high global warming pollutant (GWP) gases accounted for 4% of all Bay Area greenhouse gas (GHG) emissions in 2015, and are the fastest-growing GHGs in the Bay Area and California.

DISCUSSION

In 2016, Governor Brown signed Senate Bill (SB) 1383 into law, which sets targets for statewide reductions of short-lived climate pollutants emissions, including F-gases, of 40% below 2013 levels by 2030. To support achieving this target, the California Air Resources Board (CARB) developed the short-lived Climate Pollutant Reduction Strategy in 2017. According to CARB, "Action to reduce these powerful "super pollutants" today will provide immediate benefits as the effects of our policies to reduce long-lived GHGs further unfold."

Staff is developing a region-wide strategy to build upon existing efforts and to focus and prioritize important F-gas mitigation activities consistent with the Air District's Clean Air Plan and CARB's short-lived Climate Pollutant Strategy. For example, several current climate protection grants provide funding to projects that target F-gas emissions in commercial and residential refrigeration systems and appliances, and staff expects to build upon the outcomes of these projects. Staff will brief the Committee on current F-gas reduction efforts, on the development of the region-wide F-gas Strategy, and on potential opportunities for reducing F-gas emissions.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None. Resources to develop the Region-wide F-gas Strategy are included in the Fiscal Year Ending (FYE) 2019 budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Abby Young
Reviewed by: Henry Hilken

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Katie Rice and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 26, 2019

Re: Report of the Mobile Source Committee Meeting of September 26, 2019

RECOMMENDED ACTION

The Mobile Source Committee (Committee) recommends Board of Directors approval of the following items:

A) Projects and Contracts with Proposed Grant Awards Over $100,000

1) Approve recommended projects with proposed grant awards over $100,000 as shown in Attachment 1;

2) Approve a recommended update to fiscal year ending (FYE) 2020 Transportation Fund for Clean Air (TFCA) Regional Fund Policies to clarify the requirement regarding vehicle weight classification; and

3) Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects.

B) Proposed Charge! Program Grant Awards Over $100,000

1) Approve recommended Charge! Program projects with proposed grant awards over $100,000 as shown in Attachment 1; and

2) Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects.

C) Update on Volkswagen Environmental Mitigation Trust Grant Program

1) Authorize the Executive Officer/APCO to enter into agreements with eligible applicants for all projects approved by the California Air Resources Board (CARB) and funded by Volkswagen Environmental Mitigation Trust.

D) Update on Proposed Safe Affordable Fuel-Efficient Vehicles (SAFE) Rule

1) None; receive and file.

## BACKGROUND

The Committee met on Thursday, September 26, 2019, and received the following reports:

A) Projects and Contracts with Proposed Grant Awards Over $100,000;

B) Proposed Charge! Program Grant Awards Over $100,000;

C) Update on Volkswagen Environmental Mitigation Trust Grant Program; and

D) Update on Proposed Safe Affordable Fuel-Efficient Vehicles (SAFE) Rule.

Chairperson David J. Canepa will provide an oral report of the Committee meeting.

## BUDGET CONSIDERATION/FINANCIAL IMPACT

A) None. The Air District distributes CMP, MSIF, Community Health Protection Grant Program, TFCA, and RFG funding to public agencies and private entities on a reimbursement basis. Funding for administrative costs is provided by each funding source;

B) None. The Air District distributes TFCA funding to public agencies and private entities on a reimbursement basis. Funding for administrative costs is provided through the TFCA funding source.

C) None. The Air District will distribute Volkswagen Trust funds to awardees on a reimbursement basis. Funding for administrative costs is provided by the Volkswagen Trust.

D) None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Justine Buenaflor
Reviewed by: Vanessa Johnson

Attachment 9A: 09/26/2019 – Mobile Source Committee Meeting Agenda #4
Attachment 9B: 09/26/2019 – Mobile Source Committee Meeting Agenda #5
Attachment 9C: 09/26/2019 – Mobile Source Committee Meeting Agenda #6
Attachment 9D: 09/26/2019 – Mobile Source Committee Meeting Agenda #7

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson David Canepa and Members of the Mobile Source Committee

From: Jack P. Broadbent Executive Officer/APCO

Date: September 23, 2019

Re: Projects and Contracts with Proposed Grant Awards Over $100,000

RECOMMENDED ACTIONS

Recommend Board of Directors:

1. Approve recommended projects with proposed grant awards over $100,000 as shown in Attachment 1;

2. Approve a recommended update to Fiscal Year Ending (FYE) 2020 Transportation Fund for Clean Air (TFCA) Regional Fund Policies to clarify the requirement regarding vehicle weight classification; and

3. Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects.

BACKGROUND

The Bay Area Air Quality Management District (Air District) has participated in the Carl Moyer Program (CMP), in cooperation with the California Air Resources Board (CARB), since the program began in Fiscal Year Ending (FYE) 1999. The CMP provides grants to public and private entities to reduce emissions of oxides of nitrogen (NOx), reactive organic gases (ROG), and particulate matter (PM) from existing heavy-duty engines by either replacing or retrofitting them. Eligible heavy-duty diesel engine applications include on-road trucks and buses, off-road equipment, marine vessels, locomotives, and stationary agricultural pump engines.

Assembly Bill (AB) 923 (Firebaugh), enacted in 2004 (codified as Health and Safety Code (HSC) Section 44225), authorized local air districts to increase their motor vehicle registration surcharge up to an additional $2 per vehicle. The revenues from the additional $2 surcharge are deposited in the Air District's Mobile Source Incentive Fund (MSIF). AB 923 stipulates that air districts may use the revenues generated by the additional $2 surcharge for projects eligible under the CMP. On February 6, 2019, the Board of Directors (Board) authorized Air District participation in Year 21 of the CMP, and authorized the Executive Officer/APCO to execute Grant Agreements and amendments for projects funded with CMP funds or MSIF revenues, with individual grant award amounts up to $100,000.

In 2017, AB 617 (2017) directed CARB, in conjunction with local air districts, to establish the Community Air Protection Program. AB 617 provides a new community-focused action framework to improve air quality and reduce exposure to criteria air pollutants and toxic air contaminants in communities most impacted by air pollution. In advance of the development of the Community Air Protection Program, the Governor and legislature established an early action component to AB 617 to use existing incentive programs to get immediate emission reductions in the communities most affected by air pollution. AB 134 (2017) appropriated $50 million from the Greenhouse Gas Reduction Fund (GGRF) to reduce mobile source emissions, including criteria pollutants, toxic air contaminants, and greenhouse gases in those communities within the Bay Area. Senate Bill (SB) 856 (2018) continued support for these project types and appropriated $245 million from the GGRF statewide, of which $40 million was awarded to the Air District for Bay Area emission reduction projects. These funds will be used to implement projects under the Community Health Protection Grant Program, and optionally on-road truck replacements under the Proposition 1B Goods Movement Emission Reduction Program. On April 3, 2019, the Board authorized the Air District to accept, obligate, and expend SB 856 grant funding.

In 1991, the California State Legislature authorized the Air District to impose a $4 surcharge on motor vehicles registered within the nine-county Bay Area to fund projects that reduce on-road motor vehicle emissions within the Air District's jurisdiction. The statutory authority for TFCA and requirements of the program are set forth in the HSC Sections 44241 and 44242. Sixty percent of TFCA funds are awarded by the Air District to eligible projects and programs implemented directly by the Air District (e.g., Spare the Air, electric vehicle charging station program) and to a program referred to as the TFCA Regional Fund. Each year, the Board allocates funding and adopts policies and evaluation criteria that govern the expenditure of TFCA Regional Fund monies. The remaining forty percent of TFCA funds are pass-through funds to the designated County Program Manager (CPM) in each of the nine counties within the Air District's jurisdiction.

On April 3, 2019, the Board authorized funding allocations for use of the sixty percent of the TFCA revenue in FYE 2020, cost-effectiveness limits for Air District-sponsored FYE 2020 programs, and the Executive Officer/APCO to execute grant agreements and amendments for TFCA-revenue funded projects with individual grant award amounts up to $100,000. On June 5, 2019, the Board adopted policies and evaluation criteria for the FYE 2020 TFCA Regional Fund program.

The Bay Area Clean Air Foundation (Foundation) is a nonprofit support organization for the Air District. As part of its operation, the Foundation applies for grant funding from various sources and accepts funding to reduce and offset air emissions within the boundaries of the Air District. To administer the grant programs associated with this funding, the Foundation has a contract with the Air District, which allows for staff to be used to complete work to expend these monies. On December 5, 2017, the Foundation entered into a contract for approximately $1.3 million in funding with the administrators of the Reformulated Gas Settlement Fund (RFG) to support projects that help accelerate the adoption of zero- and near-zero-emission equipment and vehicles operating in and around the West Oakland community.

Projects with grant award amounts over $100,000 are brought to the Mobile Source Committee for consideration on at least a quarterly basis. Staff reviews and evaluates grant applications based upon the respective governing policies and guidelines established by CARB, the Board, and other funding agencies.

DISCUSSION

**Carl Moyer Program and Community Health Protection Grant Program:**

For the CMP Year 21 cycle, the Air District had more than $11 million available for eligible CMP and school bus projects from a combination of MSIF and CMP funds. The Air District started accepting project applications for the CMP Year 21 funding cycle on June 17, 2019, with applications accepted and evaluated on a first-come, first-served basis.

As of September 5, 2019, the Air District had received 61 project applications. Of the applications that have been evaluated between July 3, 2019 and September 5, 2019, 13 eligible projects have proposed individual grant awards over $100,000. These projects will replace 18 pieces of off-road agricultural equipment, seven (7) pieces of off-road equipment, eight (8) marine engines, and three (3) school buses. These projects will reduce over 73.29 tons of NOx, ROG, and PM per year. Staff recommends the allocation of $7,923,570 for these projects from a combination of CMP funds and MSIF revenues. Attachment 1, Table 1, provides additional information on these projects.

Attachment 2 lists all of the eligible projects that have been received by the Air District as of September 5, 2019, including information about the equipment category, award amounts, estimated emissions reductions, and county location. Approximately 79% of the funds have been awarded to projects that reduce emissions in highly impacted Bay Area communities. Attachment 4, Figures 4 and 5, summarize the cumulative allocation of CMP, MSIF, and Community Health Protection Grant Program funding since 2009 (more than $282 million awarded to 1,217 projects).

**Transportation Fund for Clean Air Program:**

In FYE 2020, the Air District had approximately $32 million in TFCA monies for eligible projects. The Air District opened the FYE 2020 Vehicle Trip Reduction Program and started accepting applications on August 9, 2019. In addition, staff continued to evaluate project applications received through the Air District's Charge! program.

In addition to the eligible Charge! projects, as of September 5, 2019, the Air District had received one application for an eligible project that will purchase and operate one zero-emission battery electric bus with a gross vehicle weight rating (GVWR) of approximately 10,000 lbs. This vehicle will provide shuttle service on the campus of the California State University Maritime Academy in Vallejo, California. The project will reduce approximately 0.009 tons of NOx, ROG, and PM per year and qualifies for an award of up to $13,500 in TFCA funds.

The Board-adopted FYE 2020 TFCA Regional Fund Policies require projects that purchase or lease zero and partial-zero-emission vehicles with a GVWR not exceeding 14,000 lbs. to consist of three or more of such vehicles registered to a single owner. Given that projects which would purchase and operate a single zero-emission vehicle with a GVWR between 8,500 lbs. and 14,000 lbs. can reduce enough emissions to qualify for the $10,000 minimum grant funding amount, staff is proposing an update to the FYE 2020 TFCA Regional Fund Policies to clarify the requirement regarding vehicle weight classification by 1) decreasing the maximum GVWR in Policy #23(b) from 14,000 lbs. to 8,500 lbs.; and 2) decreasing the minimum GVWR in Policy #24(a) from greater than 14,000 lbs. to greater than 8,500 lbs.

Attachment 3, Table 1, lists all eligible TFCA projects that were evaluated and awarded between July 1, 2019 and September 5, 2019, including information about the equipment category, award amounts, estimated emissions reductions, and county location. Approximately 33% of the funds have been awarded to projects that reduce emissions in highly impacted Bay Area communities.

**Reformulated Gas Settlement Fund Program:**

Since April of 2018, the Air District has conducted three rounds of solicitations for the West Oakland Zero-Emission Grant Program, which offered a total of $1.17 million in RFG project funds for eligible projects that reduce petroleum usage and air pollution in West Oakland, the Port of Oakland, and the surrounding eligible areas. This funding is designed to help owners and operators pay for a portion of the cost of purchasing and deploying new on- and off-road zero-emission vehicles, infrastructure, and other mobile or stationary equipment. A fourth solicitation to award the remaining $450,000 in RFG funds was opened on September 3, 2019.

Of the applications that were evaluated between July 3, 2019 and September 5, 2019, none of the eligible projects proposed an individual grant award over $100,000. However, one eligible RFG project was awarded less than $100,000 during this evaluation period and is listed in Attachment 3, Table 2. Table 2 also lists all other eligible RFG projects that were evaluated and awarded as of September 5, 2019, including information about the equipment category, award amounts, estimated emissions reductions, and location.

<u>BUDGET CONSIDERATION / FINANCIAL IMPACT</u>

None. The Air District distributes CMP, MSIF, Community Health Protection Grant Program, TFCA, and RFG funding to public agencies and private entities on a reimbursement basis. Funding for administrative costs is provided by each funding source.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Anthony Fournier and Sean Newlin
Reviewed by: Karen Schkolnick, Chengfeng Wang, and Ken Mak

Attachment 1: Projects with grant awards greater than $100,000
Attachment 2: CMP/MSIF, FARMER and Community Health Protection Grant Program approved projects
Attachment 3: TFCA and RFG approved and eligible projects
Attachment 4: Summary of funding awarded between 7/1/19 and 9/5/19

# AGENDA 4 - ATTACHMENT 1

Table 1 - Carl Moyer Program/ Mobile Source Incentive Fund, FARMER, and Community Health Protection Grant Program projects with grant awards greater than $100k (Evaluated between 7/3/19 and 9/6/19)

| Project # | Applicant name | Equipment Category | Project Description | Proposed contract award | Total project cost | Emission Reductions (Tons per year) | | | County |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | NOx | ROG | PM | |
| **20MOY241** | Linda Pierce Wedemeyer Exemption Trust | Ag/ off-road | Replacement of 3 pieces of diesel off-road agricultural equipment | $ 129,500 | $ 161,991 | 0.217 | 0.039 | 0.021 | Solano |
| **21SBP2** | Campbell Union School District | School bus | Replacement of 1 diesel school bus | $ 178,500 | $ 217,890 | 0.064 | 0.005 | 0.000 | Santa Clara |
| **20MOY250** | Amnav Maritime Corporation (Vessel: Patricia Ann) | Marine | Replacement of 4 marine diesel engines on the tugboat Patricia Ann | $ 1,288,000 | $ 1,436,660 | 8.609 | 0.270 | 0.476 | Alameda |
| **21MOY31** | Gerald & Kristy Spaletta (Dairy) | Ag/ off-road | Replacement of 1 piece of diesel off-road agricultural equipment | $ 185,400 | $ 231,796 | 0.566 | 0.074 | 0.052 | Sonoma |
| **21MOY21** | Renteria Vineyard Management, LLC. | Ag/ off-road | Replacement of 4 pieces of diesel off-road agricultural equipment | $ 249,600 | $ 312,155 | 0.790 | 0.121 | 0.089 | Napa |
| **21MOY33** | S.E.G Trucking | Off-road | Replacement of 2 pieces of off-road equipment. | $ 355,500 | $ 549,187 | 1.044 | 0.074 | 0.052 | Contra Costa |
| **21MOY34** | Custom Tractor Service | Ag/ off-road | Replacement of 2 pieces of diesel off-road agricultural equipment | $ 456,200 | $ 570,399 | 2.260 | 0.211 | 0.115 | Sonoma |
| **21MOY14** | Bayview Vineyards Corp. | Ag/ off-road | Replacement of 5 pieces of diesel off-road agricultural equipment | $ 198,850 | $ 248,718 | 0.741 | 0.152 | 0.084 | Napa |
| **21MOY47** | DeBernardi Dairy, Inc. | Ag/ off-road | Replacement of 1 piece of diesel off-road agricultural equipment | $ 151,000 | $ 189,566 | 0.438 | 0.040 | 0.022 | Sonoma |
| **21MOY51** | Crowley Marine Services (Vessel: Valor) | Marine | Replacement of 4 marine diesel engines on the tugboat Valor | $ 2,916,000 | $ 3,559,454 | 43.259 | 4.409 | 1.420 | Alameda |
| **20MOY217** | Oakland Pallet Co., Inc. | Off-road | Replacement of one diesel portable engine | $ 863,500 | $ 1,385,274 | 2.401 | 0.164 | 0.076 | Alameda |
| **20SBP246** | Newark Unified School District | School bus | Replacement of 2 diesel school buses | $ 179,020 | $ 954,938 | 0.037 | 0.002 | 0.000 | Alameda |
| **21MOY46** | Bigge Crane and Rigging Company | Off-road | Replacement of 6 diesel forklifts | $ 772,500 | $ 1,436,203 | 4.210 | 0.435 | 0.254 | Alameda |
| | | | **13 Projects** | $ 7,923,570 | $ 11,254,230 | 64.635 | 5.996 | 2.661 | |

# AGENDA 4 - ATTACHMENT 2

*CMP/MSIF, FARMER and Community Health Protection Grant Program approved projects*
*(between 7/3/19 and 9/5/19)*

| Project # | Equipment category | Project type | # of engines | Proposed contract award | Applicant name | Emission Reductions (Tons per year) | | | Board approval date | County |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | NOx | ROG | PM | | |
| 20MOY230 | Ag/ off-road | Equipment replacement | 1 | $ 16,965.00 | Cornerstone Certified Vineyard | 0.024 | 0.019 | 0.006 | APCO | Sonoma |
| 20MOY235 | Ag/ off-road | Equipment replacement | 1 | $ 46,690.00 | Goldridge Pinot LLC dba Emeritus Vineyards | 0.170 | 0.026 | 0.019 | APCO | Sonoma |
| 20MOY241 | Ag/ off-road | Equipment replacement | 3 | $ 129,500.00 | Linda Pierce Wedemeyer Exemption Trust | 0.217 | 0.039 | 0.021 | TBD | Solano |
| 21MOY9 | On-road | Equipment replacement | 1 | $ 60,000.00 | Prime Tank Lines LLC | 0.802 | 0.060 | 0.005 | APCO | Contra Costa |
| 20MOY248 | On-road | Equipment replacement | 1 | $ 40,000.00 | Amritpal Tingh (Truck owner/operator) | 0.604 | 0.052 | 0.000 | APCO | Alameda |
| 21MOY1 | On-road | Equipment replacement | 1 | $ 40,000.00 | Freight 99 Express Inc. (Truck owner/operator) | 0.280 | 0.024 | 0.000 | APCO | Alameda |
| 20MOY86 | On-road | Equipment replacement | 1 | $ 25,000.00 | Sears Keith (Truck owner/ operator) | 0.195 | 0.016 | 0.000 | APCO | Sacramento |
| 20MOY150 | On-road | Equipment replacement | 1 | $ 40,000.00 | Sukhjeet Singh Cheema (Truck owner/ operator) | 0.667 | 0.057 | 0.000 | APCO | San Joaquin |
| 21SBP2 | School bus | Equipment replacement | 1 | $ 178,500.00 | Campbell Union School District | 0.064 | 0.005 | 0.000 | TBD | Santa Clara |
| 20MOY227 | On-road | Equipment replacement | 1 | $ 30,000.00 | JSK Trucking (Truck owner/ operator) | 0.193 | 0.016 | 0.000 | APCO | San Joaquin |
| 20MOY239a | On-road | Equipment replacement | 1 | $ 30,000.00 | DNA Trucking, Inc. | 0.252 | 0.021 | 0.000 | APCO | Solano |
| 20MOY239b | On-road | Equipment replacement | 1 | $ 20,000.00 | DNA Trucking, Inc. | 0.203 | 0.017 | 0.000 | APCO | Solano |
| 20MOY245a | On-road | Equipment replacement | 1 | $ 60,000.00 | Jorge Quintero DBA QDS Transportation | 1.271 | 0.097 | 0.008 | APCO | Alameda |
| 20MOY245b | On-road | Equipment replacement | 1 | $ 60,000.00 | QDS Transportation | 0.817 | 0.061 | 0.005 | APCO | Alameda |
| 20MOY245c | On-road | Equipment replacement | 1 | $ 60,000.00 | Ignacio Quintero (Truck owner/ operator) | 0.900 | 0.068 | 0.005 | APCO | Alameda |
| 20MOY82 | On-road | Equipment replacement | 1 | $ 35,000.00 | Surinder Atwal (Truck owner/ operator) | 0.258 | 0.022 | 0.000 | APCO | Sacramento |

# AGENDA 4 - ATTACHMENT 2

| Project # | Equipment category | Project type | # of engines | Proposed contract award | Applicant name | Emission Reductions (Tons per year) | | | Board approval date | County |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | NOx | ROG | PM | | |
| 20MOY232 | On-road | Equipment replacement | 1 | $ 40,000.00 | Mahmoud Rastegar DBA: Prosper Dedicates Lines | 0.452 | 0.039 | 0.000 | APCO | Placer |
| 20MOY218 | On-road | Infrastructure | 1 | $ 13,717.00 | Penske Truck Leasing Co., L.P. | 0.000 | 0.000 | 0.000 | APCO | Alameda/ San Francisco |
| 21MOY28 | Ag/ off-road | Equipment replacement | 1 | $ 63,850.00 | Bains Farms LLC. | 0.082 | 0.014 | 0.010 | APCO | Solano |
| 21MOY17 | Ag/ off-road | Equipment replacement | 1 | $ 43,350.00 | Sweet Lane Nursery and Vineyards, Inc. | 0.041 | 0.009 | 0.008 | APCO | Sonoma |
| 21MOY23 | Ag/ off-road | Equipment replacement | 2 | $ 86,100.00 | Trefethen Farming LLC. | 0.178 | 0.043 | 0.034 | APCO | Napa |
| 20MOY250 | Marine | Engine replacement | 4 | $ 1,288,000.00 | Amnav Maritime Corporation (Vessel: Patricia Ann) | 8.609 | 0.270 | 0.476 | TBD | Alameda |
| 21MOY31 | Ag/ off-road | Equipment replacement | 1 | $ 185,400.00 | Gerald & Kristy Spaletta (Dairy) | 0.566 | 0.074 | 0.052 | TBD | Sonoma |
| 21MOY25 | On-road | Equipment replacement | 1 | $ 49,500.00 | J and A Trucking Inc. | 1.350 | 0.202 | 0.010 | APCO | Alameda |
| 21MOY21 | Ag/ off-road | Equipment replacement | 4 | $ 249,600.00 | Renteria Vineyard Management, LLC. | 0.790 | 0.121 | 0.089 | TBD | Napa |
| 21MOY41 | Ag/ off-road | Equipment replacement | 2 | $ 81,750.00 | Geoffrey Allen (Nursery) | 0.105 | 0.030 | 0.012 | APCO | San Mateo |
| 21MOY30 | Ag/ off-road | Equipment replacement | 2 | $ 67,100.00 | Jaswant S. Bains (Farmer) | 0.289 | 0.044 | 0.025 | APCO | Solano |
| 21MOY33 | Off-road | Equipment replacement | 2 | $ 355,500.00 | S.E.G Trucking | 1.044 | 0.074 | 0.052 | TBD | Contra Costa |
| 21MO12 | On-road | Equipment replacement | 1 | $ 40,000.00 | Oscar Transport/ Oscar Rivera (Truck owner/ operator) | 0.501 | 0.036 | 0.000 | APCO | Alameda |
| 21MOY34 | Ag/ off-road | Equipment replacement | 2 | $ 456,200.00 | Custom Tractor Service | 2.260 | 0.211 | 0.115 | TBD | Sonoma |
| 21MOY14 | Ag/ off-road | Equipment replacement | 5 | $ 198,850.00 | Bayview Vineyards Corp. | 0.826 | 0.164 | 0.090 | TBD | Napa |
| 21MOY47 | Ag/ off-road | Equipment replacement | 1 | $ 151,000.00 | DeBernardi Dairy, Inc. | 0.438 | 0.040 | 0.022 | TBD | Sonoma |
| 21MOY51 | Marine | Engine replacement | 4 | $ 2,916,000.00 | Crowley Marine Services | 43.259 | 4.409 | 1.420 | TBD | Alameda |

# AGENDA 4 - ATTACHMENT 2

| Project # | Equipment category | Project type | # of engines | Proposed contract award | Applicant name | Emission Reductions (Tons per year) | | | Board approval date | County |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | NOx | ROG | PM | | |
| 21MOY36 | Off-road | Equipment replacement | 1 | $ 74,000.00 | John Benward Co. | 0.564 | 0.028 | 0.021 | APCO | Sonoma |
| 20MOY217 | Off-road | Portable equipment replacement | 1 | $ 863,500.00 | Oakland Pallet Co., Inc. | 2.577 | 0.215 | 0.076 | TBD | Alameda |
| 20SBP246 | School bus | Equipment replacement | 2 | $ 179,020.00 | Newark Unified School District | 0.037 | 0.002 | 0.000 | TBD | Alameda |
| 21MOY46 | Off-road | Equipment replacement | 6 | $ 772,500.00 | Bigge Crane and Rigging Company | 4.210 | 0.435 | 0.254 | TBD | Alameda |
| | 37 | **Projects** | **63** | **$ 9,046,592.00** | | **75.096** | **7.060** | **2.835** | | |

# AGENDA 4 - ATTACHMENT 3

Table 1 - Summary of all TFCA approved and eligible projects (evaluated between 7/1/19 and 9/5/19)

| Project # | Project Category | Project Description | Award Amount | Applicant Name | Emission Reductions (Tons per year) | | | Board/ APCO Approval Date | CARE Area | County |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $NO_X$ | ROG | PM | | | |
| 19EV017 | LD Infrastructure | Install and operate 2 single-port Level 2 (high) charging stations with a 17.28 kW solar array at a Destination facility in Richmond. | $12,000 | AHAH LLC | 0.003 | 0.004 | 0.000 | 7/2/19 | Yes | Contra Costa |
| 19EV023 | LD Infrastructure | Install and operate 3 dual-port Level 2 (high) charging stations at a MUD facility in San Mateo. | $24,000 | Mode Residences, LLC | 0.006 | 0.008 | 0.000 | 7/31/19 | Yes | San Mateo |
| 19EV034 | LD Infrastructure | Install and operate 2 single-port Level 2 (high) and 24 dual-port Level 2 (high) charging stations at 1 workplace facility in Milpitas | $78,000 | View Inc. | 0.036 | 0.053 | 0.001 | 8/20/19 | No | Santa Clara |
| 19EV057 | LD Infrastructure | Install and operate 8 single-port Level 2 (high) and 28 dual-port Level 2 (high) charging stations at 3 workplace facilities in Atherton and Redwood City | $99,000 | Redwood City School District | 0.046 | 0.068 | 0.001 | 8/30/19 | No | San Mateo |
| 19EV065 | LD Infrastructure | Install and operate 606 single-port Level 2 (high) and 6 DC Fast charging stations at 18 Multi-dwelling unit and workplace facilities in San Francisco, San Jose, Walnut Creek, Palo Alto, Sunnyvale, Belmont, Oakland and Livermore | $2,500,000 | PowerFlex Systems, LLC | 0.881 | 1.309 | 0.026 | Pending | Yes | Multi-County |
| 19EV077 | LD Infrastructure | Install and operate 40 DC Fast charging stations at 9 Transportation Corridor facilities in San Francisco, Daly City, Millbrae, Newark, Cupertino, Castro Valley and Emeryville | $1,000,000 | Evgo Services, LLC | 0.336 | 0.499 | 0.010 | Pending | Yes | Multi-County |
| 20R26 | On-road Trucks & Buses | Purchase and operate one battery-electric shuttle | $13,500 | California State University - Maritime Academy | 0.005 | 0.003 | 0.001 | Pending | Yes | Solano |
| 20R02 | LD Vehicles | Vehicle Buy Back Program | $150,000 | BAAQMD | N/A | N/A | N/A | NA | No | Regional |
| 20R01 | Trip Reduction | Enhanced Mobile Source & Commuter Benefits Enforcement | $80,230 | BAAQMD | N/A | N/A | N/A | NA | No | Regional |
| 20R03 | Trip Reduction | Spare The Air/Intermittent Control Programs | $2,185,138 | BAAQMD | N/A | N/A | N/A | NA | No | Regional |
| | **10 Projects** | | **$6,141,868** | | **1.311** | **1.944** | **0.040** | | | |

Table 2 - Summary of all RFG approved and eligible projects (evaluated between 7/1/18 and 9/5/19)

| Project # | Project Category | Project Description | Award Amount | Applicant Name | Emission Reductions (Tons per year) | | | Board/ APCO Approval Date | CARE Area | County |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $NO_X$ | ROG | PM | | | |
| 19RFG06* | LD Infrastructure | Install and operate 43 dual port level 2 EV charging stations | $94,000 | Hayward Unified School District | 0.054 | 0.071 | 0.001 | 10/17/18 | Yes | Alameda |
| 19RFG13 | LD Infrastructure | Install and operate ten 50kW DC fast charging stations | $389,400 | EVgo Service, LLC | 0.040 | 0.060 | 0.001 | 6/5/19 | Yes | Alameda |
| 19RFG04* | Off-road (non-ag) | Purchase and operate 5 electric forklifts, 1 electric vacuum unit, and 1 electric terminal truck | $141,000 | Wyse Logistics | 0.107 | 0.015 | 0.008 | 10/17/18 | Yes | Alameda |
| 19RFG14 | Off-road (non-ag) | Purchase and operate one electric terminal tractor | $39,400 | Oakland Maritime Support Services, Inc. | 0.066 | 0.011 | 0.007 | 5/23/19 | Yes | Alameda |
| 19RFG16 | Off-road (non-ag) | Purchase and operate one electric terminal tractor | $80,000 | GSC Logistics, Inc. | 0.051 | 0.002 | 0.003 | 8/29/19 | Yes | Alameda |
| | **5 Projects** | | **$743,800** | | **0.318** | **0.159** | **0.020** | | | |

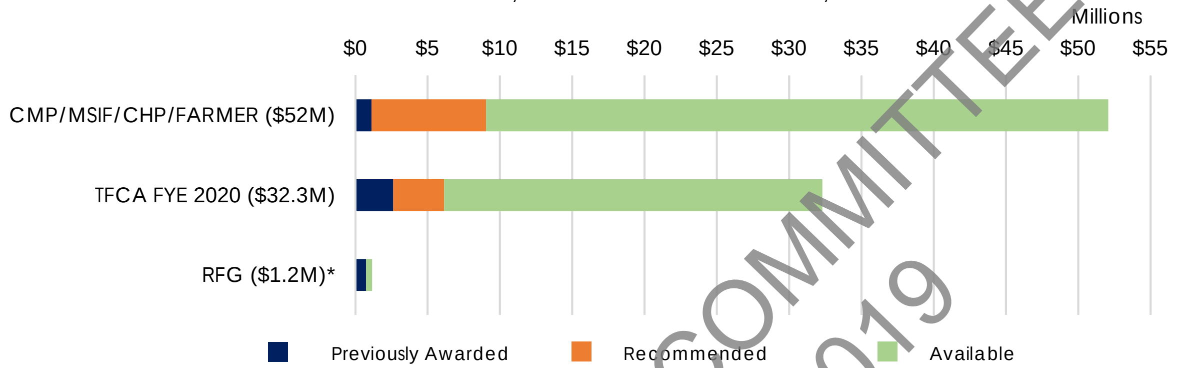
# AGENDA 4 - ATTACHMENT 4

**Figures 1-3 shown below summarize funding awarded between 7/1/19 and 9/5/19 from funding sources including:**

- Carl Moyer Program (CMP)
- Community Health Protection Program (CHP)
- Funding Agricultural Replacement Measures for Emission Reductions (FARMER)
- Mobile Source Incentive Fund (MSIF)
- Transportation Fund for Clean Air (TFCA)
- Reformulated Gasoline Settlement Fund (RFG)

**Figure 1. Status of FYE 2020 funding by source**

includes funds awarded, recommended for award, and available




* Includes funding awarded in FYE 2019

**Figure 2. Funding awarded in FYE 2020 by county:**

includes funds awarded & recommended for award

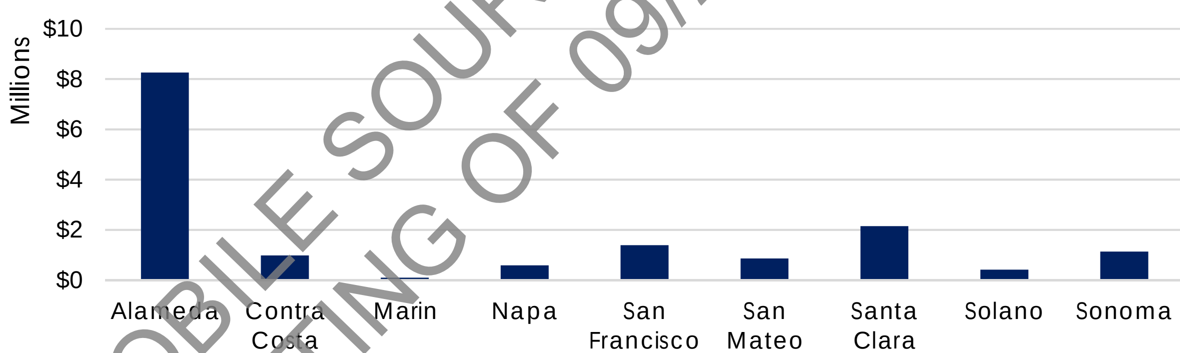
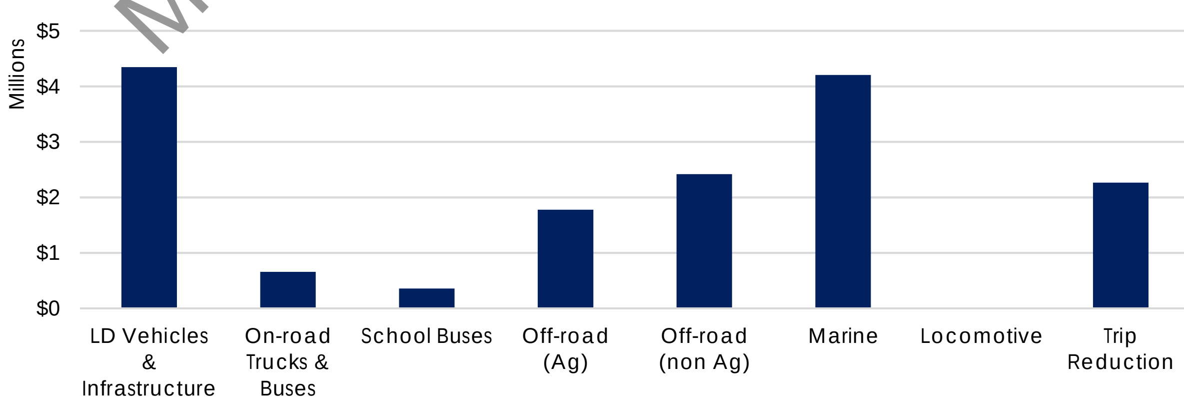



**Figure 3. Funding awarded in FYE 2020 by project category**

includes funds awarded & recommended for award



# AGENDA 4 - ATTACHMENT 4

**Figure 4. CMP/MSIF/CHP/FARMER funding awarded since 2009 by county**

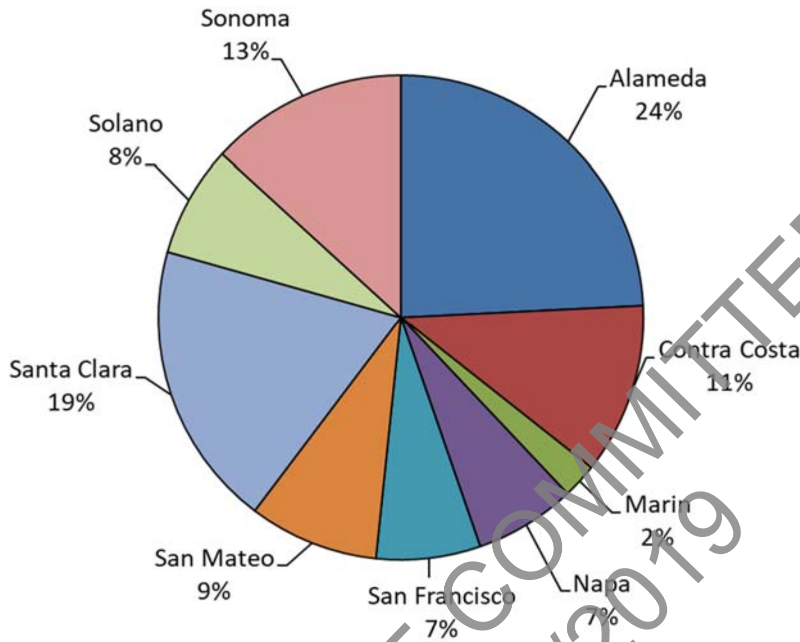
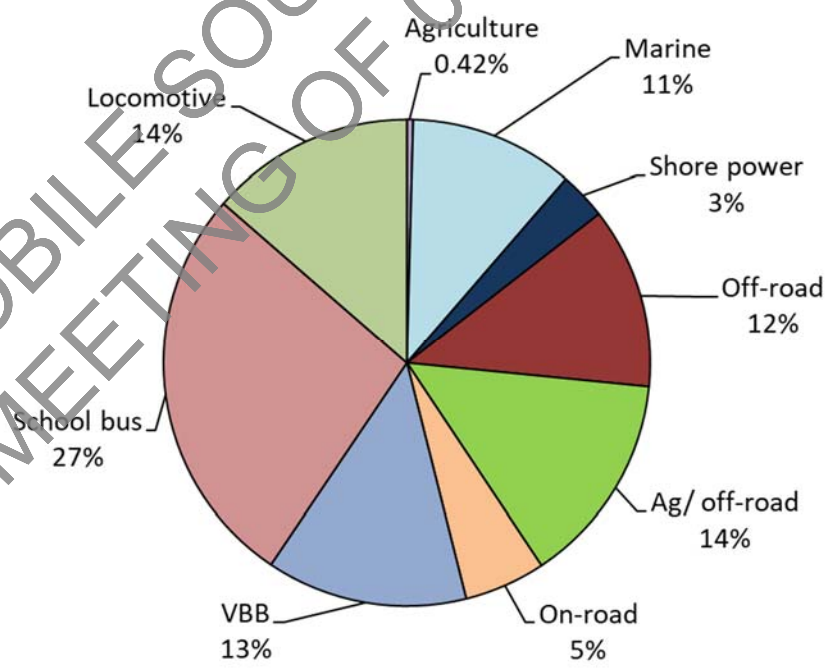



**Figure 5. CMP/MSIF/CHP/FARMER funding awarded since 2009 by category**



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson David Canepa and Members
of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 23, 2019

Re: Proposed Charge! Program Grant Awards Over $100,000



RECOMMENDED ACTIONS

Recommend Board of Directors:

1. Approve recommended Charge! Program projects with proposed grant awards over $100,000 as shown in Attachment 1; and

2. Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects.

BACKGROUND

Projects with grant award amounts over $100,000 are brought to the Mobile Source Committee for consideration on at least a quarterly basis. Staff reviews and evaluates grant applications based upon the respective governing policies and guidelines established by the California Air Resources Board (CARB) and the Air District's Board of Directors (Board).

**Transportation Fund for Clean Air**

In 1991, the California State Legislature authorized the Air District to impose a $4 surcharge on motor vehicles registered within the Bay Area to fund projects that reduce on-road motor vehicle emissions. This surcharge is used to fund the Transportation Fund for Clean Air (TFCA). Program requirements are in the Health and Safety Code Sections 44241 and 44242. Sixty percent of TFCA funds are used for programs implemented directly by the Air District (e.g., Spare the Air, Charge! Program, TFCA Regional Fund). The remaining forty percent of TFCA funds are passed-through to the designated County Program Managers (CPM) within the Air District's jurisdiction.

On June 6, 2018, the Board adopted the TFCA Regional Fund Policies and Evaluation Criteria for Fiscal Year Ending (FYE) 2019. On June 5, 2019, the Board adopted the TFCA Regional Fund Policies and Evaluation Criteria for FYE 2020. Additionally, on May 1, 2019, the Board adopted the TFCA Program Funding Allocation for FYE 2020, which increased the cost-effectiveness limit for Electric Vehicle (EV) Charging Station projects. The Charge! Program is an Air District-sponsored program and is not subject to the TFCA Regional Fund Policies and Evaluation Criteria, although the Air District has incorporated the Board adopted TFCA Regional Fund Policies and Evaluation Criteria into the Charge! Program Guidance. The FYE 2019 and FYE 2020 Evaluation Criteria included a maximum grant amount of $500,000 that may be awarded to non-public entities.

**Charge! Program**

The availability of charging infrastructure is a critical factor influencing the number of people who switch to EVs. Charging stations are categorized by the power output into Level 1, Level 2, DC Fast, and DC Ultra-Fast. Level 1 and Level 2 chargers are appropriate for locations where users dwell for longer periods of time, such as at residences, workplaces, and destinations including parks and transit park-and-ride lots. DC fast chargers can quickly charge EVs within an hour and are best suited for drivers who are making longer trips, or for situations in which a quick charge is required to resume work, such as for taxis, transportation network companies, or fleets.

Since 2016, the Air District has administered the Charge! Program, which provides funding through TFCA for the purchase and installation of publicly accessible charging stations in the Bay Area. This Program is open to government entities, non-profits, and businesses. The Charge! Program provides fixed award amounts per each charging unit installed. For example, a Level 2 charging station is eligible for up to $3,000 in funding, whereas a DC fast charging station is eligible for up to $18,000. Additional "plus-up" funding is available to promote ancillary benefits and reduce costs at project locations where there are higher barriers to implementation, including co-locating solar power generation or installing charging at multi-unit dwellings or in transportation corridors.

On May 2, 2018, the Air District Board allocated $11.43 million in carry-over and new TFCA funds for Clean Vehicle Projects, including for the Charge! Program for FYE 2019, set cost-effectiveness limits, and authorized the Executive Officer/APCO to execute grant agreements and amendments for TFCA-revenue funded projects with grant award amounts up to $100,000. The application period for the FYE 2019 cycle of the Charge! Program was open from October 25, 2018 to June 30, 2019.

<u>DISCUSSION</u>

**Charge! Program Proposed Projects**

As of June 30, 2019, the Air District had received 76 project applications for the Charge! Program. Of the applications that were evaluated between July 1, 2019 and September 5, 2019, two eligible projects have proposed grant awards over $100,000. These two eligible projects have requested over $500,000 in grant awards, which is the maximum grant amount for non-public entities per calendar year included in the FYE 2019 Charge! Program Guidance.

- **EVgo Services, LLC's Electric Vehicle Charging Station Project:** On June 5, 2019, the Board of Directors approved an award of $500,000 in TFCA Funds for EVgo Services, LLC to install and operate 20 DC fast charging stations at five transportation corridor facilities in San Francisco, Novato, and San Jose. Additionally, on June 5, 2019, the Board of Directors approved an award of $389,400 from the Reformulated Gasoline Settlement Fund (RFG) to support the installation and operation of 10 DC fast charging stations at the Oakland Airport Park 'N Fly in Oakland, California.

EVgo Services, LLC is proposing an additional project to install and operate 40 DC fast charging stations at nine transportation corridor facilities in San Francisco, Daly City, Millbrae, Newark, Cupertino, Castro Valley, and Emeryville. This project is estimated to reduce 0.8 tons of NOx, ROG, and PM per year. Staff recommend an additional award of $1,000,000 in TFCA Funds for this project. This request brings the total requested TFCA funds for EVgo Services, Inc. to $1,500,000 for the calendar year. Attachment 1, Table 1, provides additional information on this project.

- **PowerFlex's Electric Vehicle Charging Station Project:** This project will install and operate 606 single-port Level 2 and 6 DC fast charging stations at 18 multi-unit dwelling and workplace facilities in San Francisco, San Jose, Walnut Creek, Palo Alto, Sunnyvale, Belmont, Oakland, and Livermore. This project will reduce over 2.2 tons of NOx, ROG, and PM per year. Staff recommend an award of $2,500,000 in TFCA funds for this project. Approximately 40% of the award funds would be used for charging stations at multi-unit dwelling facilities. Attachment 1, Table 1, provides additional information on this project.

Staff are recommending that the Board allow exceptions to the maximum grant amount for these two projects as they would significantly increase DC fast charging in Bay Area transportation corridors and at multi-unit dwellings, which have historically been the most challenging facility categories for installing EV charging infrastructure. Of the $8.9 million in Charge! Program funds awarded to date, 0.2% has been for DC fast charging stations and 4% has been for multi-unit dwelling facilities. These projects would increase those numbers to 8% for DC fast charging stations and 11% for multi-unit dwelling facilities, for the program to date.

After all other eligible applications are awarded, there is sufficient funding from the $11.43 million available in FYE 2019 to fund these two projects. Attachment 2, Table 1, lists all eligible Charge! projects that were evaluated as of September 5, 2019, including information about the charging category, facility type, award amounts, estimated emissions reductions, and county location.

**Maximum Grant Amount for Future Cycles of Charge! Program**

To allow for larger installation projects that strategically address key gaps in EV charging infrastructure in the Bay Area, staff recommend increasing the maximum award for public and non-public entities from $1.5 million and $500,000, respectively, to $2.5 million per calendar year for both public and non-public entities for the FYE 2020 Charge! Program. Expanding the program's capacity to invest in critical areas of need for EV charging availability will accelerate the Bay Area's adoption of EVs, moving toward meeting the region's goals.

Eligible projects receiving the increased grant amount in excess of $500,000 would be required to focus on communities with fewer publicly available EV charging stations, multi-unit dwellings, transportation corridors, and/or other identified gaps in EV charging infrastructure. Any project requesting in excess of $500,000 in grant awards would also be placed on a waiting list until the end of the solicitation period, and then be evaluated if funds are still available. Projects requesting over $100,000 in grant awards will be brought to the Board of Directors for consideration.

Staff will present this recommendation along with an overview of program guidelines ahead of the launch of the FYE 2020 Charge! Program early next year.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None. The Air District distributes TFCA funding to public agencies and private entities on a reimbursement basis. Funding for administrative costs is provided through the TFCA funding source.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Mark Tang
Reviewed by: Derrick Tang and Ranyee Chiang

Attachment 1: Projects with grant awards greater than $100,000
Attachment 2: All Charge! Program approved and eligible projects

# AGENDA 5 - ATTACHMENT 1

Table 1 - Charge! Program projects
with grant awards greater than $100k (Evaluated between 7/4/19 and 9/5/19)

| Project # | Applicant name | Project Category | Project Description | Proposed contract award | Total project cost | Emission Reductions (Tons per year) | | | County |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | $NO_x$ | ROG | PM | |
| **19EV065** | PowerFlex Systems, LLC | LD Infrastructure | Install and operate 606 single-port Level 2 (high) and 6 DC Fast charging stations at 18 Multi-dwelling unit and workplace facilities in San Francisco, San Jose, Walnut Creek, Palo Alto, Sunnyvale, Belmont, Oakland and Livermore | $2,500,000 | $3,773,163 | 0.881 | 1.309 | 0.026 | Regional |
| **19EV077** | Evgo Services, LLC | LD Infrastructure | Install and operate 40 DC Fast charging stations at 9 Transportation Corridor facilities in San Francisco, Daly City, Millbrae, Newark, Cupertino, Castro Valley and Emeryville | $1,000,000 | $2,906,589 | 0.336 | 0.499 | 0.010 | Regional |
| | | | **2 Projects** | $3,500,000 | $6,679,752 | 1.22 | 1.81 | 0.04 | |

# AGENDA 5 - ATTACHMENT 2

Table 1 - Summary of all TFCA funded Charge! approved and eligible projects (evaluated between 7/1/18 and 9/5/19)

| Project # | Project Category | Project Description | Award Amount | Applicant Name | Emission Reductions (Tons per year) | | | Board/ APCO Approval Date | CARE Area | County |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $NO_X$ | ROG | PM | | | |
| 18EV029 | LD Infrastructure | Install and operate 16 single port Level 2 (high) charging stations at 1 workplace facility in Los Altos Hills | $48,000 | Creative Center of Los Altos | 0.026 | 0.034 | 0.001 | 10/30/18 | No | Santa Clara |
| 18EV035 | LD Infrastructure | Install and operate 2 dual port Level 2 (high) charging stations at 1 destination facility in Greenbrae | $8,000 | Marin Rowing Association | 0.004 | 0.006 | 0.000 | 7/31/18 | No | Marin |
| 18EV038 | LD Infrastructure | Install and operate 1 single port Level 2 (high) and one 25 kW DC Fast charging stations with solar at 1 transportation corridor facility in Petaluma | $25,900 | Solar Action Network | 0.01 | 0.01 | 0.00 | 11/30/18 | No | Sonoma |
| 18EV047 | LD Infrastructure | Install and operate 4 single port Level 2 (high) charging stations at 1 destination facility in San Mateo | $12,000 | Nazareth Plaza Owners' Association | 0.007 | 0.009 | 0.000 | 7/30/18 | No | San Mateo |
| 18EV049 | LD Infrastructure | Install and operate 12 single-port Level 2 (high) charging stations at 6 destination facilities in San Mateo, Burlingame, San Bruno, and Millbrae | $36,000 | San Mateo Union High School District | 0.020 | 0.025 | 0.000 | 7/5/18 | No | San Mateo |
| 19EV002 | LD Infrastructure | Install and operate 20 dual port level 2 (high) charging stations with solar at 1 destination facility in San Rafael | $84,000 | San Rafael Airport LLC | 0.037 | 0.055 | 0.001 | 4/5/19 | No | Marin |
| 19EV003 | LD Infrastructure | Install and operate two 25kW DC Fast charging stations at 1 transportation corridor facility in San Francisco | $23,298 | Union Investment Real Estate GmbH | 0.008 | 0.012 | 0.002 | 4/5/19 | Yes | San Francisco |
| 19EV006 | LD Infrastructure | Install and operate twenty 50kW DC Fast charging stations at 7 transportation corridor facilities in San Francisco, Novato, Emeryville and San Jose | $500,000 | EVGo Service, LLC | 0.168 | 0.249 | 0.005 | 6/5/19 | Yes | Regional |
| 19EV007 | LD Infrastructure | Install and operate 2 dual port & 1 single port level 2 (high) charging stations at 2 destination facilities in Concord | $11,000 | City of Concord | 0.005 | 0.008 | 0.000 | 5/7/19 | Yes | Contra Costa |
| 19EV009 | LD Infrastructure | Install and operate 2 dual port and 1 single port level 2 (high) charging stations at 1 workplace and 1 destination facility in Moraga | $11,000 | Town of Moraga | 0.005 | 0.008 | 0.000 | 5/1/19 | No | Contra Costa |
| 19EV013 | LD Infrastructure | Install and operate 1 DC Fast and 1 single-port level 2 (high) charging stations with a 9.1 kW solar array at a transportatopm corridor in Glen Ellen | $32,000 | Abrahams Farm LLC | 0.010 | 0.015 | 0.000 | 5/23/19 | No | Sonoma |
| 19EV017 | LD Infrastructure | Install and operate 2 single-port Level 2 (high) charging stations with a 17.28 kW solar array at a Destination facility in Richmond. | $12,000 | AHAH LLC | 0.003 | 0.004 | 0.000 | 7/2/19 | Yes | Contra Costa |
| 19EV023 | LD Infrastructure | Install and operate 3 dual-port Level 2 (high) charging stations at a MUD facility in San Mateo. | $24,000 | Mode Residences, LLC | 0.006 | 0.008 | 0.000 | 7/31/19 | Yes | San Mateo |
| 19EV034 | LD Infrastructure | Install and operate 2 single-port Level 2 (high) and 24 dual-port Level 2 (high) charging stations at 1 workplace facility in Milpitas | $78,000 | View Inc. | 0.036 | 0.053 | 0.001 | 8/20/19 | No | Santa Clara |
| 19EV057 | LD Infrastructure | Install and operate 8 single-port Level 2 (high) and 28 dual-port Level 2 (high) charging stations at 3 workplace facilities in Atherton and Redwood City | $99,000 | Redwood City School District | 0.046 | 0.068 | 0.001 | 8/30/19 | No | San Mateo |
| 19EV065 | LD Infrastructure | Install and operate 606 single-port Level 2 (high) and 6 DC Fast charging stations at 18 Multi-dwelling unit and workplace facilities in San Francisco, San Jose, Walnut Creek, Palo Alto, Sunnyvale, Belmont, Oakland and Livermore | $2,500,000 | PowerFlex Systems, LLC | 0.881 | 1.309 | 0.026 | Pending | Yes | Regional |
| 19EV077 | LD Infrastructure | Install and operate 40 DC Fast charging stations at 9 Transportation Corridor facilities in San Francisco, Daly City, Millbrae, Newark, Cupertino, Castro Valley and Emeryville | $1,000,000 | EVGo Service, LLC | 0.336 | 0.499 | 0.010 | Pending | Yes | Regional |
| | **17 Projects** | | **$4,504,198** | | **1.605** | **2.373** | **0.050** | | | |

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson David Canepa and Members of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 23, 2019

Re: Update on Volkswagen Environmental Mitigation Trust Grant Program

RECOMMENDED ACTION

Recommend Board of Directors:

1. Authorize the Executive Officer/APCO to enter into agreements with eligible applicants for all projects approved by the California Air Resources Board (CARB) and funded by the Volkswagen Environmental Mitigation Trust.

BACKGROUND

The Volkswagen (VW) Environmental Mitigation Trust (Trust) is a component of partial settlements with Volkswagen for their use of an illegal defeat device (software designed to cheat emissions tests) in certain model year 2009 to 2016, 2.0- and 3.0-liter diesel cars that were sold in California. The VW Trust is intended to fully mitigate the lifetime excess oxides of nitrogen (NOx) emissions caused by VW's actions in the United States. The Trust is enumerated in the first of two Partial Consent Decrees as Appendix D. In March 2017, the Court appointed Wilmington Trust, N.A., as Trustee to administer the Trust for all eligible beneficiaries (states and tribes). The Trust became effective in October 2017. CARB is the designated Lead Agency, acting on the State's behalf as beneficiary, to implement California's allocation, which is about $423 million of the $3 billion national Trust.

In addition to the requirements outlined in the Consent Decree, Senate Bill 92 (Chapter 26, Statutes of 2017) was passed in June 2017, which further directs how California's VW Trust funds in Appendix D are to be spent. The legislation directs CARB to strive to ensure that thirty-five percent of California's allocation benefit low-income or disadvantaged communities that are disproportionately impacted by air pollution, ensure that the expenditures align with the State's priorities, and provide for public transparency before approval.

On May 25, 2018, CARB's Board approved the Beneficiary Mitigation Plan (BMP), which describes California's goals for the investment of its share of VW Trust funds. The BMP identifies and allocates funding to each of the five eligible project categories ("Eligible Mitigation Actions", or EMA) categories, sets funding targets that prioritize benefits to disadvantaged and low-income communities, and outlines the general administrative process for how the program funding may be used. CARB's BMP has designated approximately $360 million for projects and approximately $63 million for reserves and administrative costs.

On this date, CARB also approved the administration of the VW Trust funds to be conducted by California's three largest air districts: Bay Area Air Quality Management District (Air District), San Joaquin Valley Air Pollution Control District (San Joaquin), and South Coast Air Quality Management District (South Coast). These agencies are responsible for development and day-to-day administration of their assigned EMAs, or eligible project categories, on behalf of CARB, who retains ultimate responsibility as California's Lead Agency to the Trust.

The majority of VW Trust EMAs will target NOx emissions reductions through the "scrap and replace" of existing on-road freight trucks, transit and shuttle buses, school buses, forklifts and port cargo handling equipment, repowering of commercial marine vessels and freight switcher locomotives, and installation of new shore-power infrastructure and publicly accessible refueling infrastructure for light-duty electric and hydrogen fuel cell vehicles. CARB staff estimates the Plan's funding actions, in aggregate for all EMAs, will reduce more than 10,000 tons of statewide NOx over a 10-year period.

VW Trust funds will be invested in a variety of geographic regions, and open to projects located across the State's 58 counties, 11 major ports, and 34 commercial airports. Most of the funding EMAs will be made available over two installments, released two years apart, with the first installments anticipated to open between the Fourth Quarter of 2019 and early 2020.

Table 1 provides a summary of funding allocation by project category, and the EMAs assigned to the Air District are bolded.

**Table 1: Summary of VW Trust Plan mitigation actions, funding, and lead air district**

| EMAs and Eligible Equipment | Project Funding (in millions) | Lead Air District |
|---|---|---|
| **Zero-Emission Freight and Marine Projects**<br>*Heavy-lift forklifts, port cargo handling equipment, airport ground support equipment, oceangoing vessel shore power; zero-emission ferry, tugboat, and towboats repower* | **$70** | **Air District** |
| **Light-Duty Zero-Emission Vehicle Infrastructure**<br>*Publicly available electric vehicle charging stations and hydrogen dispensing facilities ($5 million each)* | **$10** | **Air District** |
| **Zero-Emission Buses**<br>*Transit, school, and shuttle buses* | $130 | San Joaquin |
| **Zero-Emission Class 8 Freight and Port Drayage Trucks**<br>*Class 8 freight trucks and port drayage trucks with new zero-emission technologies* | $90 | South Coast |
| **Combustion Freight and Marine Projects**<br>*Low NOx class 7-8 freight trucks, Tier 4 freight switchers, Tier 4 or hybrid ferry, tugboat, and towboat repower* | $60 | South Coast |
| **Total Project Funding** | **$360** | |

## DISCUSSION

On August 1, 2018, the Air District's Board of Directors (Board) authorized the Air District to accept, obligate, and expend up to $130 million in VW Trust funding and authorized the Executive Officer/APCO to enter into all agreements necessary to accept, obligate, and expend this funding. On March 13, 2019, the Air District and CARB executed two agreements for the Air District to administer $11 million for the Light-Duty Zero-Emission Vehicle Infrastructure Projects category and $77 million for the Zero-Emission Freight and Marine Project category.

Since the contract was executed with CARB, Air District staff has been working in coordination with the other districts to develop an online application, grants management system, and reporting database; outreach materials, including a website and hotline; and procedures that will govern how the funding will be administered. All of these components must be approved by CARB. The Air District will also be regularly compiling project and funding status information and making this information available to the public, as well as submitting periodic reports to CARB.

After each solicitation is issued, Air District staff will be reviewing, evaluating, scoring, and ranking applications using the procedures approved by CARB. The ranking list will be reviewed by a panel including members of the Air District, CARB, South Coast, San Joaquin, and the California Air Pollution Control Officers Association. As such, staff is recommending the Committee request the Board of Directors to authorize the Executive Officer/APCO to enter into agreements with eligible applicants for projects selected in accordance with the guidance that is approved by CARB. Staff will be returning to the Mobile Source Committee and Board at least annually to provide a status update on this program, which is anticipated to run approximately ten years.

## BUDGET CONSIDERATION / FINANCIAL IMPACT

None. The Air District will distribute VW Trust funds to awardees on a reimbursement basis. Funding for administrative costs is provided by the VW Trust.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Amy Dao
Reviewed by: Karen Schkolnick, Chengfeng Wang, and Ken Mak

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson David Canepa and Members
of the Mobile Source Committee Members

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 23, 2019

Re: Update on Proposed Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

On August 2, 2018, the Trump Administration announced its intent to revoke California's emissions waiver as part of actions by the United States Environmental Protection Agency's (EPA) and the National Highway Traffic Safety Administration's (NHTSA) to adopt a new nationwide light duty emissions standards rule: The Safer Affordable Fuel-Efficient Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (proposed rule) identified by Docket ID No. EPA–HQ–OAR–2018–0283; NHTSA-2018-0067 (SAFE Rule). The SAFE Rule seeks to lock in place significantly reduced fuel economy standards, replacing the Obama era 50+ miles per gallon corporate average fuel economy (CAFE) requirements for 2021 through 2026 (which were proposed to be withdrawn by the EPA/NHTSA in August 2018).

On September 19, 2019, the Trump Administration announced that it will take the first step in finalizing the proposed SAFE Rule. In an action entitled "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program," the Administration, through its EPA and NHTSA, issued a Final Rule both (1) withdrawing California's emissions waiver; and (2) finalizing NHTSA regulations implementing its statutory authority to issue nationwide fuel economy standards and (attempting to) explicitly preempt state programs.

The emissions waiver has allowed California to set its own new vehicle emissions standards to address its air pollution problems since the adoption of the Clean Air Act in the 1970s. The vehicle emissions standards set by California under the waiver has been tremendously successful in helping to reduce air pollution and in improving public health in the Bay Area, as well as throughout the state. Additionally, the waiver has allowed California to set its own greenhouse gas and zero emissions requirements for certain vehicles, in order to deal with climate issues.

The Final Rule states that the second part of the SAFE Rule, the piece providing for reduced GHG and CAFE standards for light duty vehicles, will be finalized in the near future.

DISCUSSION

The Bay Area Air Quality Management District (Air District) strongly opposes the promulgation of the SAFE Rule, as it would not only worsen the effects of climate change, it would impede the Air District's progress in addressing air pollutants, endanger public health, and take a significant toll on the San Francisco Bay Area's economy. In addition, the proposed withdrawal of the greenhouse gas and zero emission vehicle requirements adopted by California under the waiver granted by the federal government, would be an unprecedented and shortsighted action by the EPA that is not supported by law. It is beyond doubt that California experiences extraordinary impacts from the air pollution and greenhouse gases created by the vehicles covered under the SAFE Rule. These impacts will only be exacerbated if the withdrawal of the California waiver withstands legal challenge.

As part of this agenda item, staff will present information to the Committee on the SAFE Rule; its impacts relative to increasing emissions; its impacts on the Air District's current Clean Air Plan; steps taken by staff to date in opposition to the proposed rule; and next steps. The Air District's Board of Directors has already authorized a legal challenge to the SAFE Rule, Part One, which will be commenced through the filing of a Petition for Review in the United States Court of Appeals for the D.C. Circuit, once the final rule is published in the Federal Register.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Randi Wallach
Reviewed by: Brian Bunger

**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**
Memorandum

To: Chairperson Katie Rice and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: September 26, 2019

Re: Public Hearing to Consider Certification of Final Environmental Impact Report and Adoption of Proposed Plan *Owning Our Air: The West Oakland Community Action Plan*

RECOMMENDED ACTION

Recommend the Board of Directors certify the *Final Environmental Impact Report* and adopt the proposed plan *Owning Our Air: The West Oakland Community Action Plan*.

BACKGROUND

Assembly Bill (AB) 617, signed in 2017, focuses on improving local air quality and health in disproportionately impacted communities. The law requires the California Air Resources Board (CARB) to work with community groups, air districts, and others to select locations around the state where communities and their air district will work together to reduce local air pollution. In September 2018, CARB approved the Bay Area Air Quality Management District's (Air District) recommendation to develop and implement a community emission reduction plan for West Oakland.

The Air District has partnered with West Oakland Environmental Indicators Project (WOEIP) to develop *Owning Our Air: The West Oakland Community Action Plan* (*Owning Our Air* or Plan) for West Oakland. Together, the Air District and WOEIP (the Co-leads) convened and led a Steering Committee of local stakeholders, including residents, community leaders, public agency staff, business representatives, and non-profit groups. Over the last 14 months, the Steering Committee and the Co-leads have worked together to create *Owning Our Air*. The Proposed Final Plan is available on the West Oakland Community Action Plan webpage http://www.baaqmd.gov/ab617woak.

DISCUSSION

***Protecting Public Health***: *Owning Our Air* builds on the Air District's long history of leadership and innovation protecting air quality and public health. The Plan focuses on certain air pollutants that contribute the most to negative health outcomes. Pollutants from cars and trucks, the Port of Oakland, rail, industry, businesses, and residences include fine particulate matter ($PM_{2.5}$), diesel particulate matter (diesel PM), and other toxic air contaminants (TACs). Specifically, the Plan focuses on reducing the extra burden West Oakland faces from local sources. Local sources contribute almost a third of the diesel PM emissions and cancer risk, and just under a quarter of the $PM_{2.5}$ emissions in West Oakland. Once adopted by the Air District Board, and approved by CARB, *Owning Our Air* will guide efforts to improve air quality and reduce emissions and exposure to the local contribution of diesel PM, $PM_{2.5}$, and TACs that result in heightened cancer risk for the West Oakland community.

***Proposed Owning Our Air:*** The foundation for *Owning Our Air* is three-fold. It includes an equal partnership between the Air District, WOEIP, and a community-based Steering Committee, innovative inventory and modeling work, and commitment from local, regional, and state agencies to implement the Plan.

The Air District was fortunate to partner with WOEIP. Led by co-founders Ms. Margaret Gordon and Mr. Brian Beveridge, WOEIP has a long, successful track record of organizing community members to advocate for better air quality in West Oakland. WOEIP was uniquely positioned to engage quickly and effectively in a community air quality action planning effort, and to form a community Steering Committee to guide planning efforts. Along with WOEIP, the Steering Committee provided a deep local knowledge of the community, including locations of existing sources of pollution and locations where people live, recreate, and convalesce. The community and Steering Committee emphasized better enforcement of existing regulations, including truck route, parking, and idling regulations; better inter-agency coordination between local, regional, and state government; continued efforts to move polluting industries out of West Oakland, and other local land use strategies; and better government response to backyard burning and odor nuisances.

The partnership with WOEIP also is central to *Owning Our Air's* innovative air quality technical work. *Owning Our Air* builds on the past twenty years of local air pollution measurements, truck surveys and other studies conducted by WOEIP, and the modeling and measurement studies conducted by the Air District as part of the Community Air Risk Evaluation Program (CARE). For *Owning Our Air*, the Air District developed additional detailed estimates of local pollution sources and local air pollution concentrations to enhance available models. This local modeling provides additional detailed insight into emissions and exposure in the community. From the local modeling, we learned there are unequal air quality impacts within West Oakland. Neighborhoods closer to the Port of Oakland and busy Seventh Street experience much higher levels of pollution and cancer risk, as compared to neighborhoods further away from these sources. *Owning Our Air* details these variations throughout West Oakland and the approaches to remedy them.

The Steering Committee established a goal and targets for *Owning Our Air*. The goal of *Owning Our Air* is to protect and improve community health by eliminating disparities in exposure to local air pollution in West Oakland. *Owning Our Air* has 2025 and 2030 reduction targets to help meet this goal:

- By 2025, all neighborhoods in West Oakland will experience the entire area's average air quality; meaning no neighborhood experiences worse air quality than today's average for West Oakland.

- By 2030, all neighborhoods in West Oakland will have air that is as clean as today's least polluted West Oakland neighborhood.

To this end, *Owning Our Air* includes more than 90 strategies to reduce emissions and exposure in West Oakland. All strategies are based on local community knowledge, existing air pollution monitoring data, the health issues confronting residents, and the Air District's local modeling of pollution concentrations and cancer risks. Moving pollution sources away from residents, adopting health-based land use policies, lowering emissions from the largest sources, increasing the use of clean trucks and other mobile sources, and reducing exposure by filtering pollutants are some of the key strategies in the Plan. *Owning Our Air* includes an Enforcement Plan that outlines the enhancement of existing activities that both the Air District and CARB will undertake to optimize compliance. This includes increased frequency of compliance inspections at stationary sources and for mobile sources; the development of educational and outreach material on open burning; providing the Steering Committee annual enforcement reports; updating the Air District complaint policy; enhancing the enforcement referral process; and collective work between the Air District, CARB, and the community, to identify unpermitted sources in West Oakland.

Implementing these strategies and the Enforcement Plan will involve work by multiple agencies, including the Air District, CARB, the City of Oakland, the Port of Oakland, and others. To ensure this multi-agency support, the Steering Committee includes agency representatives from the City of Oakland, the Port of Oakland, the Alameda County Public Health Department, Alameda County Transportation Agency (Alameda CTC), East Bay Municipal Utility District (EBMUD), and CARB. In addition, throughout plan development, the Co-leads have worked with these agencies to craft strategies and an enforcement plan that supports existing agency programs and enhances these activities. For example, the strategies and Enforcement Plan include a list of activities that CARB has committed to implementing. Strategies also support City of Oakland commitments to address land use conflicts identified in the West Oakland Specific Plan, and truck routing and parking strategies in the West Oakland Truck Management Plan. Along with the community partnership with WOEIP and the community-led Steering Community, and the local modeling efforts, this multi-agency collaborative approach makes *Owning Our Air* unique.

***What Owning Our Air Will Accomplish***: Staff estimated emissions reductions for a limited subset of the Plan strategies. Based on the Air District's forecasting and modeling work:

- The total diesel PM emission benefits of *Owning Our Air* in 2024, relative to 2024 without *Owning Our Air*, is about -2.4 tons per year (-10.5%);

- The total cancer risk-weighted toxic emission benefits of *Owning Our Air* in 2024, relative to 2024 without *Owning Our Air*, is about a 12% reduction; and

- The total $PM_{2.5}$ emission benefits of *Owning Our Air* in 2024, relative to 2024 without *Owning Our Air*, is about -3.7 tons per year (-3%).

It is expected that other unquantified strategies will result in additional reductions, and that strategies to reduce exposure (e.g. high efficiency filters and tree planting) will have further benefits.

***Public Process to Develop Owning Our Air:*** As described above, *Owning Our Air* is different than previous plans in part because of the Air District's equal partnership with WOEIP and the leadership of the Steering Committee. The public process to develop *Owning Our Air* began in April 2018, with outreach to community-based organizations, faith-based organizations, school board members, and business representatives. Ms. Gordon and Mr. Beveridge personally made phone calls, sent emails, and invited community members to attend an initial meeting. Additional Air District and WOEIP staff and volunteers made phone calls to local community leaders, wrote email blasts to community organizations, met one-on-one with various local business contacts, and made weekly presentations at existing community meetings throughout West Oakland. Community members also canvassed door-to-door to build community interest in the Steering Committee.

The Co-leads have hosted monthly Steering Committee meetings open to the public since July 2018. Most meetings are held at the West Oakland Senior Center and all meetings are moderated by a facilitator. The meetings have been well attended. At these monthly meetings, Steering Committee members and the public shared their knowledge of local sources and sensitive receptors, and discussed their priorities for the Plan. The Air District provided information about the Air District's enforcement programs, regulatory authority, inventory and modeling work, and other technical information. The City of Oakland, Port of Oakland, and Alameda County Public Health Department have made presentations about their agency's proposed and ongoing programs that relate to air quality. These presentations and discussions supported the Steering Committee's deliberations on the Plan's goal and targets and strategies to reduce emissions and exposure.

The Co-leads released a draft of *Owning Our Air* on July 23, 2019, and introduced *Owning Our Air* to the public at a Town Hall on August 17, 2019. The Town Hall was well attended by over 100 people, representing West Oakland residents, community leaders, business owners, and other stakeholders. Opening remarks were made by John Bauters, Air District Board Member and Emeryville Council Member; Ms. Margaret Gordon, WOEIP co-founder; Libby Schaaf, Mayor, City of Oakland; Honorable Nancy Skinner, California State Senator, Senate District 9; and Honorable Rob Bonta, California Assembly Member, 18$^{th}$ Assembly District. Four Steering Committee members representing BayPorte Village Neighborhood Watch, New Voices are Rising, Prescott Oakland Point Neighborhood, and AB Trucking provided their perspectives on *Owning Our Air*. Representatives from the Air District, CARB, Port of Oakland, and City of Oakland all spoke about their agency's commitment to implementing the Plan.

***Public Comments and Revisions to Draft Owning Our Air:*** Twenty-three individuals and organizations submitted comments on the public draft Plan. The comments, along with staff responses, are provided in Attachment B. The full text of each comment letter or message is compiled in Attachment C. Some comments addressed the modeling methodology. Partner agencies made comments requesting further clarification about strategies, and while expressing interest in working with the Co-leads and Steering Committee, also noted there is some uncertainty regarding their ability to implement specific strategies due to resource limits. Businesses and business coalitions also submitted letters describing their economic activities and expressing concerns about the negative effect some strategies might have on future economic conditions.

Staff revised the draft *Owning Our Air* in response to the public comments. Changes made the Plan more accessible and understandable to the public; further described the local modeling that was completed; and highlighted the key role that partnerships and collaborations with public agencies and other stakeholders will play in Plan implementation. The Proposed Final Plan also includes new information on the outcomes of the Plan, including the emission reductions noted above.

***Implementing the Plan:*** To implement *Owning Our Air*, the Air District will work with WOEIP, the Steering Committee, and partner agencies. Together, the Co-leads will employ the full range of the Air District's available tools and resources, including its regulatory, permitting, and enforcement authorities; grants and incentives; guidance documents to promote best practices; public outreach and education; advocacy; and air quality modeling, monitoring and research. In addition, partnerships and collaborations with local agencies and other stakeholders will be essential to successfully implement measures where the Air District's regulatory authority is limited, such as for land use decisions, implementation of health programs, and adoption and enforcement of mobile source rules.

To track progress on Plan implementation, the Co-leads will work with the Steering Committee to develop *Owning Our Air* annual progress reports that will include status updates on individual strategies; qualitative and quantitative assessments, including descriptions of community engagement; updates on any changes or interim milestones; and any new or modified strategies that are recommended to be added to *Owning Our Air*.

***Environmental Review:*** The Air District analyzed *Owning Our Air* for potential environmental impacts pursuant to the California Environmental Quality Act (CEQA). The Air District released an Initial Study for the project in May 2019, and released a Draft Environmental Impact Report (DEIR) on July 25, 2019. The Air District provided the required 45-day period for public review and comment which ended on September 9, 2019. A total of 11 comment letters were received on the DEIR; staff responses to comments are provided in Appendix D. The Final Environmental Impact Report (FEIR) does not identify any significant environmental impacts. The FEIR is available on the West Oakland Community Action Plan webpage http://www.baaqmd.gov/ab617woak.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Resources to prepare *Owning Our Air* are included in the Fiscal Year Ending (FYE) 2019 and FYE 2020 budgets. Ongoing implementation of the approved Plan will require additional resources from the state, Air District, and others.

Respectfully submitted,

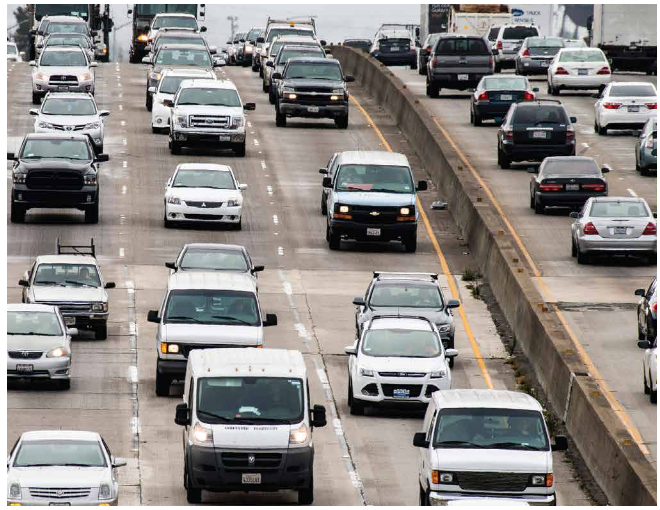
Jack P. Broadbent
Executive Officer/APCO

Prepared by: Alison Kirk and Ada Márquez
Reviewed by: Henry Hilken

Attachment 10A: Proposed Final *Owning Our Air: The West Oakland Community Action Plan* (Volumes I and II)
Attachment 10B: Summary of Public Comments with Staff Responses
Attachment 10C: Full Text of All Comments Submitted on the Public Review Draft *Owning Our Air*
Attachment 10D: Final Environmental Impact Report

AGENDA 10A - ATTACHMENT

PROPOSED FINAL



# OWNING OUR AIR

## The West Oakland Community Action Plan – **Volume 1: The Plan**

**October 2019**

A joint project of the Bay Area Air Quality Management District and West Oakland Environmental Indicators Project

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

West Oakland Environmental Indicators Project

*know which way the wind blows*

# Owning Our Air:
The West Oakland
Community Action Plan
Volume 1

# Table of Contents

## VOLUME 1

Executive Summary ........ ES-1
Introduction ........ I-1
Chapter 1 – Purpose and Scope ........ 2-1
Chapter 2 – Community Description ........ 2-1
Chapter 3 – Community Engagement ........ 3-1
Chapter 4 – Goal and Targets ........ 4-1
Chapter 5 – Technical Assessment ........ 5-1
Chapter 6 – Strategies and Implementation ........ 6-1
Chapter 7 – Enforcement ........ 7-1
Chapter 8 – Tracking Progress ........ 8-1
References ........ R-1
Glossary ........ G-1

## VOLUME 2

Appendix A – Technical Support Document ........ A-1
Appendix B – Community Engagement Materials ........ B-1
Appendix C – Steering Committee Charter and Participation Agreement ........ C-1
Appendix D – Strategies and Implementation Background ........ D-1
Appendix E – Enforcement Support Document ........ E-1

# Tables

Table 5-1. List of West Oakland Sources Inventoried and Modeled vs. Inventoried Only ........ 5-5
Table 5-2. 2017 West Oakland Emissions Summary in tons per year (with cancer risk weighting for toxics) ........ 5-7
Table 5-3. 2024 West Oakland Emissions Summary in tons per year (with cancer risk weighting for toxics) ........ 5-24
Table 6-1. West Oakland Diesel PM Emissions Summaries and Differences (tons per year) ........ 6-11
Table 6-2. West Oakland Cancer Risk-Weighted Toxics Emissions Summaries and Differences (risk-weighted tons per year) ........ 6-15
Table 6-3 West Oakland $PM_{2.5}$ Emissions Summaries and Differences (tons per year) ........ 6-18
Table 6-4. Owning Our Air: The West Oakland Community Action Plan Implementation Schedule ........ 6-21
Table 6-5. Further Study Measures ........ 6-32
Table 7-1. Enforcement History of Heavy-Duty Vehicles in West Oakland ........ 7-9

Table 7-2. Marine Enforcement History (2016-2018)........ 7-13
Table 7-3. Consumer Products Investigations (2017)........ 7-16
Table 8-1: Example Tracking Metrics........ 8-2

## Figures

Figure 2-1. Owning Our Air: The West Oakland Community Action Plan Location and Area Boundary 2-1
Figure 2-2. Home Owners' Loan Corporation Redlining Loan Rating Policy (1937)........ 2-2
Figure 2-3. Residential Zones and Sensitive Receptors in West Oakland........ 2-4
Figure 2-4. CalEnviroScreen 3.0 Pollution Burden Percentile Score........ 2-5
Figure 2-5. Race Demographics for West Oakland, Alameda County, and the Bay Area........ 2-6
Figure 2-6. Educational Attainment, Poverty, and Unemployment in West Oakland, Alameda County, and the Bay Area........ 2-7
Figure 2-7. Life Expectancy at Birth by Race/Ethnicity in Alameda County........ 2-8
Figure 2-8. Life Expectancy at Birth for Alameda County[14]........ 2-8
Figure 2-9. Life Expectancy at Birth for West Oakland and Alameda County........ 2-9
Figure 2-10. Health Indicators in West Oakland and Alameda County........ 2-10
Figure 2-11. Asthma Rates for Children Under 5 Years of Age in West Oakland and Alameda County 2-11
Figure 2-12. Air Pollution Emission Sources in West Oakland........ 2-12
Figure 3-1. Steering Committee Kick-Off Meeting, July 2018........ 3-3
Figure 3-2. Steering Committee Kick-Off Meeting Orientation Packet........ 3-3
Figure 3-3. Steering Committee Mapping West Oakland........ 3-6
Figure 4-1. Regional and Local Cancer Risk in West Oakland (see Table 5-1 for a complete list of sources included and not included in the model)........ 4-2
Figure 4-2. West Oakland Neighborhood Zones and areas with high measured levels of black carbon 4-3
Figure 4-3. West Oakland Neighborhoods with Different Local Cancer Risks........ 4-4
Figure 4-4. Goal and Targets for the Plan........ 4-7
Figure 5-1. Regional-Scale Modeling Area........ 5-3
Figure 5-2. West Oakland Community-Scale Modeling Area with Locations of Modeled Emissions........ 5-3
Figure 5-3. Percent of West Oakland Population by Census Block........ 5-4
Figure 5-4. 2017 West Oakland Emissions Summary for Top-Level Source Categories in tons per year (with cancer risk weighting for toxics)........ 5-9
Figure 5-5. Intensity of Diesel PM Air Pollution Contributed by Local Sources in West Oakland (2017). (Map tiles: Stamen Design; Data: OpenStreetMap)........ 5-10
Figure 5-6. Unequal Impacts: Diesel PM Across West Oakland (2017)........ 5-11
Figure 5-7. Local Impact Zones........ 5-12
Figure 5-8. Local vs. Regional Contributions for Diesel PM, Cancer Risk, and $PM_{2.5}$........ 5-13

Figure 5-9. a-b. Pie Charts Showing the Mix of Sources Contributing to Local Enhancement of Ambient Concentrations (2017) for (a) Diesel PM and (b) Cancer Risk. (Map tiles: Stamen Design; Data: OpenStreetMap) ... 5-15
Figure 5-10. Impact per Ton of Emissions: Diesel PM in West Oakland (2017) ... 5-17
Figure 5-11. Targets and Source Apportionment for Diesel PM in 2017 (Baseline) ... 5-19
Figure 5-12. Targets and Source Apportionment for Diesel PM in 2024 (Without the Plan) ... 5-19
Figure 5-13. Targets and Source Apportionment for Cancer Risk in 2017 (Baseline) ... 5-20
Figure 5-14. Targets and Source Apportionment for Cancer Risk in 2024 (Without the Plan) ... 5-20
Figure 5-15. Targets and Source Apportionment for $PM_{2.5}$ in 2017 (Baseline) ... 5-21
Figure 5-16. Targets and Source Apportionment for $PM_{2.5}$ in 2024 (Without the Plan) ... 5-21
Figure 6-1. Targets and Source Apportionment for Diesel PM in 2024 Without the Plan ... 6-9
Figure 6-2. Targets and Source Apportionment for Diesel PM in 2024 With the Plan ... 6-9
Figure 6-3. Targets and Source Apportionment for Cancer Risk in 2024 Without the Plan ... 6-13
Figure 6-4. Targets and Source Apportionment for Cancer Risk in 2024 With the Plan ... 6-13
Figure 6-5. Targets and Source Apportionment for $PM_{2.5}$ in 2024 Without the Plan ... 6-17
Figure 6-6. Targets and Source Apportionment for $PM_{2.5}$ in 2024 With the Plan ... 6-17
Figure 7-1. Types of Permitted Facilities in West Oakland ... 7-3
Figure 7-2. West Oakland 3-year Stationary Source Compliance Rate ... 7-4
Figure 7-3. Types of Air Quality Complaints in West Oakland ... 7-5
Figure 7-4. Alleged Sites of Odor Complaints in West Oakland ... 7-6
Figure 7-5. West Oakland 3-Year Violation Summary ... 7-7
Figure 7-6. Heavy-Duty Vehicle Inspections (2016-2018) ... 7-10
Figure 7-7. CARB Citations (2016-2018) ... 7-11
Figure 7-8. Heavy-Duty Vehicle Program Inspections (2016-2018) ... 7-12
Figure 7-9. Port of Oakland Inspections (2016-2018) ... 7-14
Figure 7-10. Marine Inspection Locations (2016-2018) ... 7-15
Figure 7-11. Truck and Bus Regulation Engine Requirements Timeline ... 7-20

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## Executive Summary

West Oakland residents have endured poor air quality and poor health for decades. In recent years, effective community organizing combined with government regulations and other interventions have improved conditions considerably. However, disparities persist. Air pollution and poor health conditions in West Oakland continue to be unacceptably high.

Recent State legislation (Assembly Bill, or AB, 617; 2017) opens new opportunities for further progress. AB 617 directs air regulators to identify communities with a high cumulative pollution exposure burden and to work with communities to develop solutions. Communities are empowered and air regulators are refocused on local impacts and local solutions.

Several Bay Area communities were identified through this process, with West Oakland being the first to go through the AB 617 emissions reduction planning process. Meaningful, ongoing engagement with community is a cornerstone of AB 617. The West Oakland Environmental Indicators Project (WOEIP) has a long, successful track record of organizing community members to advocate for action to improve air pollution and health. The Bay Area Air Quality Management District, the regional air pollution agency, partnered with WOEIP and the West Oakland Community Action Plan Steering Committee (Steering Committee) to prepare this plan: Owning Our Air: The West Oakland Community Action Plan. The Plan lays out a series of measures to be implemented over the next five years by state, regional, and local agencies to reduce pollution in the community. This Plan is unique thanks to the West Oakland community and key stakeholders who genuinely participated to shape its content.

Chapter 1 summarizes the purpose and scope of the Plan and describes the pollutants and impacts that are the focus of the Plan: fine particulate matter ($PM_{2.5}$), diesel particulate matter, and cancer risk from all toxic air contaminants.

Chapter 2 describes the West Oakland community, including the long history of industrial, port-related, transportation, and other sources generating pollution that impacts the community. Rates for life expectancy, asthma, cardiovascular disease and other health impacts are higher in West Oakland than Alameda County and the Bay Area, demonstrating some of the disparities experienced by West Oakland residents.

Chapter 3 describes the process to establish and convene the community Steering Committee that has provided the community wisdom, priorities, and voice behind this Plan.

Chapter 4 describes the goal and targets that the Steering Committee has established for this Plan. The overall goal is to protect and improve community health by eliminating disparities in exposure to local air pollution. To focus and evaluate progress toward this goal, the Committee established equity-based targets for $PM_{2.5}$, diesel particulate matter, and cancer risk in seven “impact zones” with the highest pollution levels. The targets are: by 2025, all West Oakland neighborhoods will have the same air quality as today’s average West Oakland neighborhood, and by 2030, all West Oakland neighborhoods will have the same air quality of today’s “cleanest” West Oakland neighborhood.

Chapter 5 describes the technical analysis that provides a foundation for this Plan. The analysis focuses on two questions: 1) What sources contribute most to community impacts, and; 2) How much must emissions be reduced, and from what sources, to meet the community's goal? Detailed estimates of local emissions from highways, local streets, Port-related activity, rail, stationary and other sources were developed for each of the seven zones, and local concentrations were modeled.

Chapter 6 describes the strategies proposed by the Steering Committee to achieve the goal and targets. Action will be needed from many entities, including the California Air Resources Board, the Air District, the Port of Oakland, the City of Oakland, and others. Proposed actions include regulations, grants and incentives, local ordinances, and more. Chapter 6 shows that rules on the books and other actions in place, in combination with the measures identified in this Plan move us closer to the equity targets identify in Chapter 4. But more actions are needed to achieve these targets.

Chapter 7 describes enforcement processes by the Air District and the California Air Resources Board (CARB) in West Oakland and proposes goals and strategies for each agency to enhance these efforts.

Chapter 8 describes methods to track implementation of this Plan's strategies.

Appendices to the Plan present the detailed technical analysis, details on Steering Committee meetings and other materials.

# Introduction

West Oakland is a shore-front community and home to approximately 26,000 Bay Area residents from diverse economic, social, and racial backgrounds. Freeways encircle, and busy arterials and boulevards crisscross, West Oakland. Adjacent to the community is the Port of Oakland, a large and complex maritime port, with related rail yards and rail lines. West Oakland has long been a neighborhood with strong African American roots, with the community unfortunately having been shaped by redlining practices and disinvestment. Within the past decade, West Oakland has seen increased development promising to bring economic growth and jobs to the City of Oakland and the community. However, many long-time residents are concerned that new growth will increase rents and displace existing residents who can no longer afford to live in the community.

West Oakland residents face many challenges within their community. Limited access to quality food and health services, poverty, and high unemployment rates create stressful conditions and poor health outcomes. Regional air pollution affects all neighborhoods in the San Francisco Bay Area. However, West Oakland experiences higher concentrations of air pollution compared to many surrounding communities. West Oakland experiences among the highest levels of diesel particulate matter – a toxic air contaminant – of any community in the Bay Area. West Oakland also sees higher rates of asthma, cardiovascular disease, premature death, and other poor health outcomes related to air pollution than other parts of Alameda County and the region. While many factors affect health conditions in West Oakland, this Plan seeks to reduce air pollution's contribution. The Plan's goal is to protect and improve community health by eliminating disparities in exposure to local air pollution.

# Chapter 1 – Purpose and Scope

In July of 2018, the West Oakland Community Action Plan Steering Committee (Steering Committee), including residents, community and local business leaders, and government agency representatives, committed to create *Owning Our Air: The West Oakland Community Action Plan* (Plan) to reduce the health effects of air pollution in West Oakland. The Plan is a joint effort between the West Oakland Environmental Indicators Project (WOEIP) and the Bay Area Air Quality Management District (Air District). Steering Committee members signed a Charter to define their work and made a one-year commitment to deep discussion and collaboration in the creation of this formal plan to improve health in their own community.

## THE PLAN

The Plan addresses the disproportionate air pollution burden faced by people who live, work, and play in West Oakland. The Plan presents Strategies to reduce both air pollution emissions and exposure to air pollution. The Steering Committee agreed on the Strategies and identified the government agencies that are responsible for implementing the Strategies. Most of the Strategies depend on action and collaboration between community members, business leaders, and government agencies.

No single agency can solve West Oakland's longstanding air pollution challenges on its own; progress requires action and coordination among many. The government agencies that will be integral to implementing the Strategies include the Air District, the City of Oakland, the Port of Oakland, the Alameda County Public Health Department, the California Air Resources Board (CARB), the Metropolitan Transportation Commission (MTC), among others.

## AB 617

Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) directs communities and air districts to work together to address air pollution and related health effects in overburdened communities like West Oakland. AB 617's community-focused approach provides a new framework for addressing the long-standing disparities in air pollution and related health effects across the state. Air pollution science and solutions are locally focused, and communities are empowered. This Plan documents the Steering Committee's effort to study air pollution in West Oakland and identify Strategies that will work towards eliminating West Oakland's air pollution burden.

## SCOPE

In approaching the challenge of this planning process, the Steering Committee was mindful of the numerous other planning activities occurring concurrently or previously in and for West Oakland. These include the West Oakland Specific Plan, the Port of Oakland Seaport Air Quality Plan, the West Oakland Truck Management Plan, and the (MTC) San Francisco Bay Area Goods Movement Plan. The Steering Committee compared the goals and intended actions of these plans and performed a gap analysis to reduce redundancy and identify impacts and mitigation that are not addressed elsewhere. The outcome of this gap analysis guided the selection of strategies defined in the Plan. The Plan also includes strategies from these plans that the Steering Committee strongly supports. By including these previously existing strategies, the Plan works to reinforce existing planning and build from those activities.

The Plan addresses these West Oakland air pollution sources:

- Mobile sources, such as heavy-duty trucks and light-duty vehicles that travel through West Oakland and on the surrounding roadways and freeways and are attracted to magnet sources[1] in and near West Oakland;
- Mobile sources that serve the Port of Oakland, such as cargo equipment, port trucks, locomotives, ocean-going ships, and harbor craft in the San Francisco Bay;
- Stationary sources in and adjacent to West Oakland such as the East Bay Municipal Utility District wastewater treatment plant, recycling facilities such as Schnitzer Steel, CASS, and California Waste Solutions, and gas stations, back-up diesel generators, and auto-body shops; and
- Area sources in West Oakland, such as restaurants and other businesses with commercial cooking, and backyard burning.

The Steering Committee also identified sources of pollution that are not included in the Plan's scope. The Plan does not study or attempt to address the background or regional sources of pollution that all Bay Area communities face, such as freeways, roadways, and industrial facilities in other parts of the Bay Area outside the immediate vicinity of West Oakland. The Plan also does not seek to address the burdens that residents of West Oakland shoulder because of poverty, lack of economic and educational opportunities, illegal dumping, and excessive noise, although some of these current conditions are described in the Community Profile (Chapter 2).

## POLLUTANTS

The Plan seeks to reduce emissions of and exposure to pollution from these sources. Specifically, the Plan investigates and seeks to reduce pollutants that have the greatest health impacts in West Oakland: fine particulate matter ($PM_{2.5}$), diesel particulate matter (diesel PM), and other toxic air containments (TACs).

### Fine Particulate Matter

Particulate matter (PM) is a mixture of solid particles and liquid droplets suspended in the air. Of these particles, those less than 2.5 micrometers in diameter, called fine PM or $PM_{2.5}$, pose the greatest risk to health. Health impacts from $PM_{2.5}$ include premature mortality, heart disease, and respiratory illnesses like asthma and bronchitis. Because of these health impacts, this Plan is concerned with reducing emitted $PM_{2.5}$ from all sources to reduce local exposures in West Oakland.

[1] Magnet sources include industrial sources and other businesses, parking lots, port docking facilities, warehouses, cargo staging and handling areas, fuels sales, truck and other mobile equipment maintenance facilities, weigh stations, and food service for drivers and other logistics workers.

### Diesel Particulate Matter

Diesel particulate matter is a form of PM that comes from the combustion of diesel fuel. Most diesel PM is in the $PM_{2.5}$ size range and has the same health burdens associated with fine PM. Diesel PM has also been identified as a toxic air contaminant and is known to cause cancer. In West Oakland, diesel PM is by far the most dominant air pollutant (over 90%) in terms of cancer risk. Because diesel PM has the health burdens associated with $PM_{2.5}$, is the dominant source of cancer risk from air pollution in West Oakland, and is identified by the community as a primary concern, this Plan highlights reducing exposures to diesel PM.

### Toxic Air Contaminants

In addition to diesel PM, many other compounds emitted into the air have been identified as being toxic. Compounds such as benzene, formaldehyde, acetaldehyde, hexavalent chromium, perchloroethylene, polycyclic aromatic hydrocarbons (PAHs), arsenic, and dioxins, are air pollutants known to cause cancer. In West Oakland, non-diesel sources of concern are on-road gas powered vehicles—mostly cars and light-duty trucks—and industrial stationary sources that use, process, or generate toxic compounds.

Many TACs are carcinogenic. But TACs also have non-cancer health impacts. Non-cancer health impacts range from eye irritation to respiratory diseases and nervous system disorders. The State Office of Environmental Health Hazard Assessment (OEHHA) has set reference levels above which health impacts from TACs may occur. In the Bay Area, TAC levels rarely exceed these reference levels[2] so that, in practice, the cancer-related toxicity usually drives regulatory policy, not the non-cancer impacts. Likewise, cancer risk reduction is the focus of this Plan. However, it is important to note that the strategies this Plan identifies that reduce TACs will have health benefits beyond reductions in cancer risk.

### Cancer Risk

Cancer risk is the likelihood that a person will develop cancer during their lifetime. Cancer risk from air pollution is generally expressed as the chance of cancer per million people similarly exposed to a toxic air pollutant. In this Plan, we report impacts from all TACs by combining their associated cancer risk. We combine TACs this way because it provides a succinct way to express the impacts of many compounds with different levels of toxicity. We report cancer risk by multiplying each TAC concentration by its associated cancer potency value[3] and by a constant number that accounts for an assumed exposure duration and breathing rate. Details are provided in the Technical Support Document (Appendix A).

[2] For example, the Reference Exposure Level for non-cancer health impacts for diesel PM is 5 micrograms per cubic meter (5 $\mu g/m^3$), which is greater than the highest levels in West Oakland.
[3] The State Office of Environmental Health Hazards Assessment (OEHHA) reports cancer potency values. See https://oehha.ca.gov/air/air-toxics-hot-spots.

# Chapter 2 – Community Description

Located in the urban core of the San Francisco Bay Area, West Oakland is bounded by Interstate 880 (I-880) to the south and west, Interstates 80 (I-80) and 580 (I-580) to the north, and Interstate 980 (I-980) to the east. The Port of Oakland and associated rail yards and rail lines lie to the south and west. The *Owning Our Air: The West Oakland Community Action Plan* (Plan) area includes the Port of Oakland and the northern industrial part of Jack London Square and is bounded by the Oakland Alameda Estuary to the south, the San Francisco Bay to the west, I-80 and I-580 to the north, and I-980 to the east. Figure 2-1 shows the Plan location and area boundaries.

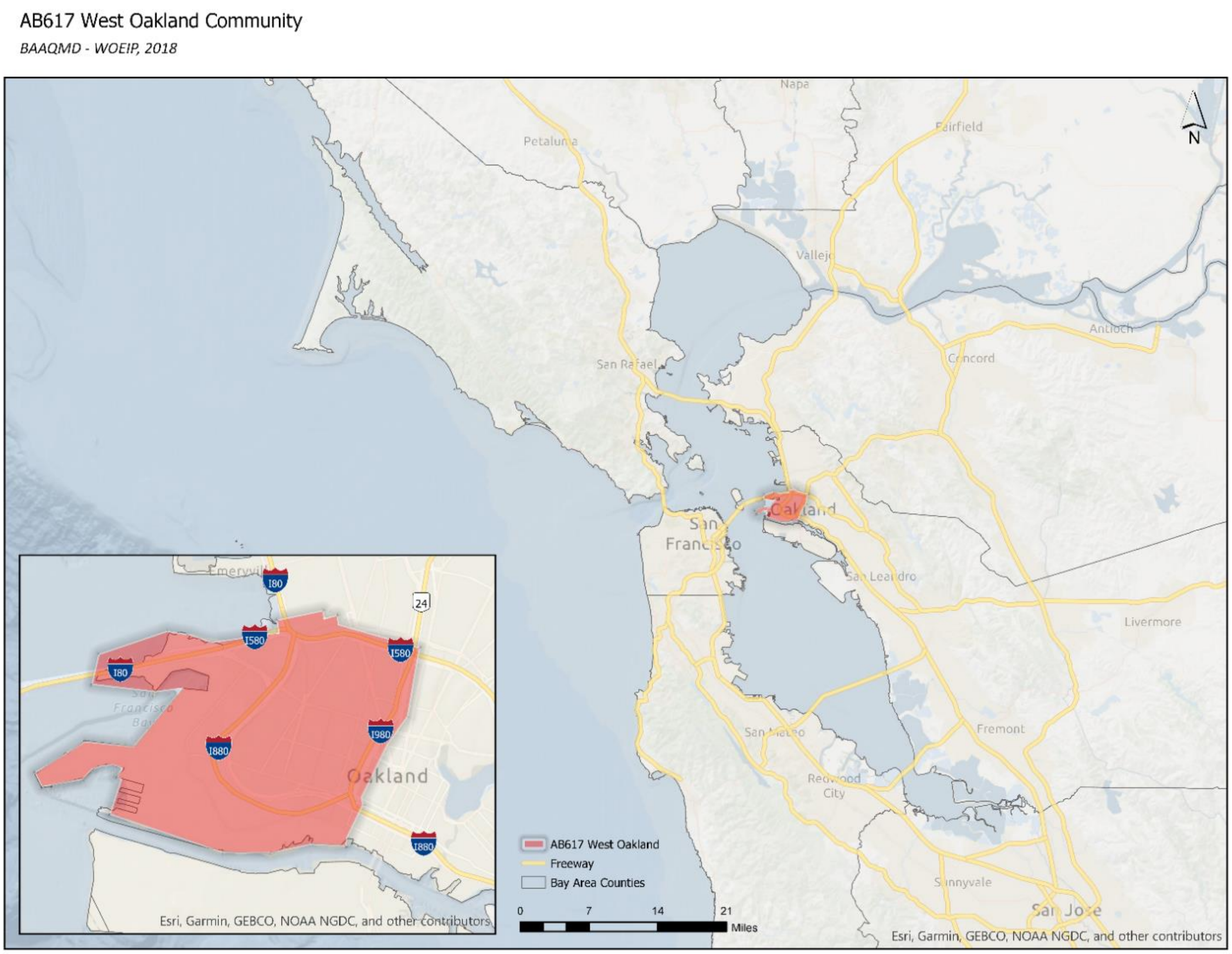


*Figure 2-1. Owning Our Air: The West Oakland Community Action Plan Location and Area Boundary*

## WEST OAKLAND HISTORY

Today, West Oakland is a mix of industrial, commercial, and residential uses, which is a direct result of 19th century industrialization and 20th century development patterns and public policy. In 1869, West Oakland became the final stop on the Transcontinental Railroad. The railroad brought workers from around the country to West Oakland, including African Americans, European Americans, and immigrants. The railroad brought other industries, attracted by overland access to the United States, and shipping access to the Pacific Rim. This industrial growth continued through World War II.[4]

Despite West Oakland's ethnically diverse beginnings, 20th century U.S. housing policy created a segregated West Oakland. Beginning in the 1930s, federal housing policy created maps to guide mortgage investment. By design, these maps directed investment away from communities of color, which were considered too risky for investment. This practice is commonly referred to as "redlining" because these neighborhoods were color-coded red. Figure 2-2 shows the 1937 Residential Security Map for the inner east Bay Area. Redlined communities include West Oakland, Emeryville, south and central Berkeley, and parts of Alameda and Oakland along the Oakland Alameda Estuary.[5]

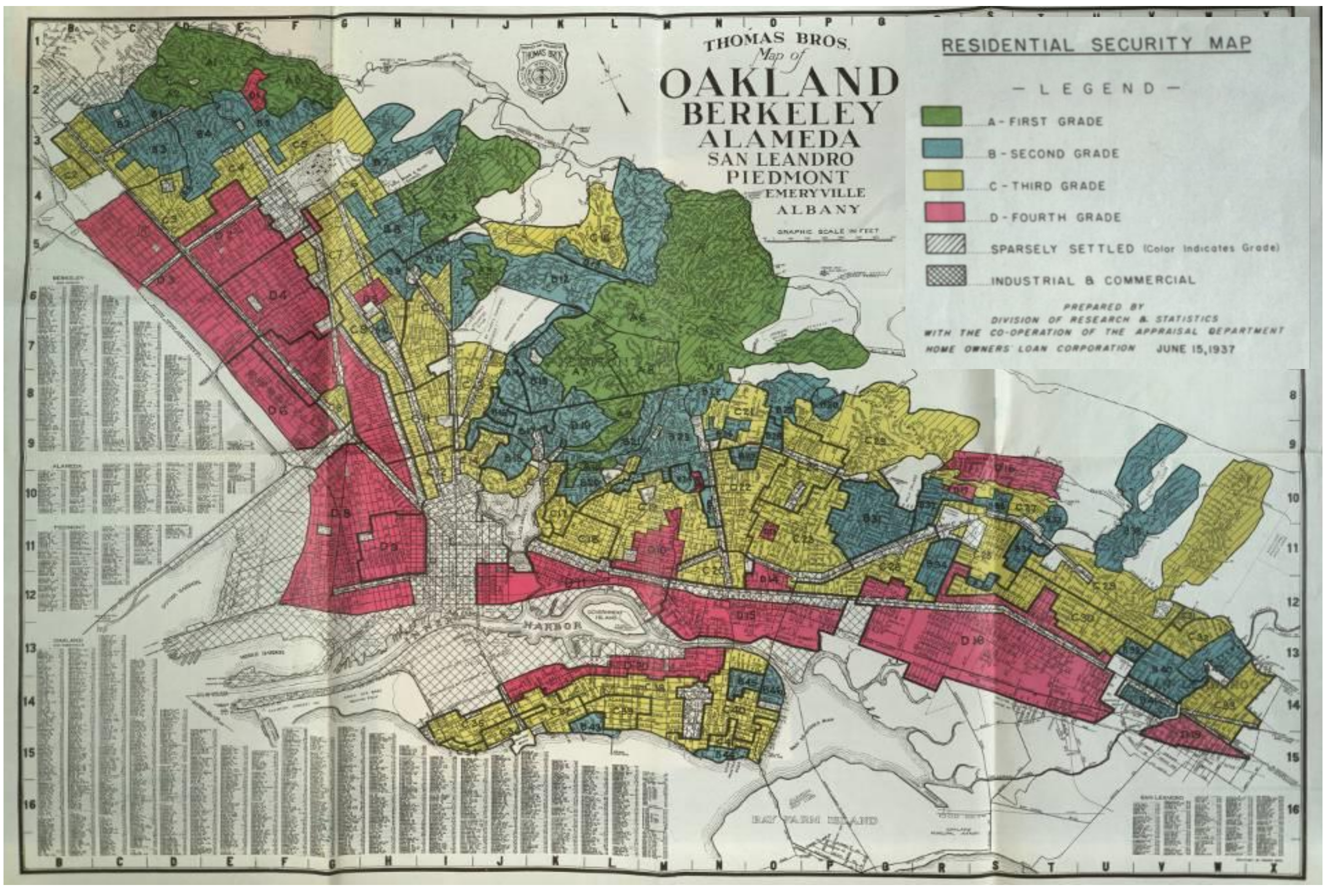


*Figure 2-2. Home Owners' Loan Corporation Redlining Loan Rating Policy (1937)*

Redlining was an explicitly discriminatory policy targeting African Americans and immigrants. These policies made it very expensive or impossible for residents in redlined communities to get

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[4] City of Oakland. West Oakland Specific Plan, 2014, p. 1-3.

[5] Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., "Mapping Inequality," *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed May 15, 2019, https://dsl.richmond.edu/panorama/redlining/#loc=13/37.7976/-122.3111&opacity=0.8&city=oakland-ca&sort=17.

homeownership or maintenance loans. This led to disinvestment and depressed housing values in these communities.[6] Although the 1968 Fair Housing Act banned discrimination in lending, redlining that occurred during the preceding 35 years contributed to both the built environment and the unequal distribution of wealth in the U.S. today.

The second half of the 20th century brought additional changes to West Oakland. While shipping occurred in Oakland since the 19th century, goods movement at the Port of Oakland grew dramatically during and after World War II. After World War II, other regional infrastructure projects displaced residents and disrupted commercial activity. In the 1950s, the Cypress freeway cut through West Oakland, bringing traffic, noise, and air pollution. In the late 1960s, the federal government built a new U.S. Post Office distribution center. In the 1970s, Bay Area Rapid Transit (BART) built elevated tracks and the West Oakland BART Station, displacing social, retail, and cultural activities along 7th Street. In 1989, the Loma-Prieta earthquake damaged the Cypress Freeway. Due to the successful activism of the West Oakland community, the rebuilt freeway was relocated. In 1999, the Oakland Army Base closed.[7]

### WEST OAKLAND TODAY

Today, people work, live, and play in West Oakland in proximity to the Port, the former Oakland Army Base (currently under redevelopment), regional infrastructure such as the Post Office, freeways, BART tracks, and other industrial uses including maritime-freight industry operations, large distribution centers, a concrete batch plant, a peaker power plant, and metal and other recycling facilities. West Oakland residents also work at the Port, U.S. Post Office, and other local freight and industrial operations, and drive these freeways and busy roadways as part of their jobs.

High levels of pollution are bad for everyone’s health, but children, seniors, and people with pre-existing illnesses are especially vulnerable. Children breathe at greater rates than adults due to the size of their young developing lungs, while seniors are more susceptible to diseases due to low lung defenses and the natural effects of aging. Figure 2-3 shows the locations that the City of Oakland zoned as residential as well as other locations where sensitive receptors spend a large amount of time (i.e. childcare centers, schools, library, playgrounds, recreation centers, and senior facilities).

[6] Richard Rothstein. The Color of Law: A Forgotten History of How Our Government Segregated America, 2017.
[7] City of Oakland. West Oakland Specific Plan, 2014, p. 1-3.

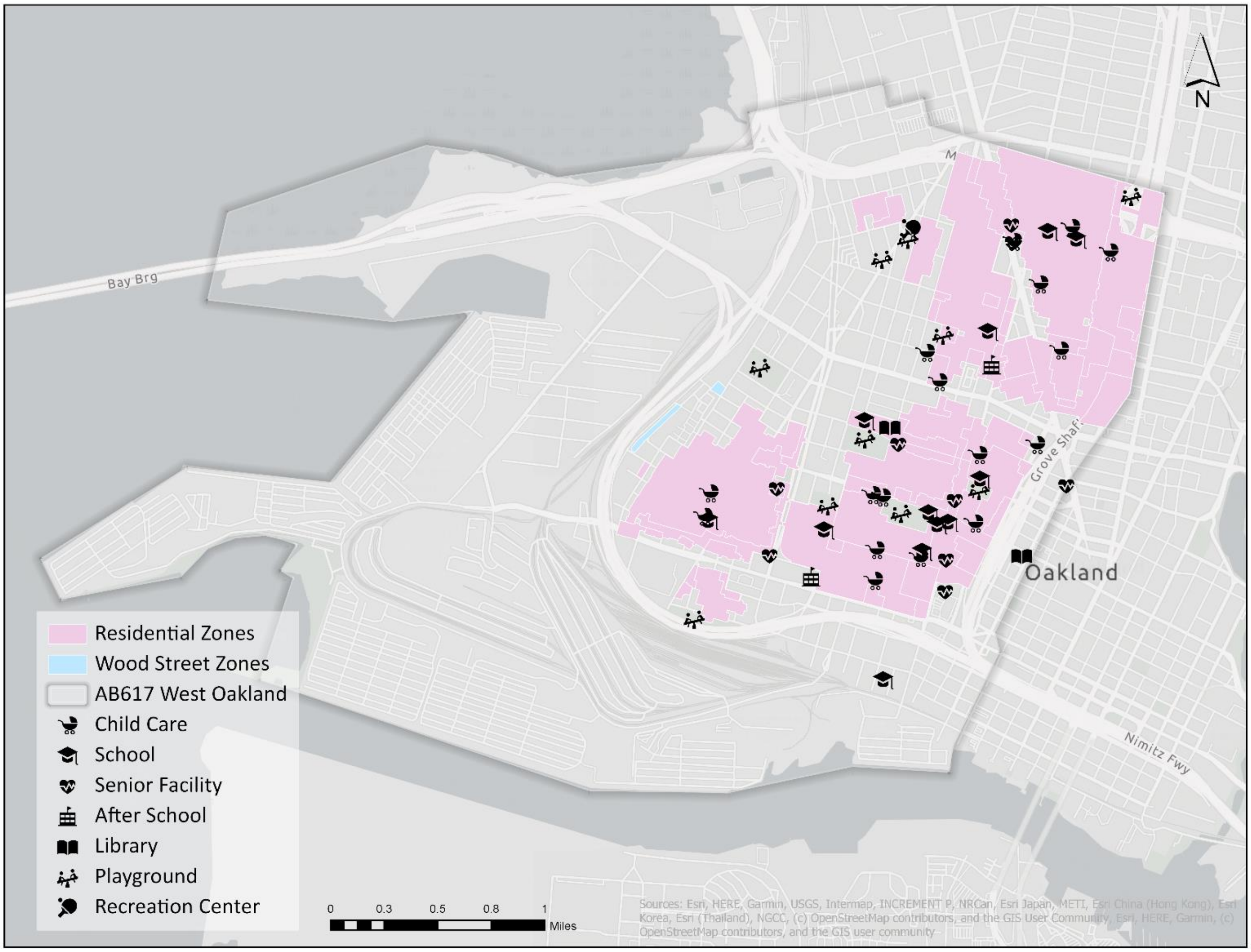


*Figure 2-3. Residential Zones and Sensitive Receptors in West Oakland*

Transportation infrastructure and industrial uses contribute to West Oakland's elevated levels of diesel particulate matter (diesel PM), fine particulate matter ($PM_{2.5}$), and toxic air contaminants (TACs). Because of high levels of local pollution exposure and poor health conditions, the Air District identified West Oakland as an impacted community in the Community Air Risk Evaluation Program (CARE).[8] Similarly, the State of California, using the CalEnviroScreen[9] screening tool, recognizes that across a wide array of environmental and health indicators that include air, water, and soil pollution, West Oakland is one of the most impacted areas in the state. Figure 2-4 shows that all West Oakland census tracts are in the top 50% of pollution-burdened census tracts, with the highest census tract scored at 89%.

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[8] Air District Community Air Risk Evaluation Program, April 2014.
[9] CalEnviroScreen https://oehha.ca.gov/calenviroscreen.

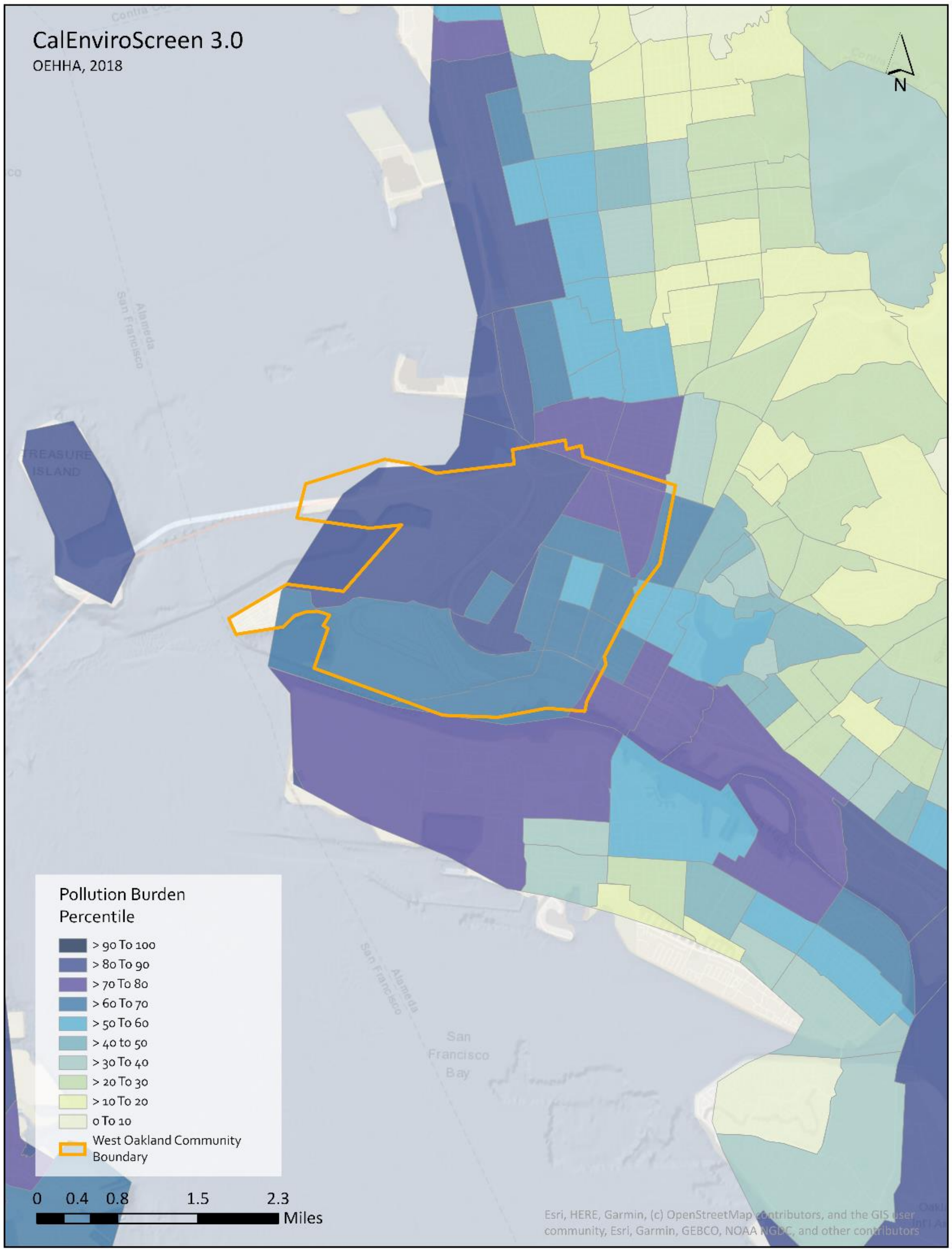



*Figure 2-4. CalEnviroScreen 3.0 Pollution Burden Percentile Score*[10]

[10] CalEnviroScreen https://oehha.ca.gov/calenviroscreen/maps-data.

## POPULATION CHARACTERISTICS

Approximately 26,000 people live in West Oakland.[11] Figure 2-5 shows the percentage of population by race based on the American Community Survey 5-year estimates (2013-2017) for the Plan area, Alameda County, and the Bay Area region. Approximately 42% of the population in West Oakland is African American, compared to 11% in Alameda County and 6% in the Bay Area as a whole.

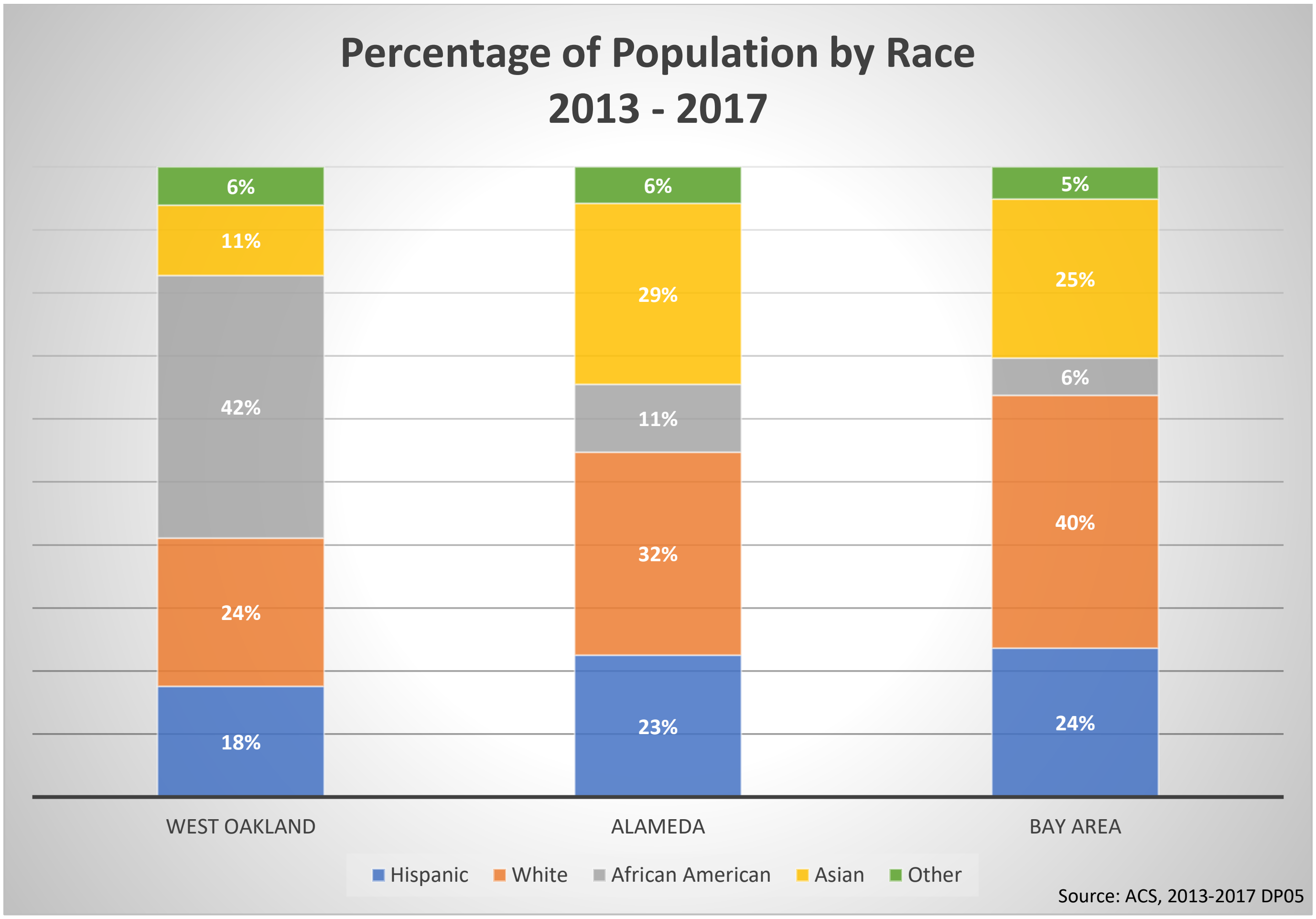



*Figure 2-5. Race Demographics for West Oakland, Alameda County, and the Bay Area*

West Oakland is predominately a low-income community. Approximately 52% of the population in West Oakland lives two times below the poverty level, compared to 25% in Alameda County, and 23% in the Bay Area as a whole. An estimated 5% of the population in West Oakland is unemployed, compared to 3% in Alameda County and the Bay Area as a whole. Figure 2-6 shows education level,

[11] American Community Survey (ACS) 2013-2017 DP05 (Census Tracts: 4014, 4015, 4016, 4017, 4018, 4022, 4024, 4025, 4026, 4027, 4105, 9819, 9820).

income, and employment status for West Oakland, Alameda County, and the region based on the American Community Survey 5-year estimates (2013-2017).[12]

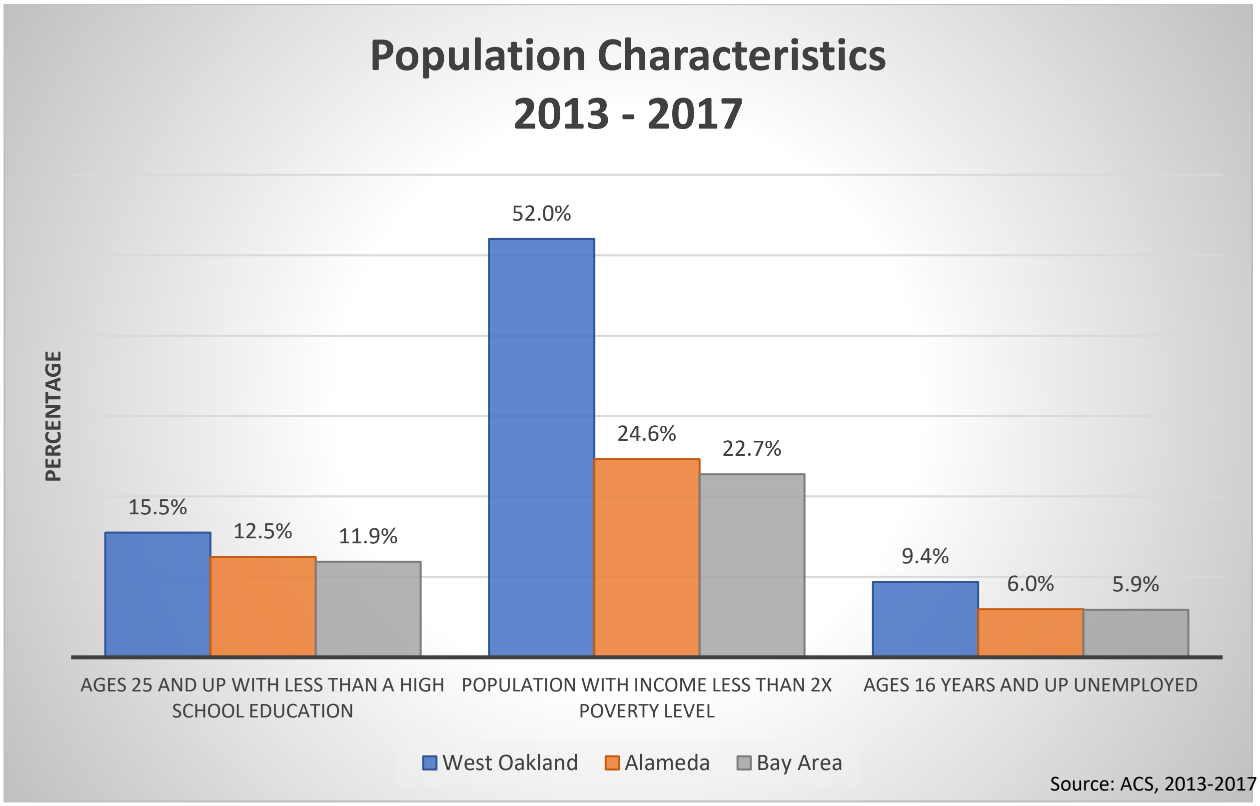


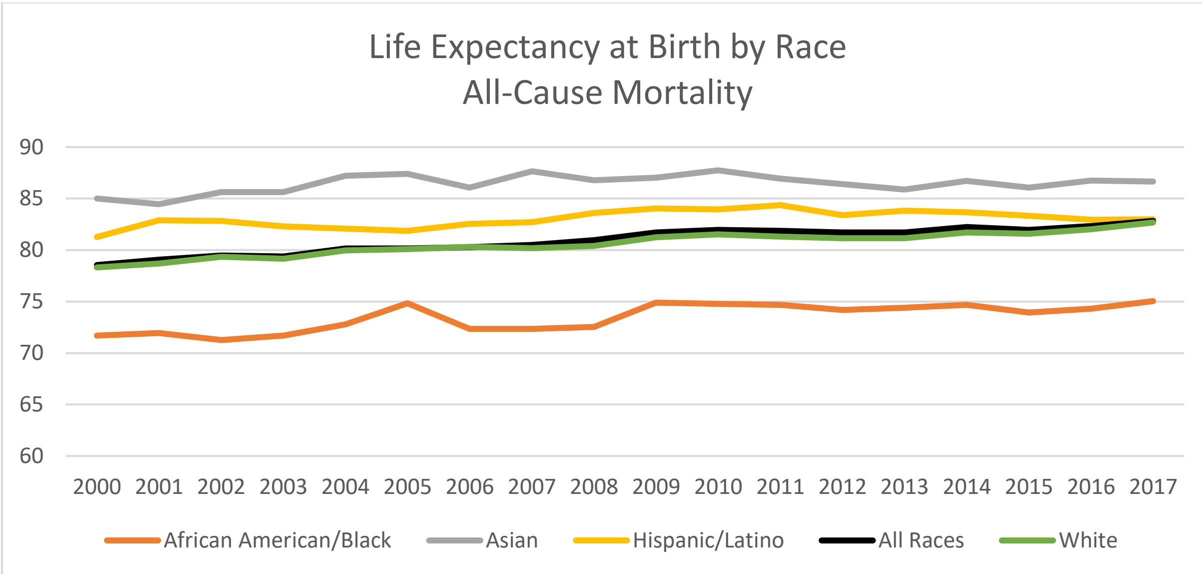

*Figure 2-6. Educational Attainment, Poverty, and Unemployment in West Oakland, Alameda County, and the Bay Area[13]*

## HEALTH CONDITIONS IN WEST OAKLAND

Figure 2-7 shows life expectancy in Alameda County has increased overall since 2000. However, African Americans in 2012 had a life expectancy of 74.7 years, living on average between 12 and 15 years fewer than those with the highest life expectancy. Figure 2-8 shows life expectancy by census tract providing a more detailed view of the uneven geographical distribution of life expectancy in Alameda County, with residents in West Oakland among those with the lowest life expectancy. In addition,

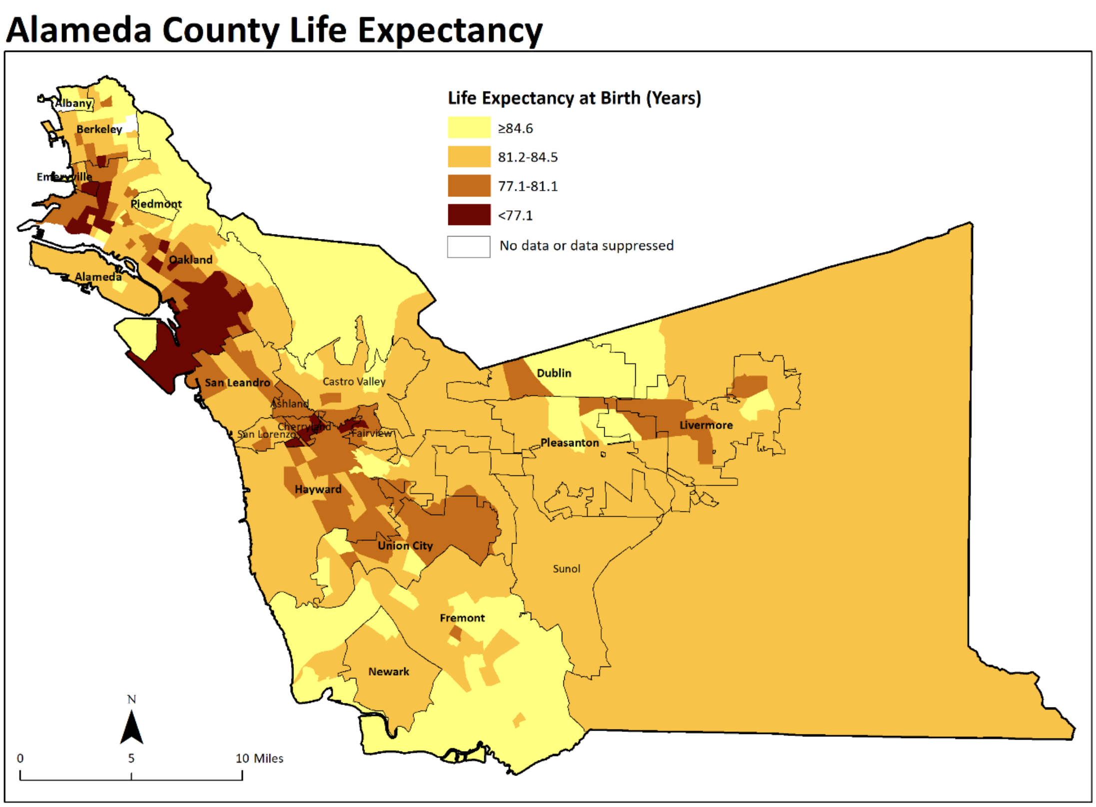
Figure 2-9 shows average life expectancy in West Oakland compared to Alameda County based on data from the Alameda County Department of Public Health.

[12]ACPHD CAPE, with data from American Community Survey (ACS) 2013-2017.
[13] ACPHD CAPE, with data from American Community Survey (ACS) 2013-2017.




Source: ACPHD CAPE, with data from Alameda County vital statistics files, 2000-2017

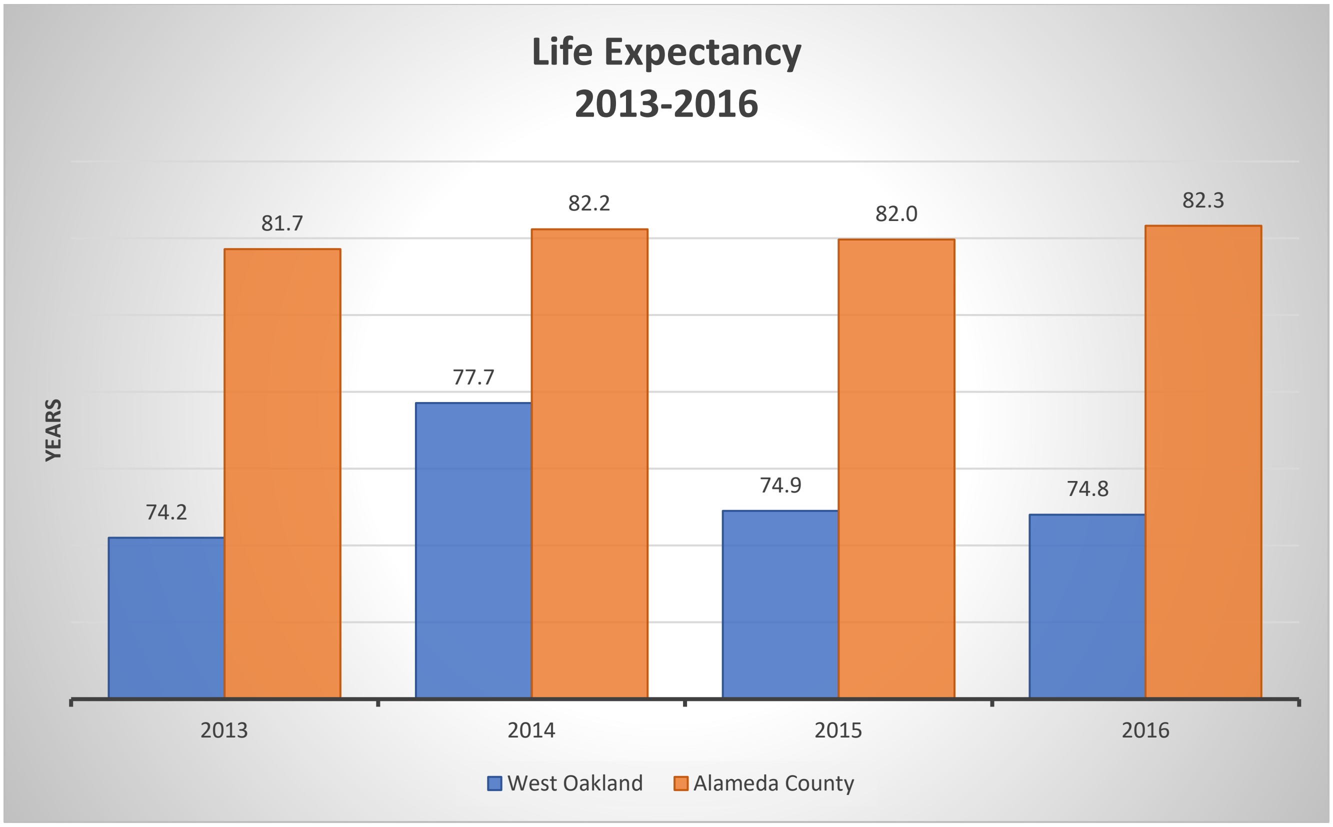
*Figure 2-7. Life Expectancy at Birth by Race/Ethnicity in Alameda County*[14]




Source: ACPHD CAPE, with data from Alameda County vital statistics files, 2013-2017.

*Figure 2-8. Life Expectancy at Birth for Alameda County*[14]

[14] ACPHD CAPE, with data from Alameda County vital statistics files, 2013-2017.




Source: ACPHD CAPE, with data from Alameda County vital statistics files, 2000-2017

*Figure 2-9. Life Expectancy at Birth for West Oakland and Alameda County*

*Chronic diseases cause most death and disability in Alameda County. There are major inequities in chronic disease burden by race/ethnicity, socioeconomic status, and place of residence. Studies show the detrimental effects that air pollution can have on health. For example, exposure to particulate matter is associated with asthma, bronchitis, emphysema, heart disease, stroke, and other health effects.*

Figure 2-10 shows the rate of various health metrics per 100,000 people in West Oakland and Alameda County as a whole, averaged over a two-year period based on data from the Alameda County Department of Public Health. West Oakland residents experience higher rates of deaths from cancer, heart disease and strokes,[15] and higher rates of asthma emergency visits and hospitalizations[16] compared to Alameda County. Asthma emergency visits for all ages in West Oakland was 76% higher than the Alameda County average. Asthma hospitalizations for West Oakland are about 88% higher than the County average and heart disease deaths are 33% higher, respectively. In addition, African

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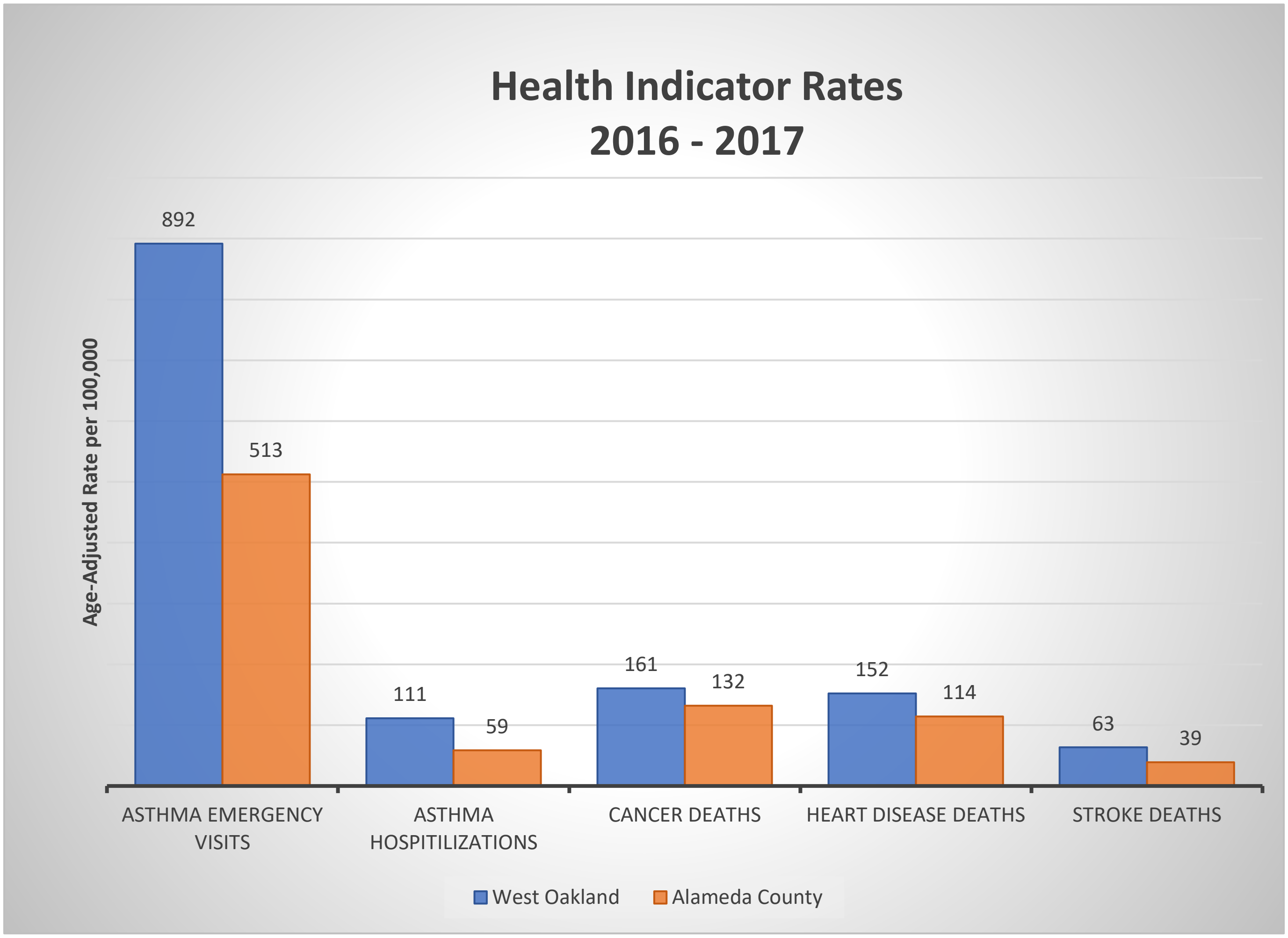
[15] ACPHD CAPE, with data from Alameda County vital statistics files, 2013-2017 using Census Tracts: 4014, 4015, 4016, 4017, 4018, 4022, 4024, 4025, 4026, 4027, 4105, 9819, 9820.
[16] ACPHD CAPE, with data from Alameda County vital statistics files, 2013-2017 using Zip Codes: 94607, 94608, 94609, 94612.

American males and females have approximately two times higher stroke death rates than any other racial/ethnic group in Alameda County.[17]

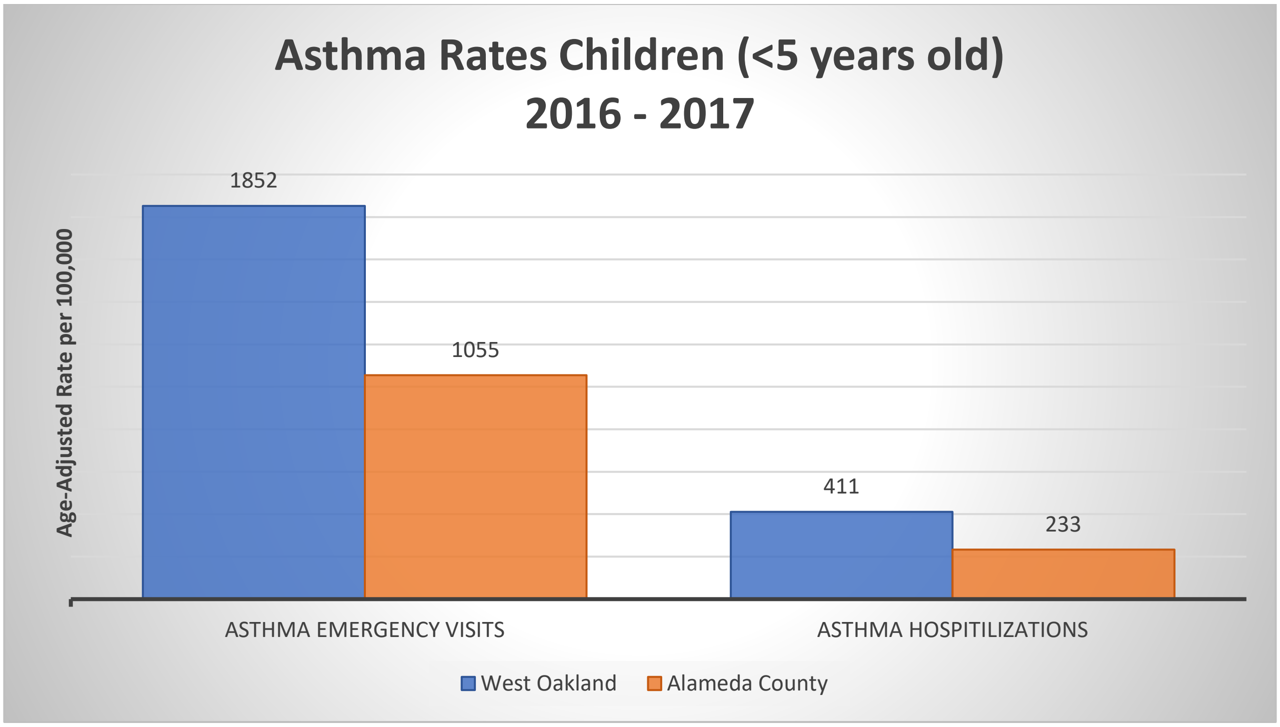



Source: ACPHD CAPE, with data from Alameda County vital statistics files, 2016-2017

*Figure 2-10. Health Indicators in West Oakland and Alameda County*

According to the Alameda County Department of Public Health, West Oakland experiences higher rates of asthma emergency department visits and hospitalizations for all groups compared to Alameda County,[18] but even greater rates for children under five (Figure 2-11). Asthma emergency visits and hospitalization for children in West Oakland during this time period are both approximately 76% higher than the Alameda County average.

[17] Alameda County Vital Statistics Files: Stroke Mortality by Gender and Race/Ethnicity 2010-2012.




Source: ACPHD CAPE, with data from Alameda County vital statistics files, 2016-2017

*Figure 2-11. Asthma Rates for Children Under 5 Years of Age in West Oakland and Alameda County*

## POLLUTION SOURCES

Air pollution affecting West Oakland residents comes from sources within West Oakland, as well as from sources throughout the region. This Plan focuses on identifying local sources and identifying measures to reduce emissions and exposure to local emissions. Examples of major sources in West Oakland include I-880 and other freeways, surface streets, truck-related businesses[19], drayage trucks, cargo-handling equipment, ships and harbor craft, locomotives, and stationary sources.[20]

The Air District and community partners have studied local pollution sources for many years and continued this analysis during the planning process. The Steering Committee identified sources of interest through review of Air District, City of Oakland, and Port of Oakland data sets and emissions inventories, air pollution modeling, air pollution measurements, community surveys and investigations, and their own local knowledge.

Through this process, the Steering Committee identified the following air pollution emission sources, many that can be seen in Figure 2-12:

[19] Truck-related businesses are businesses served by commercial trucks daily that either provide services to trucks, such as gas stations and truck repair shops, or truck yards from which trucks depart and return. These businesses are also referred to as “magnets” because their business operations attract trucks.

[20] The Air District is the agency responsible for issuing permits to sources that do not move and produce air pollution, otherwise known as permitted stationary sources.

1. Major highways surrounding the community. This includes I-880 on the west and south, I-80 and I-580 to the north, and I-980 to the east;
2. Permitted stationary sources, such as recycling facilities, a wastewater treatment plant, back-up diesel generators, gas dispensing facilities, and paint spray booths;
3. Truck-related businesses that generate truck trips in West Oakland and in and out of the Port of Oakland, including magnet sources that attract truck trips, such as the U.S. Post Office on 7th Street;
4. Port-related sources, including drayage trucks, cargo-handling equipment, ships and harbor craft, and trains traveling through the Union Pacific and BNSF rail yards located at the Port of Oakland; and
5. Construction and area sources, such as backyard burning, restaurants and businesses with commercial cooking operations.

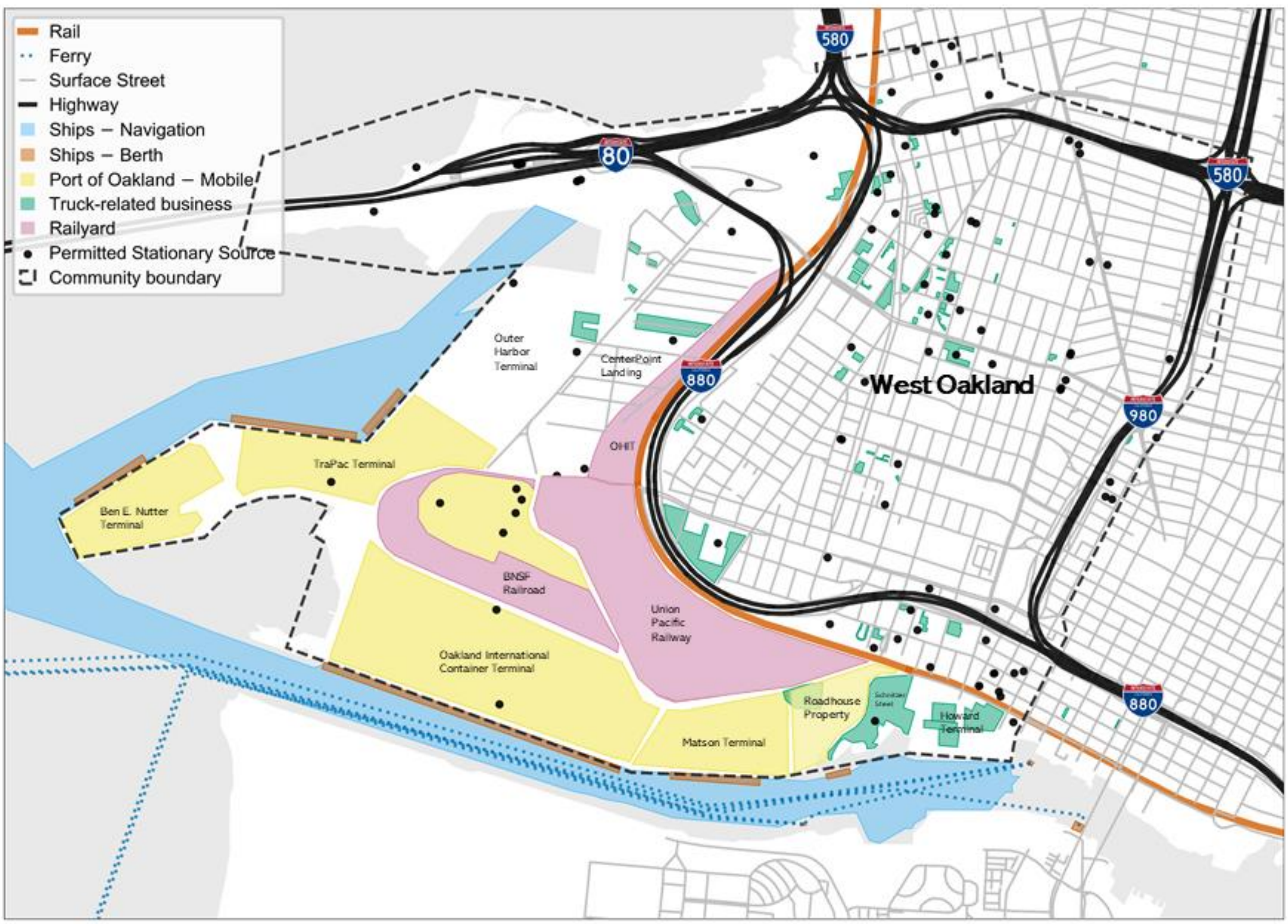



*Figure 2-12. Air Pollution Emission Sources in West Oakland*[21]

[21] Figure 2-12 is similar, but different than, Figure 5-2. Figure 2-12 presents the local pollution sources within the West Oakland Action Plan boundary while Figure 5-2 presents the sources included in the technical assessment's community-scale modeling.

# Chapter 3 – Community Engagement

The Plan reflects more than the past year of discussions, data evaluation, and decision-making. Decades of work by community activists, citizen scientists, and public and private sector workers have made this Plan possible. West Oakland is uniquely positioned to develop and implement this Plan because of this long-term work, spearheaded by the WOEIP, and because of the partnership between the WOEIP and the Air District.

## BACKGROUND

Founded in 1999, WOEIP conducts air quality research and advocates for better air quality in West Oakland. To accomplish this work, WOEIP collaborates with other community leaders, the Air District, Port of Oakland, City of Oakland, Alameda County Public Health Department, CARB, and the U.S. Environmental Protection Agency. Examples of this work include:

- Studies and reports: *Neighborhood Knowledge for Change: The West Oakland Environmental Indicators Project (2002), Clearing the Air: Reducing Diesel Pollution in West Oakland (2003),* and *Paying with Our Health: The Real Cost of Freight Transport in California (2006)*.

- Co-chairing the Port of Oakland's Maritime Air Quality Improvement Plan (2009) and the Seaport Air Quality 2020 and Beyond Plan; participating in the West Oakland Specific Plan (2014) working group, the Oakland Army Base Stakeholder Group, the Air District's Public Participation Plan External Stakeholder Advisory Group; and the West Oakland Toxic Reduction Collaborative; and organizing Willowfest and Earth Day celebrations.

- Community Air Risk Evaluation (CARE) Program work: WOEIP participated in the CARE Task Force and helped identify Bay Area communities with significant air pollution disparities and populations most vulnerable to air pollution. This effort deepened the relationship between WOEIP and the Air District. The CARE Program partnership also produced the West Oakland Truck Survey (2009). The West Oakland Truck Survey increased community awareness of air pollution health impacts and led to the early retirement of older diesel trucks polluting West Oakland.

## COMMUNITY READINESS & PARTNERSHIP

WOEIP is led by co-founders Ms. Margaret Gordon and Mr. Brian Beveridge. Their work ensures that West Oakland is ready to create and implement the Plan. WOEIP brings experience developing and providing air quality information and outreach to the community and is a natural co-lead for the Plan Steering Committee. This is why the Air District and WOEIP entered into the Co-leads Partnership Agreement to develop and implement the Plan. The Partnership Agreement outlines the roles and responsibilities of the Co-leads and ensures that the Plan is a community-led effort and not dictated by the Air District.

## ESTABLISHING THE WEST OAKLAND COMMUNITY ACTION PLAN STEERING COMMITTEE

WOEIP and Air District staff developed and implemented an outreach strategy to recruit Steering Committee members. This outreach and engagement process reached community-based organizations, faith-based organizations, school board members, business representatives, environmental justice advocates and public agencies, and is reflected in the membership of the Steering Committee.

Ms. Gordon and Mr. Beveridge brought a wealth of community contacts and active civic leadership to the outreach work and leveraged their existing relationships in the community. Ms. Gordon and Mr. Beveridge personally made phone calls, sent emails, and invited community members to attend the initial meeting. They are trusted community leaders, and the outreach process was successful because of their reputations and hard work.

Additional Air District and WOEIP staff and volunteers worked to make phone calls to local community leaders, write email blasts to community organizations, meet one-on-one with various local business contacts, and make weekly presentations at existing community meetings throughout West Oakland. Community members also canvassed door-to-door to build community interest in the Steering Committee.[22]

Individuals were invited to join the Steering Committee who live, work or have a business in West Oakland and had an interest in improving conditions in West Oakland. They also were expected to make a year-long commitment to attend meetings and agree to abide by the Steering Committee Charter which was developed by the Co-leads and shared with attendees at the Kick-Off meeting. Eighteen primary Steering Committee members joined the Steering Committee, and an average of 5-15 Steering Committee and community members combined attended most meetings.

The unique governing body is composed of a variety of residents, government agency representatives, public health workers, community organizers, entrepreneurs and local business representatives. The Steering Committee's composition reflects ethnic diversity and also encompasses a mixture of political, social, and cultural perspectives from West Oakland. These community leaders provide a breadth of experience within the community and ensure that the Plan is a true community-led process. Each Steering Committee member signed a participant agreement pledging their commitment to the process and received an orientation packet.

## STEERING COMMITTEE KICK-OFF MEETING

After several public workshops to provide an overview of the AB 617 Program and the community engagement component, the Steering Committee launched a kick-off meeting in July 2018. Ms. Margaret and Jack P. Broadbent, the Air District's Executive Officer/Air Pollution Control Officer, opened the event. Speakers included Libby Schaaf, Mayor of Oakland; Cestra Butner, President of the Board of Port Commissioners; and Lynette Gibson McElhaney, Councilmember for City of Oakland.

[22] See Appendix B for examples of outreach materials and meeting materials.


*Figure 3-1. Steering Committee Kick-Off Meeting, July 2018*


*Figure 3-2. Steering Committee Kick-Off Meeting Orientation Packet*

## STEERING COMMITTEE MEETING FACILITATION

The Co-leads decided to hire professional facilitators to support each Steering Committee meeting to address any power imbalance between the Air District and the community. The facilitators' role was to maintain a positive working environment among meeting participants throughout the Plan development process. Facilitators that are trusted by the community are critical in alleviating community concerns that government entities, such as the Air District, have too much power in the planning process. Having neutral facilitation fostered inclusivity and full participation by community members. The facilitators also structured each meeting to include a question and answer period to encourage public comments throughout the planning process. In addition, the facilitators guided the Steering Committee toward consensus on Plan elements and Strategies at critical points during the Plan's development.

## CHALLENGES AND LESSONS LEARNED

The Air District recommended West Oakland as a Year 1 community because air quality issues in the community are well documented, WOEIP has deep roots in West Oakland, and the Air District has an established relationship with WOEIP. AB 617 legislation establishes a very short timeline for communities to develop plans. Because WOEIP is so experienced in community organizing, air quality issues, and partnering with government entities, the Co-leads were able to meet tight timelines.

Even with WOEIP's experience in the community and the existing relationship between WOEIP and the Air District, the timeline for developing the Plan was short. After all public meetings, Steering Committee members and the public completed meeting evaluations. Participants often commented that they didn't have enough time to review and understand the technical information prepared by the Co-leads before the Steering Committee meeting. The compressed Plan timeline put pressure on all partners. It was extremely difficult to deliver meeting materials to Steering Committee members and the public in advance of meetings to adequately study before each meeting. Due to the short timeframe for Plan development, there was limited time to return to topics discussed at previous meetings. The Co-leads recommend that in the future, community plans not be limited to a one-year development period.

Lack of state-of-the-art meeting facilities in West Oakland also was a limitation faced by the Co-leads. This is likely to be an issue in other impacted communities as well. Several meetings were held in downtown Oakland, but the Co-leads wanted most of the Steering Committee meetings to be in the community of West Oakland and in the same location. The West Oakland Senior Center was available and rented for monthly meetings. The Senior Center is centrally located, but it lacks communication amenities, such as a sound system and video screens, and lacks a kitchen. For each meeting, staff had to assemble and disassemble the room, bring a sound system, laptops, projection screens, and dinner for attendees. This meant that monthly Steering Committee meetings were extremely labor-intensive for the Co-leads, and less time was available for other activities, such as preparing materials or continuing outreach work to spread the word about the Plan. When Steering Committee meetings included world café style events, the noise could be distracting and uncomfortable.

Engaging young people in the process was also difficult for the Co-leads, and the West Oakland Senior Center was not the best location to hold meetings to attract youth participation. It also was not a location familiar to the young adults or young families in the community, who might have preferred a local school. Space at the meeting location and funds to offer childcare would have helped more community member adults with young children attend meetings regularly. Funding for childcare services at meetings, and Steering Committee member transportation to and from meetings, also would help Steering Committee members attend more meetings.

Additional funding to support community partners to pay for staff, community outreach, event locations, food, material development, and communications equipment, would be extremely helpful for future efforts. For future year plans, new community relationships and knowledge need to be developed. It is essential that adequate time is included in the AB 617 process to build these community relationships that are recommended for Year 2 and later year plans. Funding for capacity building is imperative for communities to effectively participate in AB 617 implementation. Given more time to develop materials and relationships, Co-leads would also have more time to partner with youth organizations or schools to work with educators to engage youth in the Plan. (See Appendix D for a description of available state Community Air Grants to fund capacity building.)

## STEERING COMMITTEE PROGRESS - SUMMER 2018 TO SUMMER 2019

### Summer 2018

At the initial kick-off meeting, Steering Committee members heard presentations on the draft Seaport Air Quality 2020 and Beyond Plan from the Port of Oakland, an update on the West Oakland Truck Management Plan from the City of Oakland, and an overview of existing data and studies that examine cumulative health impacts in West Oakland from the Environmental Defense Fund. Participants were also given the opportunity to comment on the Steering Committee Charter at this meeting. In addition, the Co-leads let participants know that language interpretation services would be available at Steering Committee meetings upon request.

### Fall 2018

In September 2018, the Steering Committee and public mapped pollution sources and locations where people are exposed to air pollution in West Oakland, such as homes, schools, and recreation facilities. The Steering Committee expressed support for additional Air District and City enforcement of existing regulations and ordinances, including truck idling, parking, and routes; better maintenance of street trees and illegal dumping removal; and better government response to backyard burning and odor nuisances. Figure 3-3 shows examples of these map-making activities, which helped the Co-leads develop the maps in Chapter 2 showing sources and receptors of pollution. The Co-leads also presented information about methods to identify and verify pollution sources. Later in the fall, the Steering Committee learned about emissions inventories and modeling methodologies, health effects of air pollution, and emissions reduction strategies the Steering Committee might include in the Plan.

### Winter 2018/2019

In December 2018, the Steering Committee compiled a list of potential strategies to reduce emissions and exposure to air pollution in West Oakland. The Steering Committee considered strategies to address emissions from land-use policies, emissions from trucks and other mobile sources (i.e. ocean-going vessels, harbor craft, locomotives, and off-road construction equipment), and stationary sources; and existing and proposed exposure reduction strategies, such as indoor air filters and asthma management programs.


*Figure 3-3. Steering Committee Mapping West Oakland*

In January 2019, the Steering Committee performed a gap analysis of existing and proposed plans that affect the area, determining additional needs and identifying additional emissions reduction strategies to address these gaps. The Steering Committee voiced support for land use and transportation strategies to move truck related businesses, relocate truck parking and truck routes out of residential neighborhoods in West Oakland, require indoor air filtration, and advocate for more enforcement to respond to truck parking, routing, and idling complaints.

In February 2019, the Steering Committee discussed Environmental Defense Fund (EDF) geographic impact zones, which are areas with the highest impacts from air pollution. The Steering Committee worked on an impact zone exercise to prioritize strategies and develop tools for addressing problem areas.

### Spring 2019

In March 2019, the Air District presented the preliminary findings from the air quality modeling work to the Steering Committee (see Chapter 5). The presentation explained how modeling can help identify the air pollution sources in West Oakland at the neighborhood-level, block-by-block. The presentation included maps of air pollution at seven zones within West Oakland. The presentation and maps also identified West Oakland's proportion of air pollution from *local* sources, versus the proportion of air pollution from *regional* sources.

That same month, the Steering Committee reached agreement on draft Strategies. In April 2019, the Steering Committee discussed the Plan goal and targets (see Chapter 4) and examined possible metrics and methods to track progress. In May 2019, the Steering Committee began to consider the Plan implementation phase. In June 2019 the Steering Committee convened a panel of agency leaders to discuss implementation, reflecting the fact that progress in local air quality and health will require actions by multiple governmental agencies and other stakeholders. Later in June and in July 2019, the Steering Committee reviewed and commented on a confidential draft of this Plan.

### Summer 2019

In June 2019, the Steering Committee had two meetings. On June 5, representatives from CARB, City of Oakland, Alameda County Public Health Department, Port of Oakland, and Alameda County Transportation Commission spoke on a panel that discussed how to successfully implement the Plan. On June 26, the Steering Committee reviewed and commented on an internal draft of *Owning Our Air*. Between the June 26 meeting and July 8, the Steering Committee submitted approximately 100 comments in person, via email, and through Open Air Forum, the Air District's web-based commenting platform.

At the July 10 Steering Committee meeting, WOEIP and Air District staff updated the Steering Committee on the status of responses to the Steering Committee's comments on the internal draft Plan. The Steering Committee was again given an opportunity to comment on the internal draft. The Steering Committee gave direction to the Co-leads to continue making updates based on Steering Committee's comments, and to release the public draft of *Owning Our Air*. On July 23, the draft *Owning Our Air* was released for public review and comment. A press release and e-blast were sent from the Air District to interested parties. On July 24, the Draft Environmental Impact Report for the draft *Owning Our Air* was also released.

After releasing the public draft of *Owning Our Air*, the Steering Committee met on August 7 to prepare for the August 17 Town Hall meeting to introduce *Owning Our Air* to the public. The Town Hall was well attended by 108 people, representing West Oakland residents, community leaders, business owners, and other stakeholders. Opening remarks were made by John Bauters, Air District Board Member and Emeryville Council Member; Ms. Margaret Gordon, WOEIP co-founder; Libby Schaaf, Mayor, City of Oakland; Honorable Nancy Skinner, California State Senator, District 9; and Honorable Rob Bonta, California Assembly Member, 18th Assembly District. Four Steering Committee members representing BayPorte Village Neighborhood Watch, New Voices are Rising, Prescott Oakland Point Neighborhood, and AB Trucking provided their perspectives on why they became involved and their participation in the Plan's development. Representatives from the Air District, CARB, Port of Oakland, and City of Oakland all spoke about their agency's commitment to implementing the Plan.

Meeting agendas, materials, and presentations from all Steering Committee meetings listed above are available at [www.baaqmd.gov/ab617woak](http://www.baaqmd.gov/ab617woak).

## LOOKING AHEAD

In the fall, the Air District Board of Directors will conduct a hearing and consider adopting the Plan and submitting the Plan to CARB. In December, CARB will meet in West Oakland to conduct a hearing on the Plan and consider approving the Plan. Upon approval of the Plan, the Steering Committee will continue to meet quarterly to advance and track Plan implementation.

# Chapter 4 – Goal and Targets

**The goal of the Plan is to protect and improve community health by eliminating disparities in exposure to local air pollution.** The 2025 targets seek to improve air quality exposure in West Oakland neighborhoods so that all neighborhoods meet the exposure conditions of today's average West Oakland neighborhood. The 2030 targets seek to improve air quality exposure in West Oakland neighborhoods so that all neighborhoods meet the exposure conditions of today's least polluted West Oakland neighborhood. This chapter describes the development of the goal and targets. The goal and targets will serve as a framework to measure Plan implementation progress.

## GOAL DEVELOPMENT

The Steering Committee developed the Plan goal after careful consideration, which included sharing and listening to each other's knowledge of West Oakland. This collective knowledge of West Oakland includes observations about the location of air pollution sources and the location of people in West Oakland.

Observations about air pollution sources in West Oakland included the source type, including mobile sources such as trucks, and stationary sources such as the East Bay Municipal Utility District facility. Observations about the location of people in West Oakland included residential areas, schools, parks, and hospitals. The Plan incorporates this local knowledge and allows the Steering Committee to consider both emissions and exposure to emissions at the neighborhood level, block-by-block, in West Oakland.

The Steering Committee also considered technical presentations from the Air District, CARB, the Environmental Defense Fund, and others. The Air District presented information about each agency's programs, providing data at the local, regional, and state level. The Environmental Defense Fund presented findings from data collection studies in West Oakland.

The Steering Committee learned that all Bay Area communities are exposed to air pollution. For example, Figure 4-1 presents the estimated cancer risk from regional and local air pollution in West Oakland based on the Air District's regional and local model estimates. In West Oakland, an additional excess cancer risk of 425 per million people can be attributed to air pollution sources outside of West Oakland that affect all Bay Area communities, while an excess cancer risk of 200 per million people can be attributed to modeled local air pollution sources.[23] This additional local risk is primarily due to the large number of goods movement, infrastructure, and industrial uses within the Plan area.

[23] As stated in Chapter 2, only 26,000 people live in West Oakland. However, health professionals typically express cancer risk per one million people.

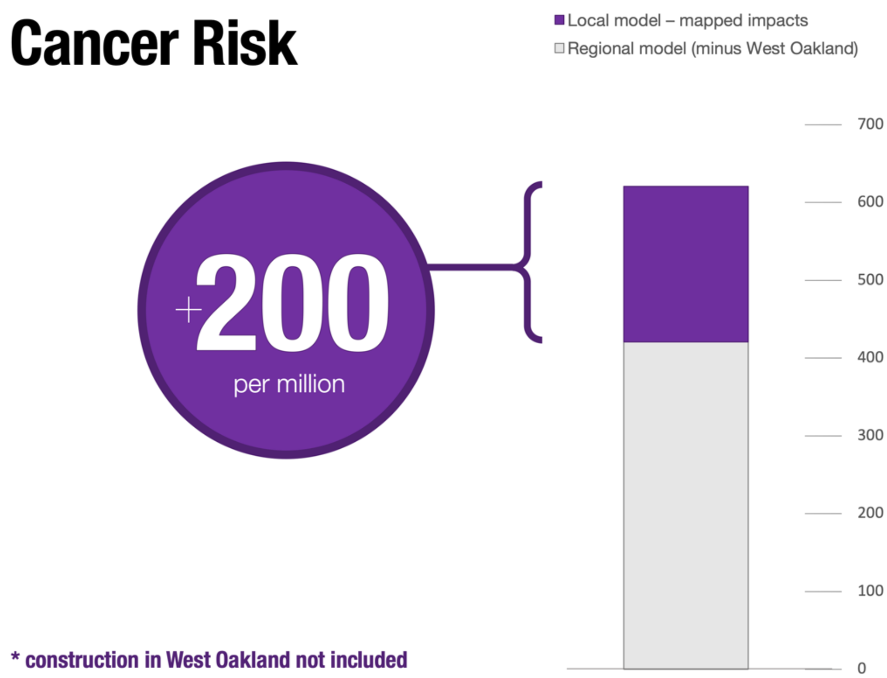



*Figure 4-1. Regional and Local Cancer Risk in West Oakland (see Table 5-1 for a complete list of sources included and not included in the model)*

The Steering Committee further investigated how different neighborhoods experience different levels of air pollution exposure. To better understand local variations in air pollution, the Steering Committee studied maps developed by the Environmental Defense Fund (EDF) showing local air quality measurements collected from May 2015 to May 2016 throughout West Oakland. Figure 4-2 displays areas identified by WOEIP and EDF as residential neighborhoods that experience higher pollution levels.[24] The red dots are locations where black carbon was measured above the median in West Oakland. The blue areas represent residential land-use parcels. The Steering Committee focused on developing strategies intended to eliminate the local disparity in exposure to air pollution in the numbered zones.

[24] The maps are generated using air pollution measurements collected in a study by the Environmental Defense Fund and partners and published in Environmental Science & Technology Journal 2017 51 (12), 6999-7008, https://pubs.acs.org/doi/pdf/10.1021/acs.est.7b00891?rand=3y8c9oq7.

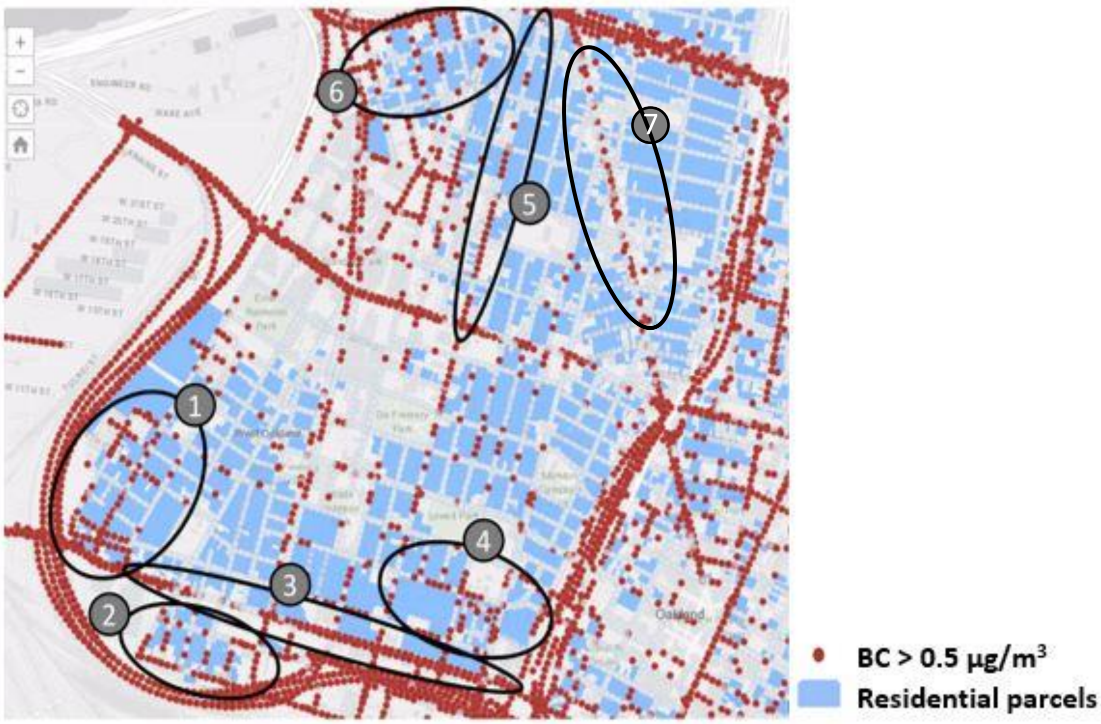



*Figure 4-2. West Oakland Neighborhood Zones and areas with high measured levels of black carbon*

Building on the neighborhood zones identified by WOEIP and EDF, the Air District used its local model to estimate exposure to various pollutants in West Oakland at the neighborhood level. For example, Figure 4-3 shows variations in cancer risks across West Oakland that the Air District's local model attributes to local sources. Cancer risk from local sources ranges from a high of approximately 350 per million (3rd Street) to a low of 110 per million in the Hoover-Foster neighborhood. Figure 4-3 also presents the contribution from the port, rail, and truck categories in the zones with the highest cancer risk. More details about the modeling and emissions are presented in Chapter 5.

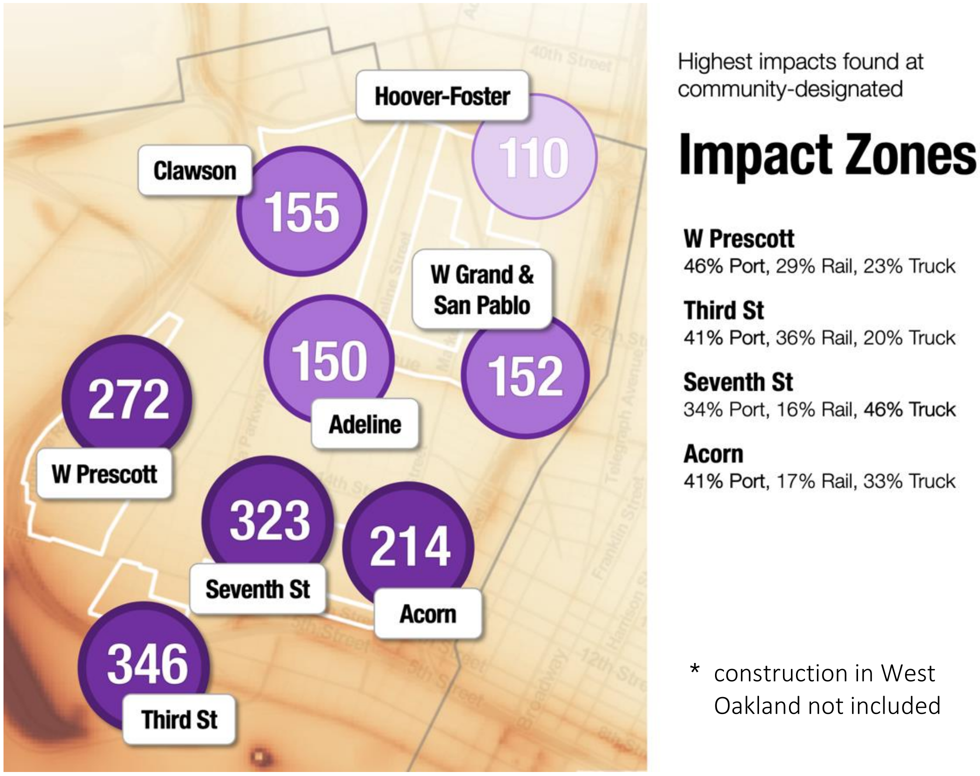



*Figure 4-3. West Oakland Neighborhoods with Different Local Cancer Risks*

## TARGET DEVELOPMENT

The Plan targets will help the Steering Committee determine if we are on track to meet the Plan's goal. The Steering Committee developed the Plan targets to address disparities within West Oakland. Addressing disparities in exposure to air pollution within West Oakland will also help make progress towards eliminating disparities between West Oakland and the Bay Area at large. The targets can be described as follows:

- **By 2025**, throughout West Oakland, all neighborhoods will experience conditions of the ***average*** West Oakland residential neighborhood, as they existed during the base year (2017).

- **By 2030,** throughout West Oakland, all neighborhoods will experience conditions of the ***least*** impacted residential neighborhood during the base year (2017), i.e., today's "cleanest" neighborhood in West Oakland.

Presented below are the specific targets for diesel PM, $PM_{2.5}$, and cancer risk, which address emissions and exposure from local sources only. The targets define the desired future conditions which are based on the baseline (2017) model year findings. In addition, these conditions reflect the impact of local sources excluding the regional background. More details on the development of the targets based on the emissions inventory and modeling is provided in Chapter 5.

### Diesel Particulate Matter (diesel PM) Target

- By 2025, local emission sources will contribute to the average West Oakland residential neighborhood a concentration of diesel PM of no more than 0.25 $\mu g/m^3$ (micrograms per cubic meter).
- By 2030, local emission sources will contribute to the average West Oakland residential neighborhood a concentration of diesel PM of no more than 0.13 $\mu g/m^3$.

### Fine Particulate Matter ($PM_{2.5}$) Target

- By 2025, local emission sources will contribute to the average West Oakland residential neighborhood a concentration of $PM_{2.5}$ of no more than 1.7 $\mu g/m^3$.
- By 2030, local emission sources will contribute to the average West Oakland residential neighborhood a concentration of $PM_{2.5}$ of no more than 1.2 $\mu g/m^3$.

### Cancer Risk Target

- By 2025, local emission sources will contribute to the average West Oakland residential neighborhood a cancer risk of no more than 200 in a million.
- By 2030, local emission sources will contribute to the average West Oakland residential neighborhood a cancer risk of no more than 110 in a million.

### Emission Reduction Targets

Achieving these equity-based concentration targets will require reducing emissions from sources impacting the West Oakland community. The Air District has worked with the Steering Committee and CARB to define and quantify emissions reduction targets that support tracking progress towards the Plan's goals. Chapter 6 discusses how specific measures in the Plan, for which we can quantify emission reductions, produce concrete emission reductions for diesel PM, $PM_{2.5}$, and other toxics and make progress toward the equity-based targets.

The reduction benefits quantified in Chapter 6 are the Plan's emission reduction targets.

Table 6-1 shows the differences in diesel PM emissions in 2024 forecasts with and without the Plan compared to the base year. The total diesel PM emission benefits of the Plan in 2024 relative to 2024 without the Plan is about -2.4 tons per year (-10.5%). The reductions in diesel PM in 2024 with the Plan relative to the base year is about -7.5 tons per year (-27%). As shown in Table 6-1, the emission reduction target for diesel PM of 2.4 tpy is largely driven by reductions in emissions from port-related sources (1.9 tpy).

Table 6-2 shows the differences in cancer risk-weighted emissions in 2024 forecasts with and without the Plan compared to the base year. There is about a 12% reduction in total cancer risk-weighted toxic emissions from the Plan in 2024, relative to 2024 without the Plan. There is about a 27% reduction in cancer risk-weighted toxic emissions in 2024 with the Plan, relative to the base year. As shown in Table 6-2, while the cancer risk-weighted emissions are an aggregation of multiple air toxic compounds, diesel PM is responsible for over 90% of total cancer risk in West Oakland. Therefore, the emission reduction target for diesel PM addresses cancer risk, and targets were not established for any other individual air toxic compound. (See Appendix A, Part 1, Section 4.1.3 for a discussion of cancer risk modeling and assessment.)

Table 6-3 shows the differences in $PM_{2.5}$ emissions in 2024 forecasts with and without the Plan compared to the base year. The total $PM_{2.5}$ emission benefits of the Plan in 2024, relative to 2024 without the Plan, is about -3.7 tons per year (-3%). The reductions in $PM_{2.5}$ in 2024 with the Plan, relative to the base year, is about -0.4 tons per year (-0.3%). For $PM_{2.5}$, the emission reduction target is 3.7 tpy, which is, and are primarily associated, with port-related sources (1.8 tpy) and road dust from surface streets (1.46 tpy).

An important finding of the technical assessment for the Plan is that the quantifiable emission reductions identified so far do not achieve the equity-based targets: more emission reductions, from sources yet to be determined, or analyzed, are needed. For example, we expect progress towards achieving the equity-based targets will also come from land use policies and other Strategies identified but not quantified in this Plan.

### PROXIMITY-BASED GOALS

The CARB Community Air Protection Blueprint calls for plans prepared under AB 617 to include proximity-based goals to reduce exposure at sensitive receptors. Reducing exposure of the most vulnerable members of the community is a priority of this Plan. Steering Committee members helped identify sensitive receptor locations in West Oakland and developed strategies to reduce exposure in these areas. Figure 2-11 shows residential areas, schools, and other sensitive receptor locations in the Plan area, whereas Figure 4-2 shows “impact zones” in West Oakland that are exposed to higher local levels of pollution and that are the focus of this Plan’s strategies. Many of the strategies in this Plan will help reduce exposure for sensitive receptors, such as measures addressing conflicting land uses, relocating truck routes, planting trees and other vegetative barriers, installing high efficiency air filtration, and other approaches. During Plan implementation, the Steering Committee will emphasize strategies that provide the greatest benefit to the most vulnerable people and locations.

### SUMMARY

The goal to protect and improve community health by eliminating disparities in exposure to local air pollution reflects the stark reality that such local disparities in exposure exist. The Steering Committee will track progress towards the goal during the Plan implementation phase based on the metrics in the Plan targets. The 2025 targets are to improve air quality exposure in West Oakland neighborhoods so that *all* neighborhoods meet the exposure conditions of today’s *average* West Oakland neighborhood. The 2030 targets are to improve air quality exposure in West Oakland neighborhoods so that *all* neighborhoods meet the exposure conditions of today’s *least polluted* West Oakland neighborhood, Hoover-Foster. Achieving the exposure conditions in the least polluted West Oakland neighborhood puts West Oakland on path towards eliminating the difference between exposure in West Oakland and the rest of the Bay Area. Figure 4-4 summarizes the goal and targets for the Plan.

The 2025 and 2030 targets are ambitious for the five- and ten-year timeframes. The Steering Committee and other stakeholders also expressed support for eliminating the disparity between air quality in West Oakland and the least polluted Bay Area communities. The Co-leads absolutely support and recognize this desire. It is reflected in the Plan Goal but should be considered too aspirational for a target within the Plan's timeframe.

**GOAL**

To protect and improve community health by eliminating disparities in exposure to local air pollution.

| | BASELINE<br>Baseline conditions in West Oakland in the year 2017. | 2025 TARGET<br>All neighborhoods experience West Oakland's ***average*** air quality. | 2030 TARGET<br>All neighborhoods experience West Oakland's ***best*** air quality. |
|---|---|---|---|
| Diesel PM | 0.30 $\mu g/m^3$ | < 0.25 $\mu g/m^3$ | < 0.13 $\mu g/m^3$ |
| $PM_{2.5}$ | 1.70 $\mu g/m^3$ | < 1.70 $\mu g/m^3$ | < 1.20 $\mu g/m^3$ |
| Cancer Risk | 204 in a million | < 200 in a million | < 110 in a million |

*Figure 4-4. Goal and Targets for the Plan*

# Chapter 5 – Technical Assessment

Various agencies and organizations have analyzed air pollution extensively in West Oakland. For over 20 years, WOEIP has conducted local air pollution measurements, truck surveys, and other activities to better understand local pollution sources. Recently, WOEIP partnered with the Environmental Defense Fund, Google, and Aclima to conduct detailed air pollution measurements in all West Oakland neighborhoods. In 2008, CARB and the Air District collaborated on an assessment of local health risk due to diesel particulate matter. In 2009, WOEIP and the Air District collaborated on a truck traffic survey that revised some of the assumptions made in the health risk assessment about truck traffic in West Oakland. Through the Community Air Risk Evaluation Program (CARE), the Air District conducted additional air pollution modeling and measurement studies to better understand local sources and concentrations. Most recently, to support this Plan, the Air District has developed detailed estimates of local pollution sources and local air pollution concentrations. This chapter and the Technical Support Documentation in Appendix A describe the technical assessments underlying this Plan.

## OVERVIEW

To support the Steering Committee's selection of strategies and targets, the Air District conducted extensive technical analysis of air quality impacts in West Oakland. The technical analysis focused on two key questions:

***Question 1.*** *What sources contribute most to community impacts from air pollution in West Oakland?*

***Question 2.*** *How much must emissions be reduced, and from what sources, to meet the community's goals?*

For definitions of technical terms, including the following, please see the Glossary:

- Intensity
- Emissions
- Concentrations
- Average concentrations
- Exposures

## APPROACH

The Air District devoted technical resources to creating and using computer-based simulations, or models, to answer the two questions above. Our approach to the technical assessment was guided by the key aims identified by our community partners. The key aims include: (a) eliminating air quality disparities, (b) taking pollution receptor proximity into account, and (c) focusing on local sources. By using models, and a general assessment of the air pollution emissions in West Oakland, the Air District could address Question 1, and thereby guide the policy choices needed to answer Question 2, in a way that supported these aims.

The Air District accomplished this by determining which local sources contribute most to air pollution at any given location in West Oakland, including, but not limited to, places of specific concern to the community—the impact zones discussed in Chapter 4.

## MODELING AREAS

Two types of models were applied to represent air pollution levels in West Oakland. First, a regional-scale model that covers the entire Bay Area was applied to understand the contributions made by sources outside West Oakland. The regional-scale model applied was the Community Multiscale Air Quality (CMAQ) Modeling System, supported by the U.S. Environmental Protection Agency and used for estimating levels of smog, PM, and toxics within a regional airshed. This regional-scale modeling zeroed out emissions from West Oakland sources, so that only impacts from outside sources would be represented.

### Why Model When You Can Measure?

Since there have been several recent measurement studies in West Oakland, why does this technical assessment adopt a modeling approach? With instrument-based **measurements**, we can *quantify* and *compare "what is."* For example, the West Oakland Street View study helped address the question, "How much black carbon do we find on each street?" Or, "Where is black carbon highest?" This is very useful. But black carbon measurements are often less useful for determining "*why it is*." With computer-based **models**, we can better *diagnose and explain.* With modeling, we can help address the question: Where does the diesel particulate matter come from? What sources are responsible, and which contribute the most?

Second, a community-scale model, nested within the regional-scale model, was applied to determine the contribution of sources for which data were available within West Oakland to impacts in the community. The community-scale model applied was a simplified plume model supported by U.S. EPA (AERMOD) that can produce more fine-grained air pollution concentration estimates near sources than the regional model, leading to more accurate estimates of impacts within the community. This community-scale model was used to calculate results at locations spaced 20 meters apart (about 65 feet) to provide hyper-local, block-by-block, information.

Both models, the regional-scale and the community-scale, simulated a full year to estimate *annual average concentrations* of air pollution levels in West Oakland for 2017, the baseline year for this technical assessment. The baseline was set to 2017 because this was the year with the most recent emissions information available when the technical assessment began in late 2018. The Technical Support Documentation (Appendix A) has details on these models and their application.

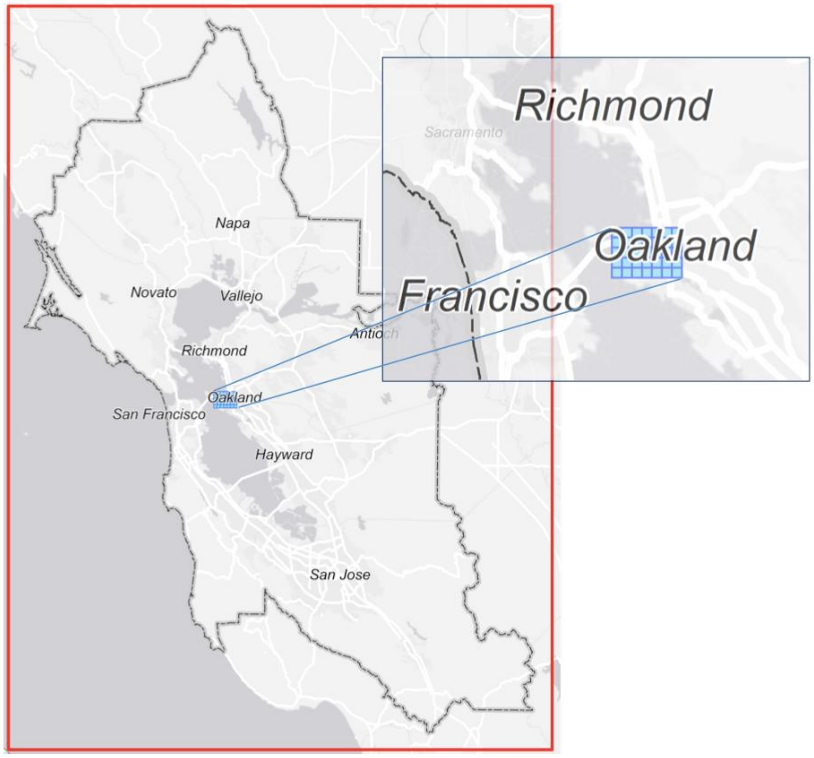



*Figure 5-1. Regional-Scale Modeling Area*

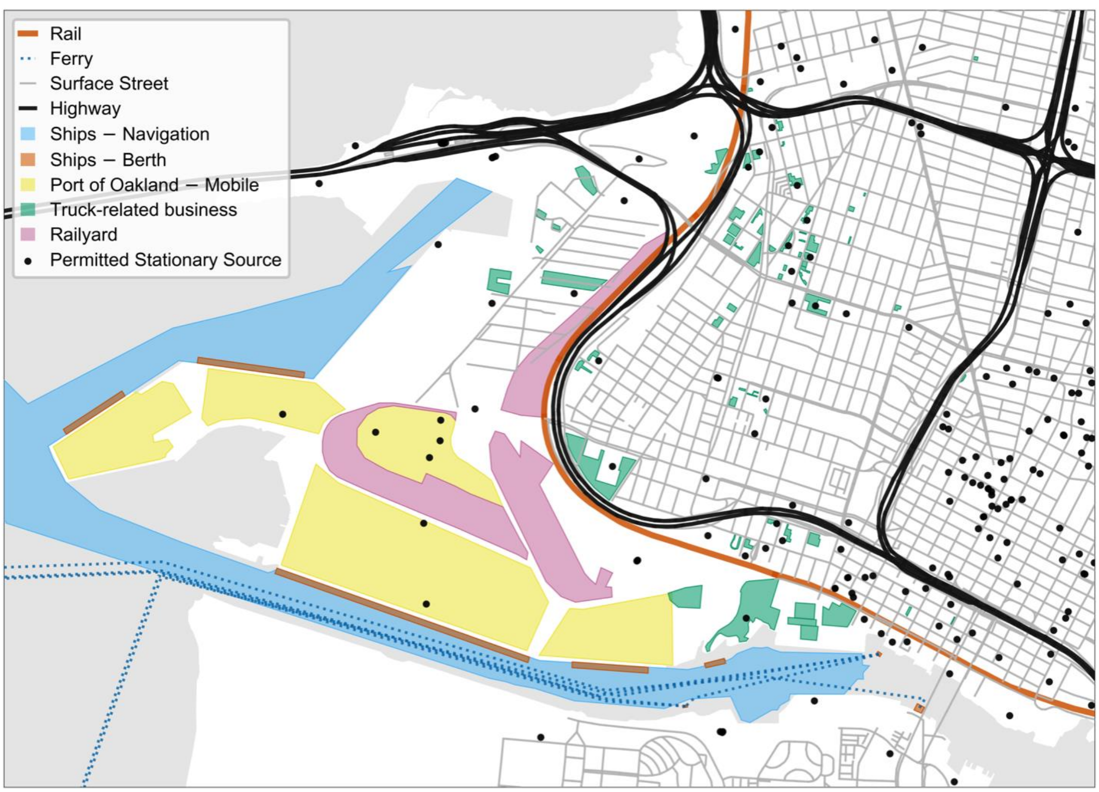



*Figure 5-2. West Oakland Community-Scale Modeling Area with Locations of Modeled Emissions*

Figure 5-1 shows the area covered by the regional-scale model (red rectangle). The area of the community-scale modeling is shown as blue squares, expanded in the inset. The Air District boundary is outlined (grey dashed line). White lines show major roadways. Figure 5-2 zooms in to more clearly show the area covered by the community-scale model, and the types and locations of air pollution sources that were included. All sources shown in Figure 5-2 were included in the community-scale modeling.

To determine air pollution *exposures* of West Oakland residents, we need maps of air pollution *concentrations*, which the community-scale modeling provides. We also need to know where people are. To represent the locations of people in the community, the Steering Committee agreed to use the latest Census population information. The latest decennial U.S. Census, conducted in 2010, provides residential population counts at the Census block level, as mapped in Figure 5-3. In this figure, Census blocks with a higher percentage of West Oakland's residential population are mapped in darker shades. Census blocks with no residential population are not shaded.


*Figure 5-3. Percent of West Oakland Population by Census Block*

## POLLUTANTS, SOURCES, AND EMISSIONS

In the Plan's technical assessments of impacts, the Air District focused on the following:

- Diesel PM;
- Fine particulate matter ($PM_{2.5}$); and
- Cancer risk posed by toxic air contaminants.

As discussed in Chapter 1, these three pollutants — especially diesel PM — have been identified by our community partners, and by previous work, as being the air pollutants of greatest concern in West Oakland.

This Plan estimates emissions of the pollutants listed above for most known major sources of air pollution in West Oakland. Table 5-1 lists all these sources of air pollution. However, the community-scale modeling only included sources for which locations and activity could be determined within the timeframe of the Plan schedule. The sources that were both inventoried and modeled are shown on the left side of Table 5-1; the right side shows the sources that were inventoried but not modeled.

*Table 5-1. List of West Oakland Sources Inventoried and Modeled vs. Inventoried Only*

| Sources Included in Community-Scale Modeling | Sources Inventoried Only |
|---|---|
| **Highway** | **Some stationary sources** |
| On-road vehicles, like cars and trucks, including exhaust, fuel evaporation, brake & tire wear, and road dust | Restaurants |
| **Street** | Food & agriculture |
| On-road vehicles, like cars and trucks, including exhaust, fuel evaporation, brake & tire wear, and road dust | Residential wood burning |
| **Port** | Commercial & industrial fuel combustion |
| Ships maneuvering & berthing, harbor craft, dredging, bunkering, Port trucks, cargo handling equipment, and OGRE & BNSF railyards | Smaller industrial processes<br>Solvent uses<br>Consumer products |
| **Rail** | **Some non-road sources** |
| Rail lines (including passenger rail), and UP railyard | Construction equipment |
| **Permitted** | Construction dust |
| Schnitzer, EBMUD, Dynegy, Pinnacle Ag Services, Sierra Pacific, CASS, California Cereal, CA Waste (10th St), and many others | Commercial & industrial mobile equipment<br>Lawn & garden equipment |
| **Other** | Transport refrigeration units (TRUs) |
| Ferries, Schnitzer (ships), Schnitzer trucks and other truck-related businesses | |

Emissions summaries for all these sources are shown in Table 5-2 for $PM_{2.5}$, diesel PM, and cancer risk-weighted toxics. This inventory of emissions reflects current best estimates. Like all emissions inventories, these are estimates and subject to change as more and better information becomes available. The cancer risk weighting applied to toxic emissions does not produce an estimate of cancer risk; rather, it provides a way to rank emissions based on pollutant toxicity as well as the amount emitted.[25] The top portion of Table 5-2 lists emissions from sources both inventoried and modeled; the bottom portion lists emissions from sources inventoried but not modeled. From Table 5-2, one can calculate that most emissions of diesel PM (85%) and cancer-causing toxics (83%) were included in the community-scale modeling. About two-thirds (66%) of the $PM_{2.5}$ emissions were included in the community-scale modeling.

Construction equipment, which is a non-negligible source of diesel PM emissions and cancer risk (Table 5-2) and often operates close to people, was omitted from the modeled local sources due to lack of data on specific locations.[26] Construction equipment emissions were inventoried within West Oakland and were accounted for in the regional sources. While construction equipment emissions were not modeled, there are measures in the Plan that address construction-related emissions.

Transport refrigeration units have relatively small diesel PM emissions in West Oakland but may operate close to people in some parts of West Oakland. However, here again, data on specific locations were not available in time to include in the Plan.

Table 5-2 shows that commercial cooking (restaurants), residential fuel combustion (mostly wood burning), and construction (exhaust and dust) are sources that contribute about 30% of local $PM_{2.5}$ but emissions were not included in local modeling. These are all sources where information on specific locations of emissions was not readily available and could not be obtained in time for inclusion in the Plan. However, this emissions assessment, along with the direct experience of community members, did inform certain strategies to address these sources, as well as the need to further study these sources to better understand and reduce their impacts in the West Oakland community.

One of the larger sources of $PM_{2.5}$ in current estimates shown in Figure 5-2 is road dust. Road dust is both inventoried and included in the local modeling, but there is a high level of uncertainty in road dust emission estimates (few studies are available to evaluate them). Road dust emissions are estimated to be large and growing as traffic volumes increase over time. This assessment informed the addition of a street sweeping strategy in the Plan.

Figure 5-4 shows a visual summary of the top-level categories of emissions sources in Table 5-2.

[25] For example, diesel PM is more toxic than benzene, therefore a pound of emitted diesel PM gets a higher ranking than a pound of emitted benzene.

[26] While the Steering Committee expressed a strong interest in including construction in the modeling, the Air District determined that collecting the needed activity and locations of construction emissions, especially for future years, at the hyper-local scale of the modeling, would take too long to meet the Plan schedule.

*Table 5-2. 2017 West Oakland Emissions Summary in tons per year (with cancer risk weighting for toxics)*

| Source | $PM_{2.5}$ | Diesel PM | Cancer Risk-Weighted TACs[27] |
|---|---|---|---|
| **West Oakland sources included in community-scale modeling** | | | |
| **Highway** | **20.29** | **2.12** | **1,791** |
| Non-truck vehicles | 12.23 | 0.19 | 331 |
| HD/Medium HD trucks | 2.48 | 1.84 | 1,392 |
| Light HD trucks | 0.41 | 0.09 | 69 |
| Road dust | 5.17 | – | – |
| **Street** | **22.38** | **2.07** | **1,692** |
| Non-truck vehicles | 4.82 | 0.09 | 183 |
| HD/Medium HD trucks | 2.44 | 1.88 | 1,434 |
| Light HD trucks | 0.35 | 0.09 | 76 |
| Road dust | 14.77 | – | – |
| **Port** | **21.99** | **15.87** | **11,817** |
| OGV maneuvering | 3.94 | 3.84 | 2,859 |
| OGV berthing | 7.83 | 4.31 | 3,212 |
| Harbor craft | 3.82 | 3.94 | 2,932 |
| Dredging | 1.12 | 1.16 | 864 |
| Bunkering | 0.27 | 0.28 | 209 |
| Port trucks | 0.93 | 0.50 | 372 |
| Road dust | 2.25 | – | – |
| Cargo handling | 1.59 | 1.58 | 1,177 |
| OGRE Railyard | 0.07 | 0.08 | 57 |
| BNSF Railyard | 0.17 | 0.18 | 136 |
| **Rail** | **2.04** | **2.20** | **1,637** |
| Rail lines | 1.02 | 1.09 | 810 |
| UP Railyard | 1.02 | 1.11 | 826 |
| **Permitted** | **17.84** | **0.30** | **1,101** |
| Schnitzer (stationary) | 5.20 | – | 823 |
| EBMUD | 3.99 | 0.09 | 110 |
| Dynegy | 1.96 | < 0.01 | 1 |
| Pinnacle Ag Services | 1.48 | – | – |
| Sierra Pacific | 0.91 | – | – |
| CASS | 0.72 | – | < 1 |
| California Cereal | 0.58 | – | < 1 |
| CA Waste (10th St) | 0.46 | – | – |

[27] Appendix A describes the method applied for cancer risk weighting of toxic air contaminants (TACs).

| Source | $PM_{2.5}$ | Diesel PM | Cancer Risk-Weighted TACs[27] |
|---|---|---|---|
| Other | 2.53 | 0.21 | 168 |
| **Other** | **1.36** | **1.36** | **1,016** |
| Ferries | 0.91 | 0.93 | 695 |
| Schnitzer (ships) | 0.30 | 0.30 | 225 |
| Schnitzer (trucks) | 0.04 | 0.01 | 8 |
| Truck-related businesses | 0.11 | 0.12 | 87 |
| **Total** | **85.91** | **23.91** | **19,054** |
| ***West Oakland sources not included in community-scale modeling*** | | | |
| **Area** | **30.40** | **–** | **413** |
| Commercial cooking | 20.63 | – | 9 |
| Food and Agriculture | – | – | 13 |
| Residential fuel combustion | 6.93 | – | 18 |
| Commercial/industrial fuel combustion | 2.30 | – | 17 |
| Industrial processes | 0.03 | – | 176 |
| Solvent utilization | 0.00 | – | 125 |
| Consumer products | 0.00 | – | 41 |
| Other area sources | 0.50 | – | 13 |
| **Non-road** | **13.00** | **4.12** | **3,358** |
| Construction equipment | 4.10 | 3.33 | 2,501 |
| Construction dust | 6.74 | – | – |
| Commercial/industrial equipment | 1.17 | 0.51 | 436 |
| Lawn & garden equipment | 0.12 | 0.02 | 79 |
| Transport refrigeration units (TRUs) | 0.24 | 0.26 | 192 |
| Other non-road sources | 0.63 | 0.00 | 151 |
| **Total** | **43.40** | **4.12** | **3,771** |
| **Grand Total** | **129.31** | **28.03** | **22,825** |

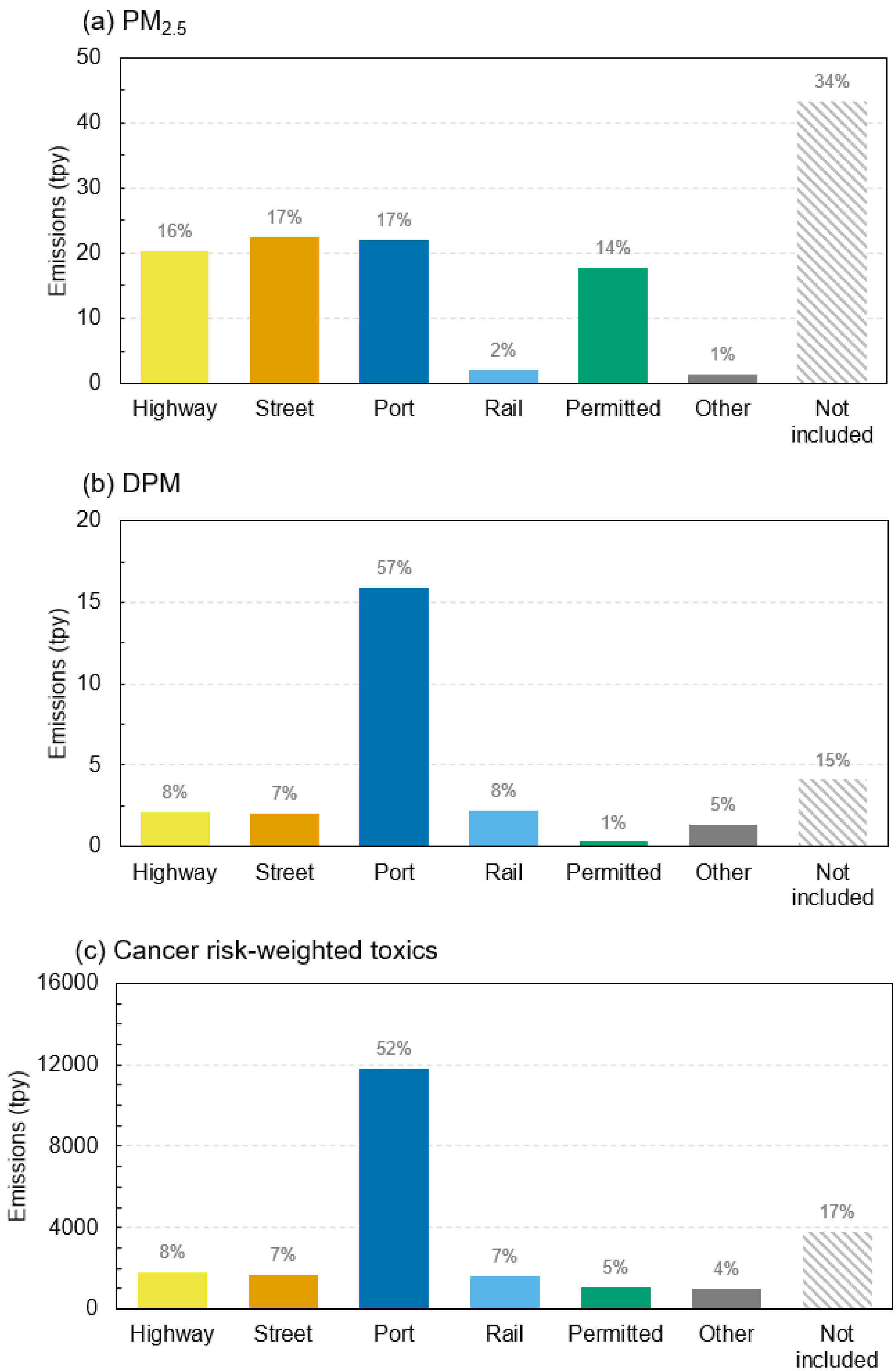



*Figure 5-4. 2017 West Oakland Emissions Summary for Top-Level Source Categories in tons per year (with cancer risk weighting for toxics)*

## MEASURES OF IMPACT

The word "impact" is used throughout this chapter and in Chapter 6 where we report the assessed Plan benefits. We can assess the impacts of air pollution in several ways. The technical assessment for this Plan has focused on "residential impact." Residential impacts, and other kinds of impacts, are described below.

**Concentration as impact**. Figure 5-5 depicts an important kind of impact—the increased intensity of air pollution that is due to local sources. This intensity is quantified in terms of increased *average concentration*. The total concentration of diesel PM or $PM_{2.5}$ is the amount of material — soot and other particles — one would find on filters, after a specified amount of air is drawn through them. Figure 5-5 shows modeling estimates of annual average concentrations of diesel PM attributed to local sources in and around West Oakland. These modeling estimates are not total concentrations. They are the part of the total concentration that we are attributing, through modeling, to local sources.

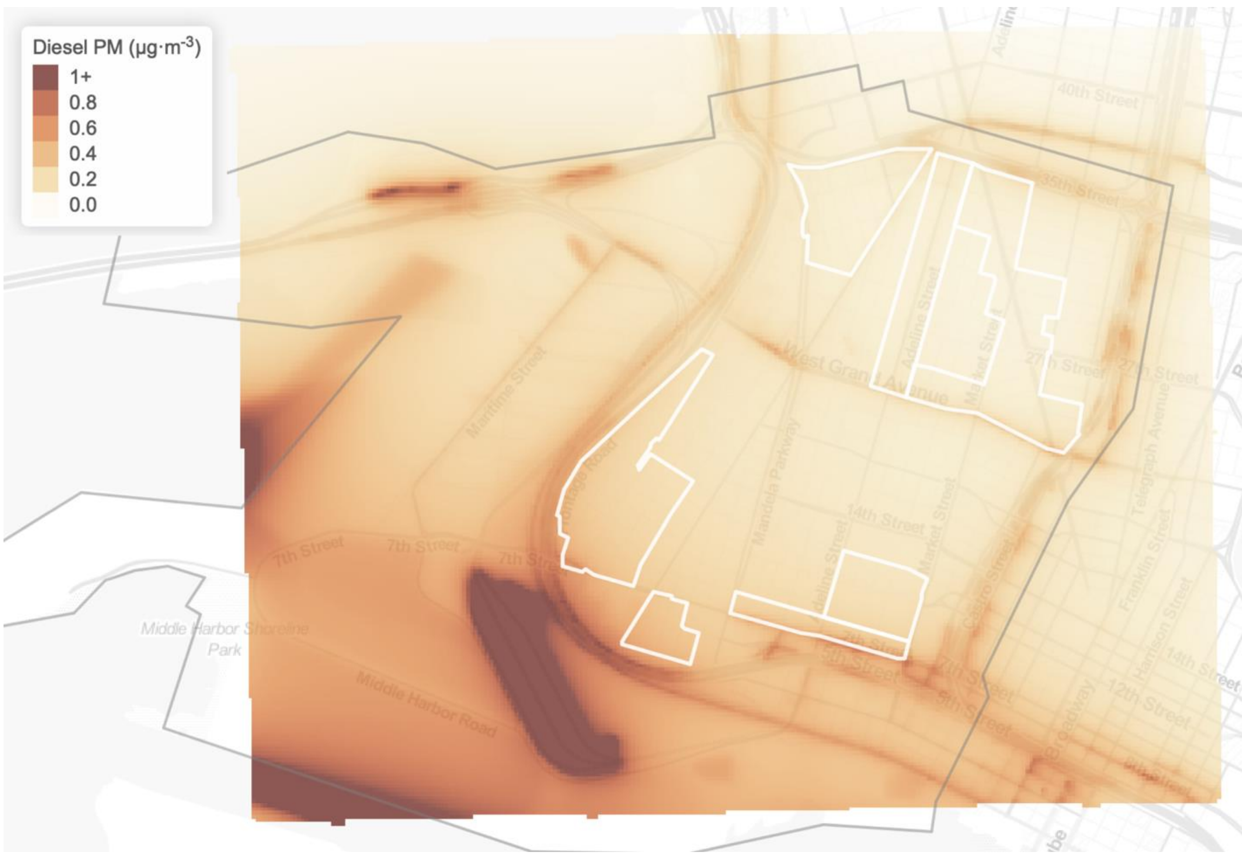



*Figure 5-5. Intensity of Diesel PM Air Pollution Contributed by Local Sources in West Oakland (2017).* (*Map tiles: Stamen Design; Data: OpenStreetMap)*

**Exposure as impact**. When we refer to *ambient concentration*, we are talking about the intensity of pollution in outdoor air, whether people are located there or not. *Exposure* is a way of expressing how intense the pollution is *where people are breathing it*. From a community-impact perspective, this second kind of impact is of greater concern.

**Residential impact.** Figure 5-6 shows an approximation of exposure to diesel PM, which we refer to as "residential impact." Each rectangle represents a Census block, with height proportional to the people living in the block. Because we do not know where every person is or what they are breathing all the time, we approximate it in a way that makes a practical, policy-relevant difference. In this analysis, we approximate exposure in terms of "residential impact." This is simply the average ambient (outdoor) concentration across each residential block in West Oakland, weighted by the number of people residing in that block.[28]

Figure 5-6 shows that there are unequal air quality impacts within West Oakland. Some people are closer to sources of air pollution and breathe dirtier air. The exposures indicated on the far right of Figure 5-6 are higher than those at the left. The average amount, when we account for the number of people exposed, is indicated by the black diamond in this figure. Reducing this disparity in exposure, these unequal impacts, is a central focus of this Plan. As discussed in Chapter 4, we carried out the assessment of unequal impacts by examining exposures within "impact zones." The Census blocks used to represent the impact zones in this assessment are shown in Figure 5-7. The Findings section of this chapter provides additional discussion of these unequal impacts.

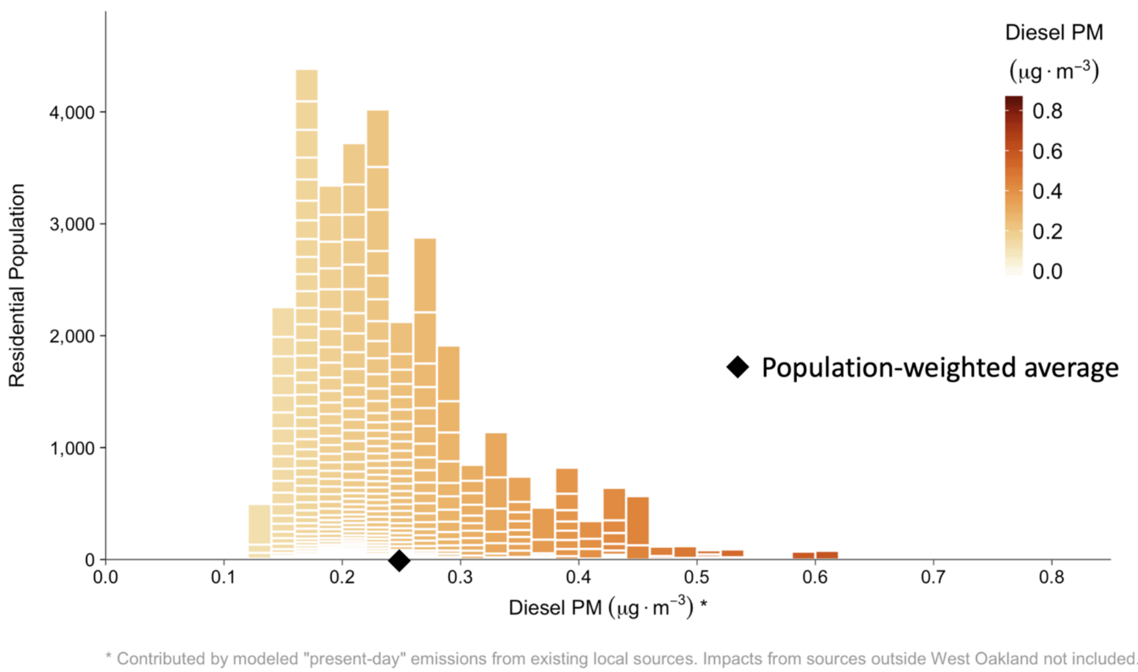



*Figure 5-6. Unequal Impacts: Diesel PM Across West Oakland (2017)*

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[28] Because people spend some time away from their residence, and some time indoors, residential impact is not a perfect estimate of exposure. For example, it does not take into account whether or not the air that people are breathing is filtered outdoor air. Filtration is a key piece of several proposed Plan actions. Breathing filtered indoor air would reduce exposure, but "residential impact" only considers the quality of outdoor air. On the other hand, "residential impact" is a more useful metric than ambient concentration, because it takes the proximity of people into account. Also, it is the same approach used by most large, population-based, scientific studies of the health effects of ambient air pollution.

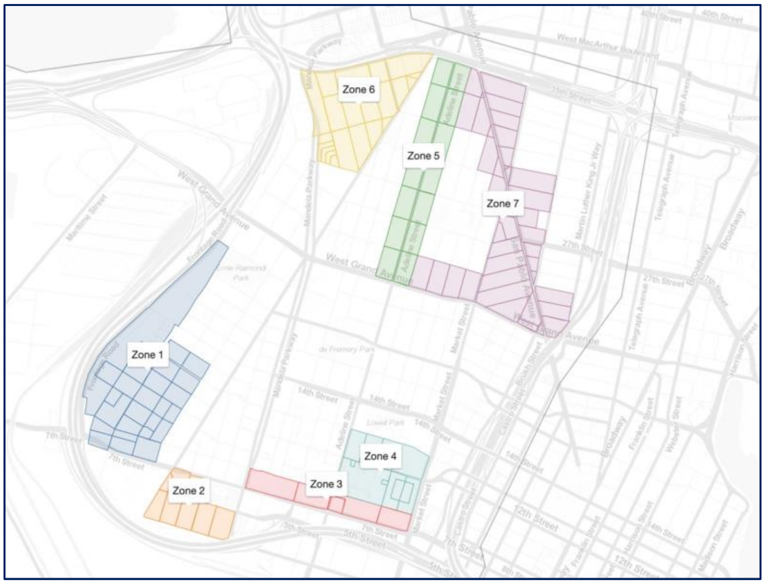


*Figure 5-7. Local Impact Zones*

## FINDINGS: BASELINE (2017) CONDITIONS

This section presents answers to Question 1, "What sources contribute most to community impacts from air pollution in West Oakland?" The technical assessment addresses this using information from the community-scale modeling. No matter the pollutant, air pollution in West Oakland comes from either outside or within West Oakland. Because this Plan focuses on local actions to reduce emissions and exposure, one of the first questions our community partners asked was, "How much is local?"

## HOW MUCH IS LOCAL?

This technical assessment used the regional-scale model (with West Oakland emissions omitted) to estimate the contribution of sources outside West Oakland and used the community-scale model to estimate the inside (or local) contribution. Figure 5-8 shows modeling-based estimates of the annual average concentrations across West Oakland of diesel PM, cancer risk, and $PM_{2.5}$, weighted by (residential) population. In each case, Figure 5-8 shows the portion of residential impact contributed from sources outside West Oakland (gray bars) versus from local sources (purple bars):[29] about 40% of diesel PM is local; about 30% of cancer risk is local; and about 20% of $PM_{2.5}$ is local.

Figure 5-8 shows that, for both diesel PM and cancer risk, the top local contributors to West Oakland average impacts are heavy-duty diesel trucks (about 40%), marine vessels (about 30%), and rail (about 20%). These estimates comprise trucks at all locations (port, street, or highway); marine vessels at all locations (including ferry berths, private berths, and the Port of Oakland); and locomotive activity at all locations (BNSF, OGRE, and UP railyards, as well as on rail lines anywhere in West Oakland), respectively. For $PM_{2.5}$, the top local contributors are road dust (about 40%), on-road cars and trucks (including exhaust and brake and tire wear, about 30%), and permitted sources (about 20%).

[29] As discussed above, construction equipment, restaurants, and wood burning were omitted from the "modeled local sources" due to lack of data on specific locations. They are accounted for under "regional sources."

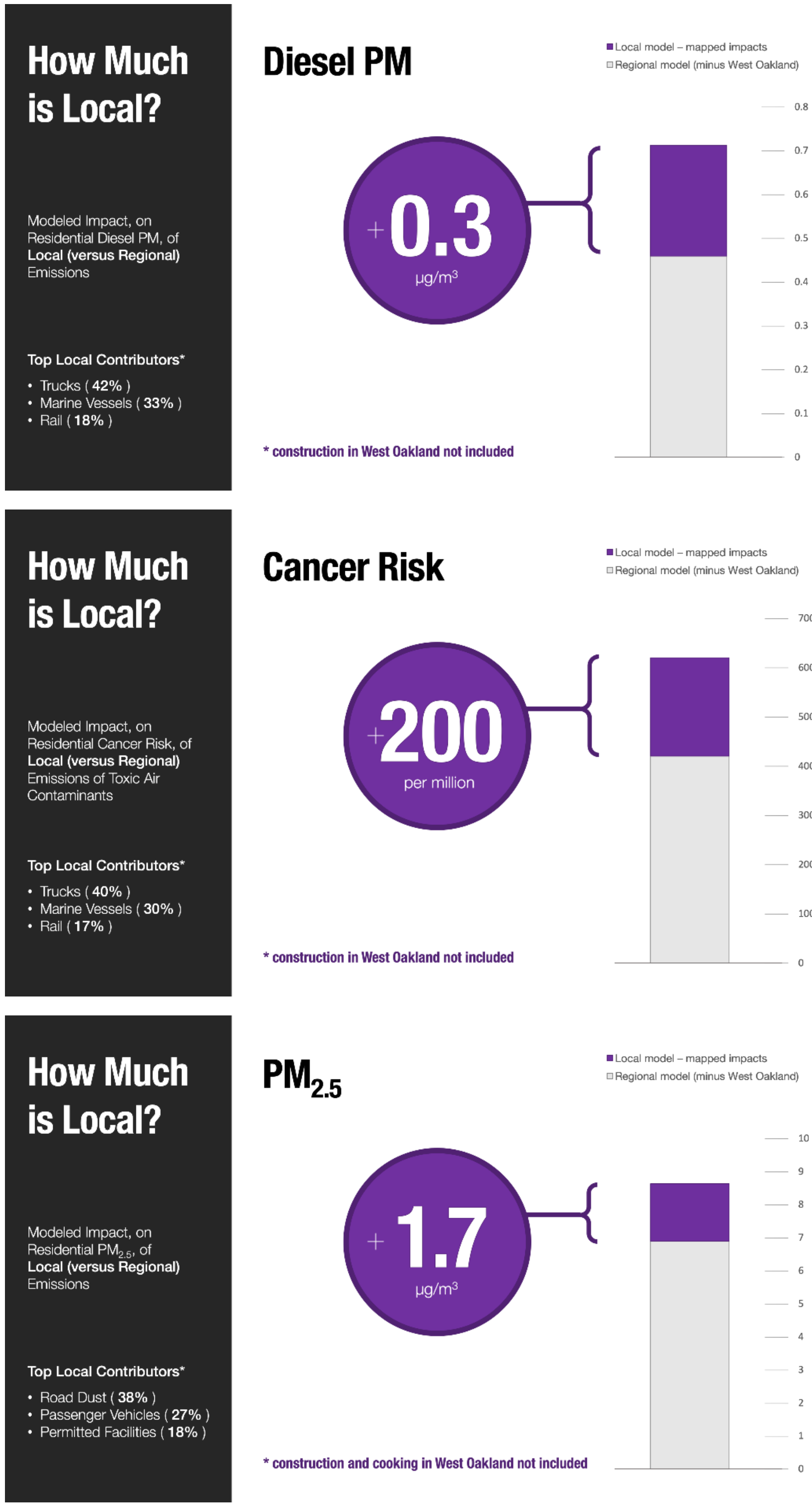


*Figure 5-8. Local vs. Regional Contributions for Diesel PM, Cancer Risk, and $PM_{2.5}$*

Road dust, to which over one-third of local fine particulate matter modeled impacts ($PM_{2.5}$) was attributed, is dust that has landed on a road and is kicked up into the air by passing vehicles. Road dust may be worth targeting with specific interventions. The residential impacts of road dust in West Oakland are due primarily to traffic on local streets, rather than highways. This estimate, which is large but uncertain, requires further study. For example, it may warrant a field measurement campaign to see whether the estimates (which are based on a few studies of road dust in other regions) are accurate enough to guide policy aside from increasing the frequency and quality of the street sweeping.

An important finding of this study is that the great majority – over 90% – of cancer risk from local air pollution in West Oakland is attributable to diesel PM. This is consistent with findings from previous studies by the Air District, CARB, and others. And much of the remaining cancer risk from other toxic air pollutants will be reduced by the Air District's recently adopted Rule 11-18.

### IMPACTS VARY BY LOCATION

Contributions to impacts from local air pollution sources vary by location within West Oakland, as one would expect. As discussed in Chapter 2, West Oakland has grown over the decades into a community with some residential areas, schools, and recreation areas within close proximity to industrial sources, highways, and busy roadways. These land-use decisions that took place over decades have resulted in different impacts for different areas of West Oakland. Places that are closer to a specific source, like a highway or a rail line, are impacted more by that source. This technical assessment quantifies this influence. Whereas Figure 5-8 showed community-wide "average residential impact" across West Oakland, Figure 5-9 shows contributions and source apportionments at different locations: the community-identified local impact zones. For each of the pollutants, Figure 5-9 maps annual average concentrations from local sources. The pie charts in Figure 5-9 are located over the local impact zones; chart size indicates concentration levels for each impact zone and colors illustrate the share contributed by each source at each zone. For diesel PM (Figure 5-9a) and cancer risk (Figure 5-9b), concentrations increase from the top right, where highways and streets contribute a greater share, to the bottom left of each figure – where rail and Port of Oakland sources contribute more. For $PM_{2.5}$ (Figure 5-9c), concentrations are more varied. All zones see large contributions from streets. Zones 1 and 6 see sizable contributions from permitted sources. In Zone 1, about 20% of the contribution of $PM_{2.5}$ is from California Waste, a recycling and waste transfer facility, and about 10% is from Pinnacle Agriculture, a grain processing and shipping facility. In Zone 6, about 15% of the contribution is from Sierra Pacific, a ready-mix concrete supplier, and about 10% is from East Bay Municipal Utilities District wastewater treatment plant. In both these zones, fugitive $PM_{2.5}$ emissions, which are difficult to estimate and uncertain, make up a significant portion of the total contribution from permitted sources. More fine-grained, zone-specific tables are available in Appendix A and in online technical support resources.[30]

[30] Online Technical Support Resources provide more information about emissions and zone-specific impacts. Visit http://www.baaqmd.gov/ab617woak.

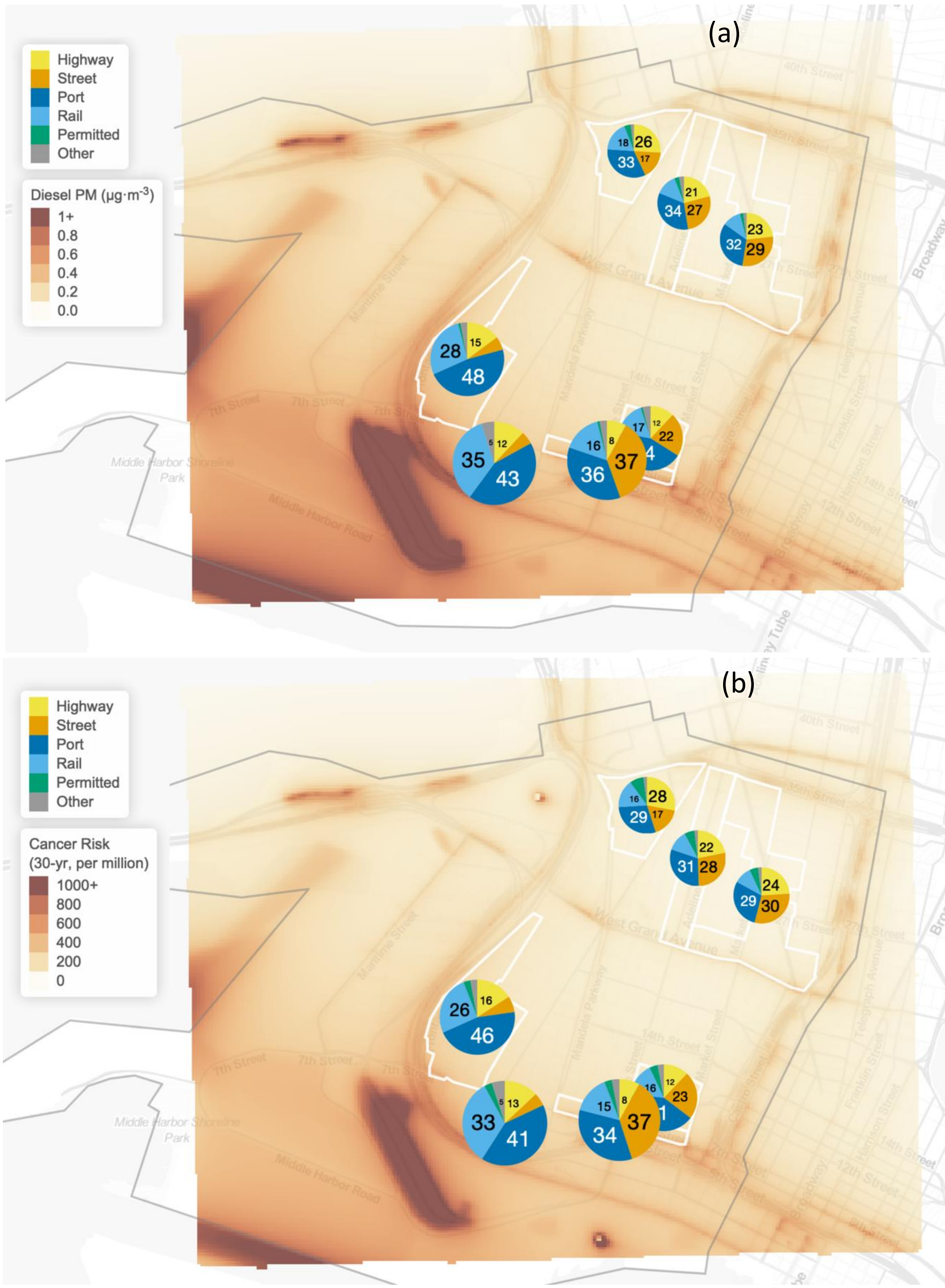


*Figure 5-9. a-b. Pie Charts Showing the Mix of Sources Contributing to Local Enhancement of Ambient Concentrations (2017) for (a) Diesel PM and (b) Cancer Risk. (Map tiles: Stamen Design; Data: OpenStreetMap)*

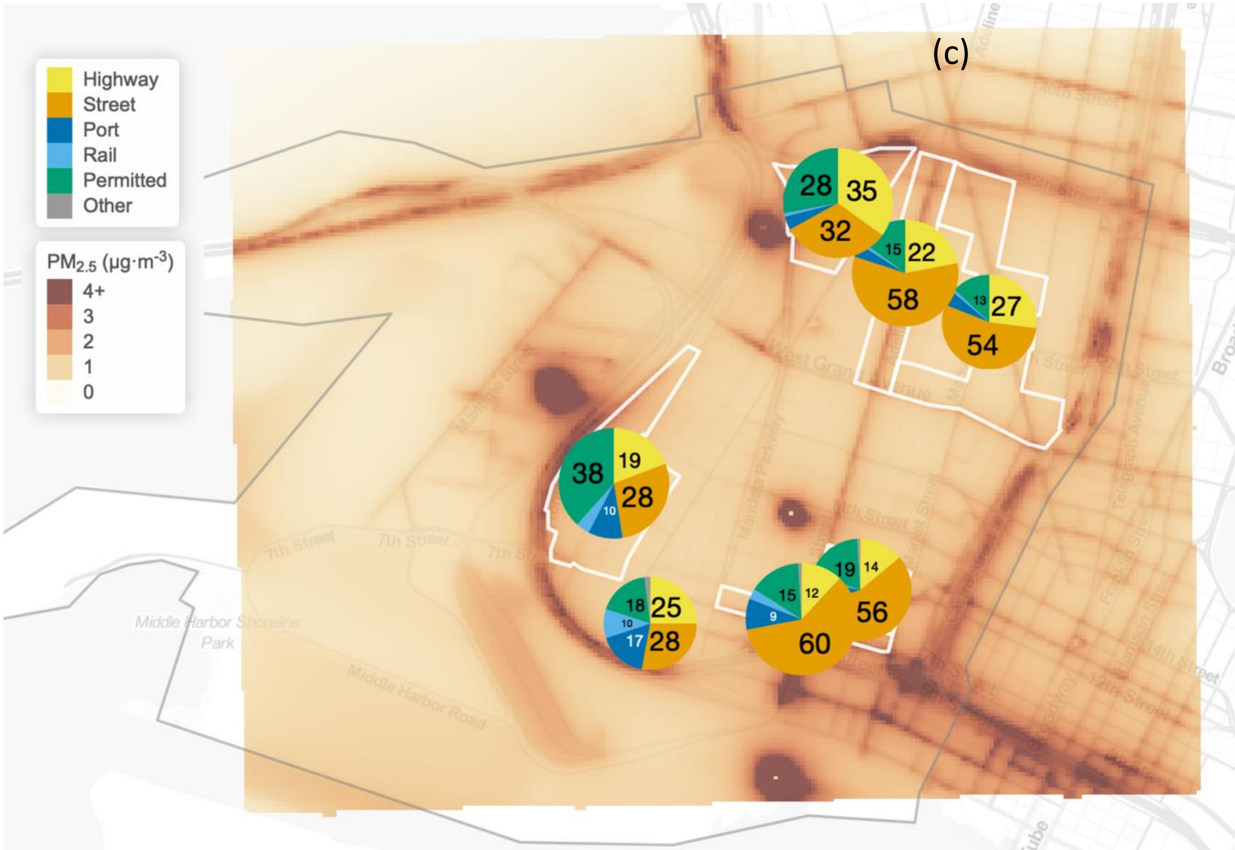


*Figure 5-9. c. Pie Charts Showing the Mix of Sources Contributing to Local Enhancement of Ambient Concentrations (2017) for $PM_{2.5}$. (Map tiles: Stamen Design; Data: OpenStreetMap)*

## IMPACT PER TON VARIES BY SOURCE

Figure 5-10 shows how much residential impact is caused by a ton of diesel PM emissions. Circles are modeled local sources. Red circles create more impact per ton; blue circles, less. Knowing which sources contribute the most impact per ton helps to inform the Plan strategies. It also allows us to calculate the improvement in residential conditions — in other words, the progress toward our goals — that we expect to result from a given reduction in emissions. As the figure illustrates, the answer to this depends on the source.

The vertical sides (y-axes) of Figure 5-10 show residential impacts in units of population-weighted concentrations (left side) and as a percent of the total residential impact (right). The horizontal axes show emissions in units of tons per year (bottom) and as a percent of total local emissions (top). Sources that fall near the dashed diagonal line have a share of emissions roughly equal to their share of impacts. Sources above the line contribute more impact per ton than sources below it. Trucks, for example, are above the line. They operate near people throughout West Oakland. Ocean-going-vessels (OGVs) are below the line. A ton of diesel PM emitted from trucks, therefore, contributes more to residential impacts than a ton emitted from OGVs. However, this does not mean that sources below the line are not important. The residential impact from an emission source depends not only on this ratio (impact per ton), but also on how many tons the source emits. Sources with lower impact-per-ton factors, like OGVs, can still generate substantial impacts.

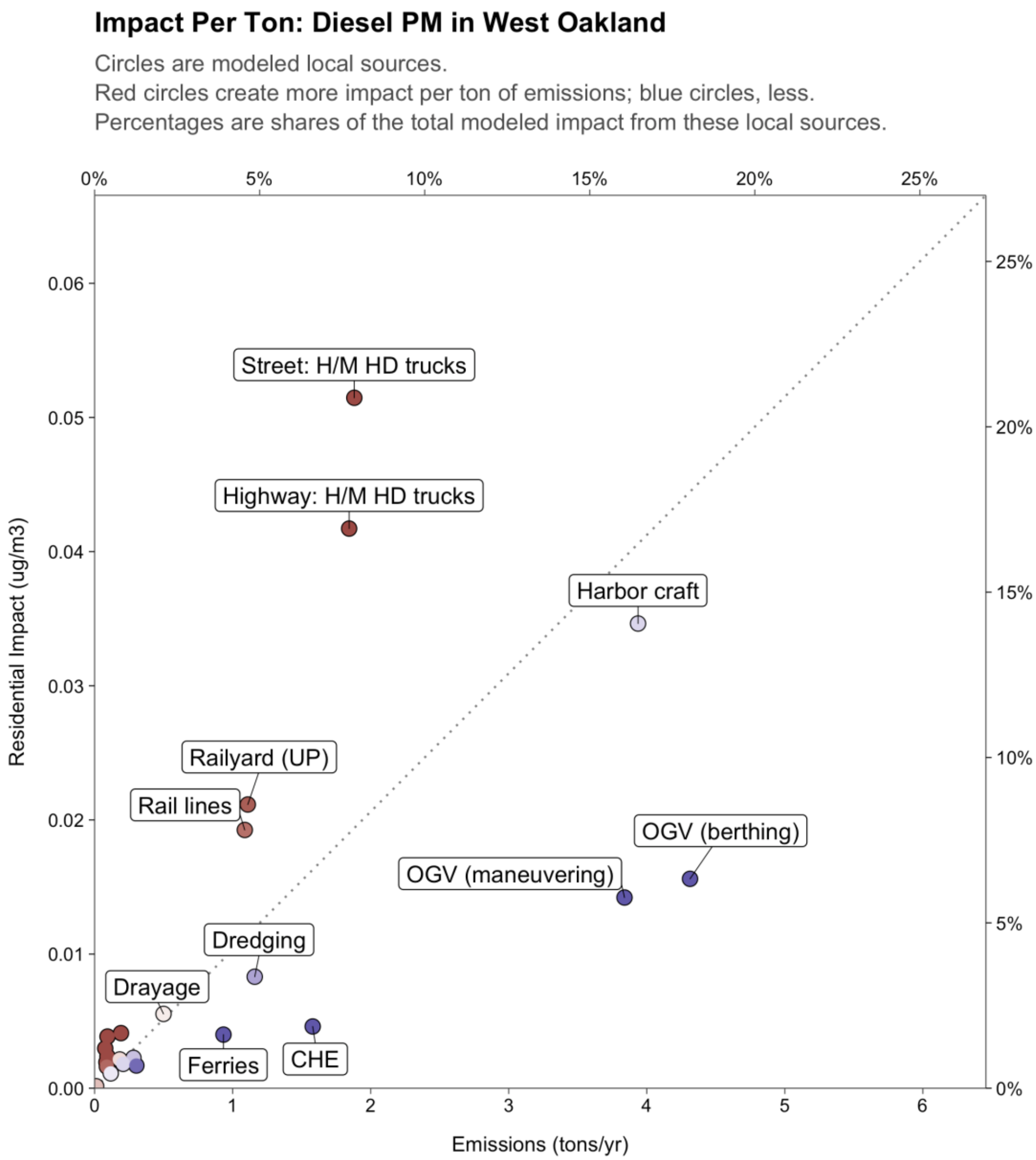


*Figure 5-10. Impact per Ton of Emissions: Diesel PM in West Oakland (2017)*

## BASELINE TARGETS AND FUTURE YEAR 2024 (WITHOUT THE PLAN)

This section begins to address Question 2, “How much must emissions be reduced, and from what sources, to meet the community’s goals?” Specifically, this section presents modeled results to show how strategies already approved, but not fully implemented, will reduce impacts. Chapter 6 shows modeled results to show how Plan strategies move us further toward meeting the community goals.

The assessments in this section and in Chapter 6 show that emissions reductions quantified here will improve conditions by 2024 and move us toward the Plan targets, but not reach them all.[31]

**Baseline Conditions at Local Impact Zones.** Figure 5-9 showed pie charts layered on a map of air pollution concentrations and cancer risk for 2017. The same information is shown in Figure 5-11, Figure 5-13, and Figure 5-15, this time in the form of a bar chart, to show how different sources are responsible for the concentrations at each of the community-identified impact zones. Colored bars show total impacts in local neighborhoods from sources included in community-scale modeling. In Zone 2, for example, Figure 5-11 shows that most of the local enhancement of diesel PM concentrations is attributable to maritime and rail emissions. In Zone 3, a substantial portion is due to trucks on local streets. The dashed lines in these figures show the 2025 target ("average neighborhood" today) and the 2030 target ("cleanest neighborhood" today).

Using a bar chart allows us to superimpose targets and illustrates how much the total impacts from modeled sources need to come down to meet the targets. The targets are defined by the Plan's desired future conditions which were established based on the baseline (2017) model year. These conditions reflect and are scoped to the impact of local sources, without the regional background.

The different impact zones are affected by different mixtures of sources. However, to meet the 2025 and 2030 targets in all impact zones, emissions from several source types will need to be reduced.

**Future Year 2024 Conditions (without the Plan) at Local Impact Zones.** For diesel PM, Figure 5-11 shows that in 2017 only three of the seven impact zones meet the 2025 target, and none meet the 2030 target. Figure 5-12 shows that in 2024, without the Plan, all but Zones 1 and 2 will meet the 2025 target, and three out of seven will meet the 2030 target. To meet the 2025 target in Zone 2, and to meet the 2030 targets, more reductions are needed for diesel PM emissions from Port and rail sources. Figure 5-13 and Figure 5-14 illustrate a similar story for cancer risk.

For $PM_{2.5}$, Figure 5-15 shows that local impacts are largely determined by emissions from surface streets and highways. Only two out of seven impact zones meet the Plan 2025 target in 2017. As noted earlier, permitted sources near Zones 1 and 6 also add to the local $PM_{2.5}$ impacts. Figure 5-16, for 2024 without the Plan, shows only small changes in local $PM_{2.5}$ relative to 2017.

The next section summarizes the forecasted emission changes that, given the impact/emission relationships shown in Figure 5-10, will produce these changes in impacts. Assessments in Chapter 6 highlight the benefits of the Plan in 2024 that we can quantify relative to 2024 without the Plan; it also discusses what elements of the Plan produce the changes in impacts.

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[31] This section assesses improvements achieved "by 2025" or in future year 2024. Initial assessments of future year 2029 were made. However, because of uncertainties in 10-year forecasts, we only emissions estimates for 2029 in Appendix A were presented.

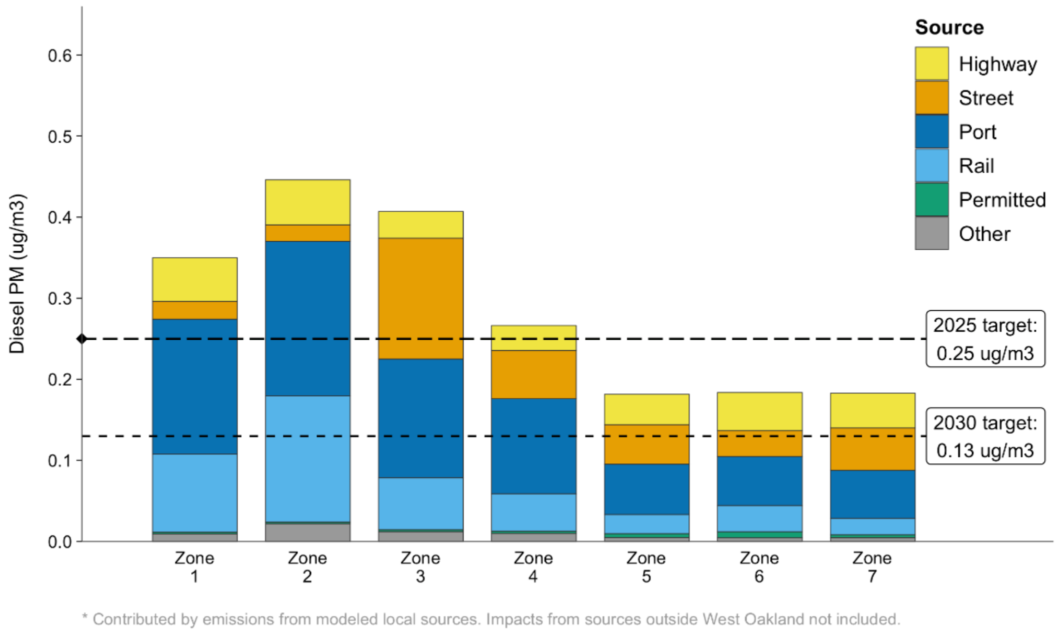


*Figure 5-11. Targets and Source Apportionment for Diesel PM in 2017 (Baseline)*

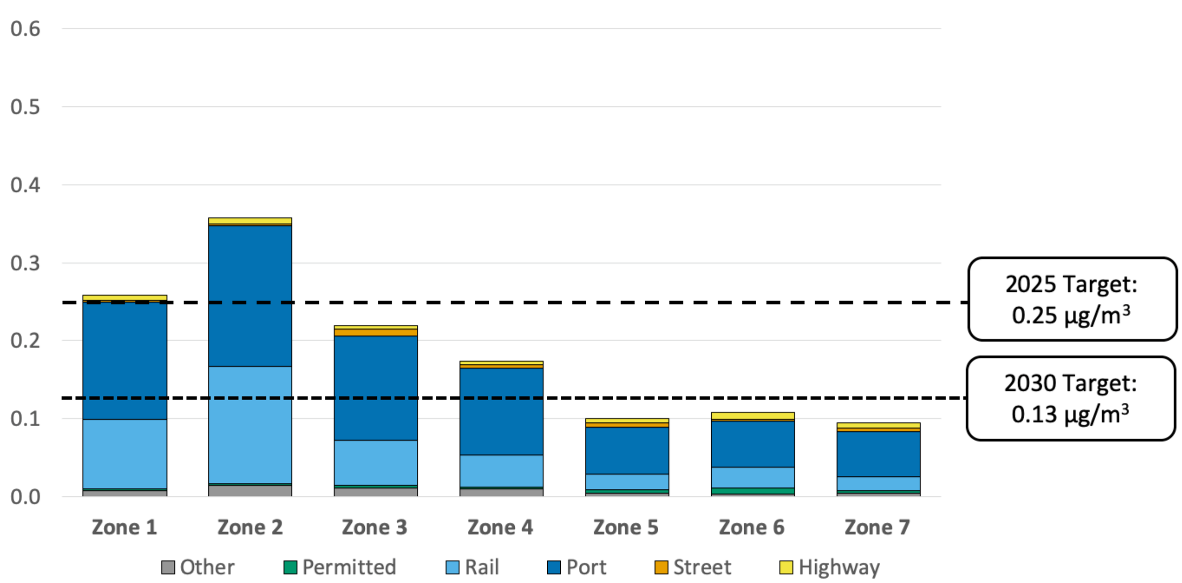


*Figure 5-12. Targets and Source Apportionment for Diesel PM in 2024 (Without the Plan)*

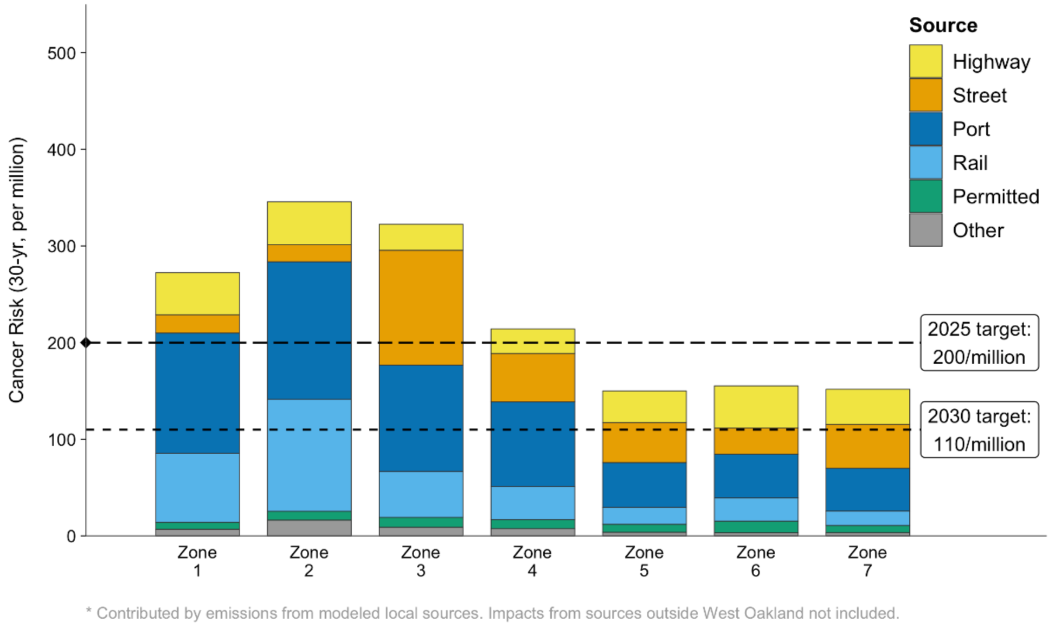


*Figure 5-13. Targets and Source Apportionment for Cancer Risk in 2017 (Baseline)*

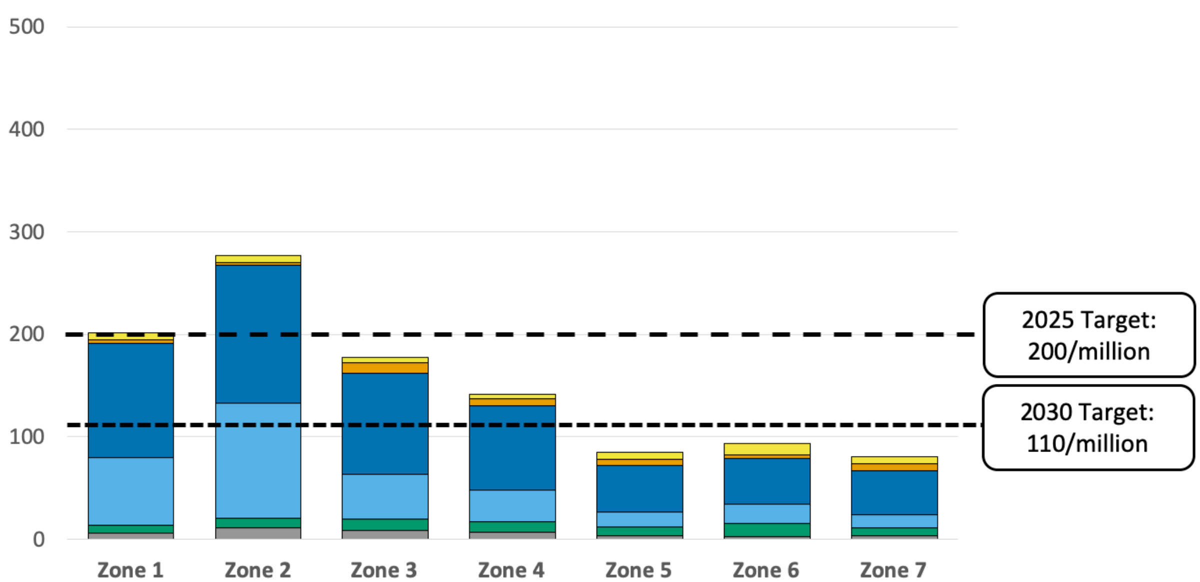


*Figure 5-14. Targets and Source Apportionment for Cancer Risk in 2024 (Without the Plan)*

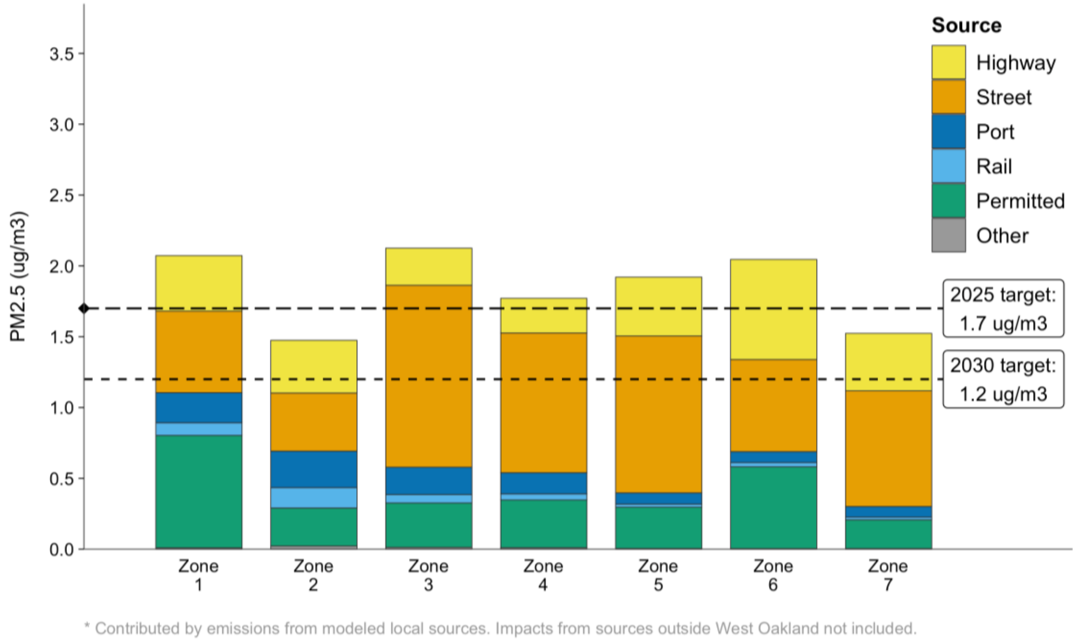


*Figure 5-15. Targets and Source Apportionment for $PM_{2.5}$ in 2017 (Baseline)*

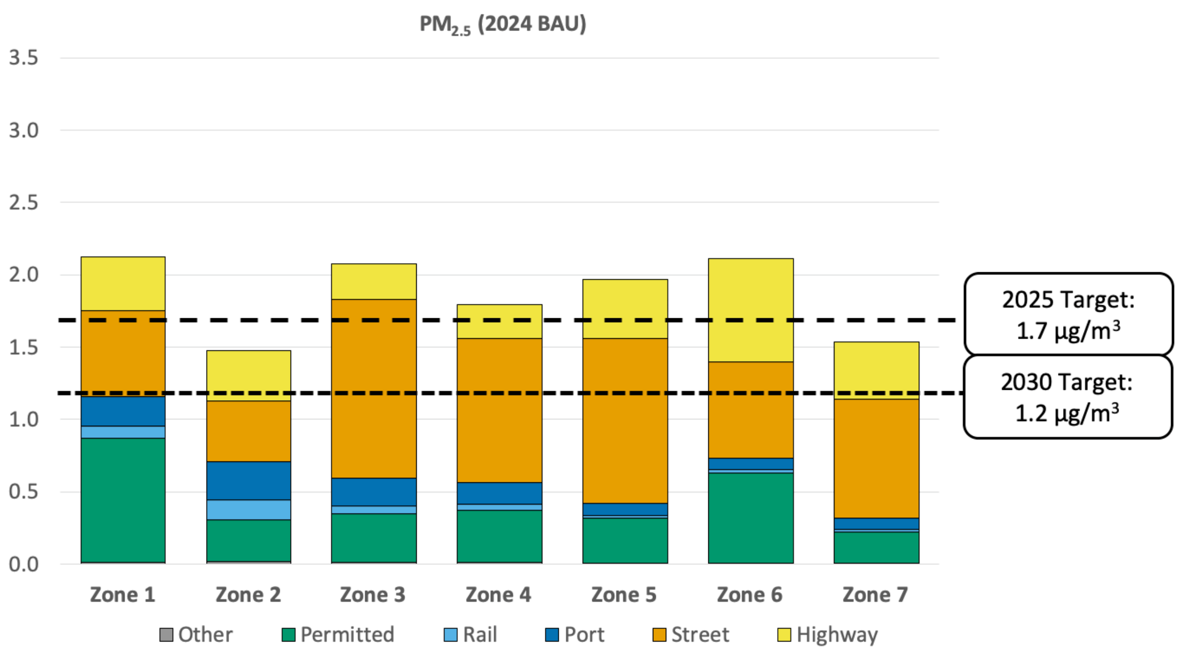


*Figure 5-16. Targets and Source Apportionment for $PM_{2.5}$ in 2024 (Without the Plan)*

## SUMMARY OF MODELED CHANGES, 2017 TO 2024 (WITHOUT THE PLAN)

This section describes key differences between the 2024 without-Plan scenario, and the 2017 base case, with respect to the emissions and impacts from modeled pollutants.

### Diesel PM

**On-road Trucks.** Emissions and impacts from on-road sources of diesel PM (orange and yellow bars in Figure 5-11) are dramatically reduced in 2024. These reductions occur because of "fleet turnover" — newer vehicles replacing older ones to meet the 2023 compliance requirements of CARB's Truck and Bus Rule.[32] CARB's model for on-road car and truck emissions (EMFAC2017), which was used for this Plan, forecasts 100% compliance with the Truck and Bus Rule by 2023. Senate Bill 1,[33] which makes in-state vehicle registration conditional on compliance, will support this.

**Ocean-Going Vessels.** This assessment forecasts growth in container shipping using CARB's forecasts.[34] CARB's forecasts call for about a 5% compound annual container ship activity growth rate between 2017 and 2030. Because most Ocean-Going Vessels (OGV) that call on the Port are container ships, OGV emissions and impacts generally will, absent any reductions, grow at this rate. The 2024 forecast without the Plan assumes that OGV emissions will grow at this rate. The Air District will continue to work with CARB on refining base year and future year emissions estimates.

**Harbor Craft.** Cleaner engines will be responsible for about a 30% decrease in diesel PM emissions from tugboats between 2017 and 2024, without the Plan. This is based on a bottom-up forecast of changes in tug fleet emissions, assembled by consultant Ramboll at the request of the Air District. CARB's Commercial Harbor Craft (CHC) Regulation requires tugs to have Tier 2 or cleaner engines by 2022. The 2024 "without Plan" scenario envisions compliance by all tugs that do not yet meet or exceed this requirement. It also assumes that the requirement will not be surpassed, except by those vessels that already surpass it.

Between 2017 and 2019, the Air District provided incentive funding for Tier 3 repowers of two tugs frequently serving the Port of Oakland, resulting in reduction of approximately -1 ton/year in diesel PM in the West Oakland modeling domain. This surpassed the regulatory standard.

**Rail.** In 2024, without the Plan, emissions forecasts for the UP rail yard and for passenger rail considered growth and fleet turnover, consistent with CARB's forecasts. At the UP rail yard, emissions

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[32] https://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.
[33] https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1.
[34] Base year and forecasted emissions for ocean-going vessels at berth were provided by CARB to BAAQMD via email communication on July 12, 2019. These emissions are consistent with the 2019 Draft Ocean-Going Vessels At Berth Inventory. (A final version will be publicly posted 60 days before the CARB Board hearing for the At Berth Regulation Amendment.)

from line haul locomotives, switchers, and cargo handling equipment reflect CARB's growth and fleet turnover projections.[35]

### Cancer Risk

The maps of diesel PM and cancer risk in Figure 5-9 look very similar. This is because diesel PM contributes over 90% of the cancer impacts caused by toxic air contaminants in our model. Because of the large contribution of diesel PM to overall cancer risk from air pollution, all the reductions in diesel PM described above will similarly contribute to reducing cancer risk in West Oakland.

**Permitted Sources.** The main differences between the diesel PM and cancer risk maps in Figure 5-9 are visible spots associated with permitted stationary sources at two facilities: EBMUD and Schnitzer Steel. These facilities emit toxics other than diesel PM.[36] There is also a less obvious difference due to gasoline exhaust emissions, mostly from light heavy-duty trucks, which add a small increment of cancer risk spread across West Oakland. Toxic emissions from EBMUD and Schnitzer Steel will be reduced by Air District Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities, adopted in November 2017. Rule 11-18 requires existing facilities with high toxic risk in the Bay Area to reduce their risk to below 10 per million or install the cleanest available technologies. The Air District organized facilities into two categories to prioritize implementation: Phase I and Phase II. Prior to this Plan, both facilities were listed as Phase II facilities in the implementation schedule.[37] In 2024, without the Plan, a small amount of growth (1% annual) is assumed to occur, based on regional growth rates, but no reduction in emissions due to Rule 11-18. As discussed in Chapter 6, this Plan accelerates the Rule 11-18 implementation schedule for Schnitzer Steel.

### $PM_{2.5}$

**Highway and Street: Brake Wear, Tire Wear, and Road Dust.** Exhaust emissions from on-road vehicles are forecast to decline as gasoline and diesel engines continue to become cleaner. But even as engines become cleaner, overall $PM_{2.5}$ emissions from highways and surface streets are projected to increase. These projected increases in $PM_{2.5}$ are from brake wear, tire wear, and road dust, which grow as the number of miles that Bay Area residents drive continues to increase. Although emissions from brake and tire wear and from road dust are uncertain, our current best projections indicate that, with increasing vehicle-miles-driven on highways and streets, these types of emissions from on-road vehicles will continue to climb in future years unless additional actions are taken to reduce them.

**Permitted Sources.** Reductions from the Dynegy plant decommissioning are included in the 2024 projection. Since this plant is not close to residents, the $PM_{2.5}$ reduction for impact zones is modest.

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[35] Cargo handling equipment emissions at the UP railyard are grown consistently with CARB's 2016 SIP Inventory v1.05. Due to the availability of updated projections, switcher emissions at the UP rail yard, line haul locomotives, and passenger rail emissions are grown consistently with the projections found in CARB's 2019 SIP Inventory v1.00.

[36] The top non-diesel toxic air contaminants (TACs) from EBMUD are formaldehyde, chloroform, and benzene. Top non-diesel TACs from Schnitzer Steel are polychlorinated biphenyls (PCB), hexavalent chromium, and benzene.

[37] Discussion of Phase I and Phase II facilities and the Rule 11-18 procedures have been posted on the Air District's web site: Regulation 11, Rule 18 Implementation Procedures, Bay Area Air Quality Management District, April 2018, http://www.baaqmd.gov/community-health/facility-risk-reduction-program.

**Port and Rail**. Most of the modeled $PM_{2.5}$ reductions from Port and Rail sources come from diesel combustion, so the mechanisms discussed above (for diesel PM) also apply here.

The emissions in future year 2024 (without the Plan) are listed in Table 5-3. As in Table 5-2, in Table 5-3, emissions are listed both for sources included in the community-scale modeling and for sources that were not included in the community-scale modeling but only inventoried. This inventory of emissions reflects best available current forecasts. Like all emissions inventories, these are estimates and subject to change as more and better information becomes available. As in Table 5-2, in Table 5-3, the cancer risk weighting applied to toxic emissions does not produce an estimate of cancer risk; rather, it provides a way to rank emissions based on pollutant toxicity as well as the amount emitted.

*Table 5-3. 2024 West Oakland Emissions Summary in tons per year (with cancer risk weighting for toxics)*

| Source | $PM_{2.5}$ | Diesel PM | Cancer Risk-Weighted TACs[38] |
|---|---|---|---|
| **West Oakland sources included in community-scale modeling** | | | |
| **Highway** | **19.77** | **0.30** | **332** |
| Non-truck vehicles | 12.88 | 0.07 | 159 |
| HD/Medium HD trucks | 0.94 | 0.16 | 120 |
| Light HD trucks | 0.42 | 0.07 | 52 |
| Road dust | 5.53 | – | – |
| **Street** | **21.97** | **0.18** | **204** |
| Non-truck vehicles | 5.02 | 0.03 | 87 |
| HD/Medium HD trucks | 0.77 | 0.08 | 60 |
| Light HD trucks | 0.35 | 0.07 | 57 |
| Road dust | 15.83 | – | – |
| **Port** | **25.24** | **17.15** | **12,769** |
| OGV maneuvering | 5.61 | 5.57 | 4,145 |
| OGV berthing | 10.29 | 5.24 | 3,901 |
| Harbor craft | 3.07 | 3.16 | 2,355 |
| Dredging | 0.80 | .79 | 592 |
| Bunkering | 0.25 | 0.26 | 190 |
| Port trucks | 0.66 | 0.12 | 89 |
| Road dust | 2.53 | – | – |
| Cargo handling | 1.78 | 1.74 | 1,293 |
| OGRE Railyard | 0.08 | 0.08 | 62 |
| BNSF Railyard | 0.18 | 0.19 | 143 |
| **Rail** | **1.84** | **1.96** | **1,462** |
| Rail lines | 0.70 | 0.74 | 554 |
| UP Railyard | 1.12 | 1.22 | 909 |

[38] Appendix A describes the method applied for cancer risk weighting of toxic air contaminants (TACs).

| Source | $PM_{2.5}$ | Diesel PM | Cancer Risk-Weighted TACs[38] |
|---|---|---|---|
| **Permitted** | **16.94** | **0.30** | **1,185** |
| Schnitzer (stationary) | 5.53 | – | 900 |
| EBMUD | 4.28 | 0.09 | 117 |
| Dynegy | 0.00 | – | – |
| Pinnacle Ag Services | 1.62 | – | – |
| Sierra Pacific | 1.00 | – | – |
| CASS | 0.78 | – | < 1 |
| California Cereal | 0.63 | – | < 1 |
| CA Waste (10th St) | 0.51 | – | – |
| Other | 2.59 | 0.21 | 167 |
| **Other** | **1.36** | **1.33** | **987** |
| Ferries | 0.92 | 0.92 | 688 |
| Schnitzer (ships) | 0.37 | 0.37 | 277 |
| Schnitzer (trucks) | 0.04 | < 0.01 | < 1 |
| Truck-related businesses | 0.03 | 0.03 | 21 |
| **Total** | **87.09** | **21.22** | **16,939** |
| ***West Oakland sources not included in community-scale modeling*** | | | |
| **Area** | **33.83** | **–** | **439** |
| Commercial cooking | 23.90 | – | 10 |
| Food and Agriculture | – | – | 13 |
| Residential fuel combustion | 6.99 | – | 16 |
| Commercial/industrial fuel combustion | 2.39 | – | 18 |
| Industrial processes | 0.03 | – | 192 |
| Solvent utilization | – | – | 135 |
| Consumer products | – | – | 44 |
| Other area sources | 0.50 | – | 11 |
| **Non-road** | **11.71** | **1.72** | **1,523** |
| Construction equipment | 2.39 | 1.42 | 1,074 |
| Construction dust | 7.70 | – | – |
| Commercial/industrial equipment | 0.97 | 0.21 | 205 |
| Lawn & garden equipment | 0.13 | 0.02 | 77 |
| Transport refrigeration units (TRUs) | 0.07 | 0.07 | 57 |
| Other non-road sources | 0.46 | 0.00 | 109 |
| **Total** | **45.54** | **1.72** | **1,962** |
| **Grand Total** | **132.63** | **22.94** | **18,901** |

# Chapter 6 – Strategies and Implementation

To implement the Plan, government agencies, community members, business owners, and other stakeholders need to commit resources and funding. Over the past fifteen years, a variety of public agencies have adopted plans that directly or indirectly affect air quality and quality of life in West Oakland (see Appendix D). The Plan builds on these planning activities by identifying 84 Strategies and four Further Study Measures that add to or extend existing plan actions. The Strategies and Further Study Measures are listed in Table 6-4 and Table 6-5 at the end of this chapter, along with the collaborating authorities and implementation schedule.

As this Plan is implemented, the Strategies and Further Study Measures will be refined, and specific elements fleshed out. Public agencies will need to commit resources to the Strategies and Further Study Measures to conduct further investigation to understand authority, legality, effectiveness, and feasibility. Over the lifetime of the Plan, if additional feasible strategies are identified, these strategies will be reported in the annual reports to CARB.

## KEY AGENCIES WITH ROLES IMPLEMENTING THE PLAN

### Air District

The Air District is the regional agency responsible for assuring clean air in the nine counties that surround the San Francisco Bay (except northeastern Solano and northern Sonoma counties). The Air District writes and implements air quality plans, adopts and enforces regulations to control air pollution from stationary sources, offers incentives to government agencies, businesses, and individuals to voluntarily reduce air pollution, engages with communities and provides technical and policy guidance regarding air quality, and manages the Spare the Air program.

### City of Oakland

The City of Oakland is the local agency responsible for land-use and transportation decisions. The City Council makes land-use decisions by adopting general and specific plans, zoning regulations, and certifying environmental reports for land-use projects, such as housing, commercial, and industrial developments.

### Metropolitan Transportation Commission (MTC)

The Metropolitan Transportation Commission (MTC) is the regional agency responsible for transportation planning, financing, and coordinating for the nine-county San Francisco Bay Area. MTC works with other public agencies in the Bay Area to support the streets, roads, highways, transit systems, and other transportation resources. MTC is currently working on Plan Bay Area 2050. Plan Bay Area 2050 is a long-range plan for the future of the nine-county region, focusing on the economy, the environment, housing, and transportation. Plan Bay Area 2050 will identify West Oakland as a designated Priority Development Area (PDA), which means that it has convenient public transit service prioritized by local government for housing, jobs, and services. As a PDA, West Oakland has access to dedicated funding for plans and infrastructure improvements, and MTC recognizes PDAs as important locations for growth that will help address the region’s climate emission reduction goals.

### Port of Oakland

The Port of Oakland is the local agency responsible for managing the Oakland Seaport, Oakland International Airport, and Jack London Square. The City of Oakland's Charter establishes the Port of Oakland as an independent department with its own governing board.

### Alameda County Public Health Department

The Alameda County Public Health Department is the county department responsible for providing public health services. The Health Department delivers services such as access to quality medical care services, disease prevention education and control, community education and outreach, and health policy development.

### California Air Resources Board (CARB)

CARB is the state agency responsible for controlling emissions from mobile sources and consumer products (except where federal law preempts CARB's authority), controlling toxic emissions from mobile sources, controlling greenhouse gases from mobile and stationary sources, developing fuel specifications, and coordinating State-level air quality planning strategies with other agencies. CARB is also responsible for establishing the state's air quality standards to protect human health.

### Alameda County Transportation Commission

The Alameda County Transportation Commission (Alameda CTC) is the county agency responsible for managing the county's one-cent transportation sales tax funds and funding transportation projects and programs. The Alameda CTC is responsible for delivering the County's bicycle, pedestrian, highway improvements, road, and transit projects.

### California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) is the state agency responsible for maintaining and improving state highways and transportation projects.

## STRATEGIES

The Steering Committee is recommending 84 Strategies based on its local knowledge of their community, the health issues confronting residents, air pollution monitoring data, and the Air District's modeling of pollution concentrations and cancer risks. This list of Strategies was consolidated from an initial, broader list that included many similar concepts. These Strategies include lowering emissions from the most important sources in West Oakland, reducing exposure by filtering pollutants, and moving pollution sources away from residents. In this section, an overview of the Strategies by category are presented along with the key authorities and examples. Improvement and expansion of enforcement programs are described in Chapter 7.

### Land Use Strategies

The Steering Committee identified air pollution issues closely tied to land use decisions. Non-conforming or incompatible land uses can result in increased exposure, particularly when industrial facilities or truck routes are sited near residences.

The City of Oakland adopted the West Oakland Specific Plan to facilitate development in West Oakland. Consistent with the West Oakland Specific Plan, the City plans to identify locations to relocate heavy industrial businesses currently in West Oakland (Strategy #4). Relocating two recycling companies (California Waste Solutions and CASS, Inc.) to the former Oakland Army Base has been the subject of community concerns. Relocating these two firms by the end of 2024, if not sooner, will reduce exposure from both their onsite operations and from trucks traveling and idling on local streets within Zones 1 and 6 (Strategy #1).

In addition to relocating polluting businesses out of residential areas, the Steering Committee also identified strategies to relocate truck yards and truck routes away from residences (Strategy #5). Exposure from trucks can be reduced by shifting and enforcing truck routes and hours within the community and enforcing existing restrictions on truck parking, truck idling (Strategy #9). Exposure from open burning and pollution from industrial sources also may be reduced with better agency coordination and updated enforcement procedures (Strategy #24).

The Steering Committee also identified strategies to support emissions reductions at the Port, such as adopting an Electrical Infrastructure Plan for the maritime waterfront areas of Oakland (Strategy #19) and working with other agencies and local partners to create a Sustainable Freight Advisory Committee to address air quality issues (Strategy #21).

In addition, the Steering Committee identified two Strategies to plant vegetative borders as living filters between sources of PM and residences, parks, schools, and community centers. The first is a community participatory design process being led by the WOEIP for a biofilter system for the Prescott neighborhood (Strategy #12). The second is a recommendation that the City of Oakland develop a comprehensive urban canopy and vegetation plan for West Oakland that identifies the locations where trees can be added, such as parks and along Caltrans' highway and freeway rights-of-way, and that provides for the long-term maintenance of trees (Strategies #10, 16).

### Mobile Source Strategies

The Steering Committee identified that most of the community's air pollution issues stem from mobile sources in and within the vicinity of the community. Mobile sources include on-road and off-road vehicles, marine, and locomotives. Various agencies share authority over mobile sources of air pollution.

The City of Oakland has the authority to set truck routes and parking policies. Proximity to truck emissions can be reduced by keeping trucks on designated routes and out of residential neighborhoods. For example, the City adopted the West Oakland Truck Management Plan to reduce the effects of transport trucks on local streets in West Oakland. For the Plan, the City of Oakland will implement strategies that address air pollution impacts from transportation (Strategies #33-35).

The Steering Committee also identified the need for improving modes of transportation in West Oakland. For example, the Steering Committee emphasized the need for completion of the transit proposals from the West Oakland Specific Plan, particularly increases in current AC Transit service and the introduction of new direct service to Downtown Oakland akin to the successful Broadway Shuttle

(Strategy #45). In addition, the Steering Committee recognizes that improving the design and safety of the local streets will help to indirectly reduce emissions by encouraging residents to walk or ride bicycles and scooters instead of driving cars (Strategy #56). Other mobile strategies include working with Alameda CTC to improve bicycling and pedestrian infrastructure in West Oakland (Strategy #44) and with MTC to extend car sharing to low-income individuals and groups (Strategy #46).

At the Port, the Steering Committee recommended the following strategies to reduce emissions from movement of inbound and outbound freight on cargo equipment, port trucks, locomotives, and ocean-going ships and harbor craft in the San Francisco Bay:

- Working with the City of Oakland to award long-term leases to vendors that will deliver trucker services (including mini-market and convenience stores, fast food and fast casual restaurants), and parking to keep trucks off West Oakland streets (Strategy #42);
- Studying the effects on truck flow and congestion due to increasing visits from larger container ships, the feasibility of an off-terminal container yard that utilizes zero-emission trucks to move containers to and from the marine terminals, and the potential efficiency gains from increasing the number of trucks hauling loaded containers on each leg of a roundtrip to the Port (Strategy #43); and
- Studying the feasibility of using electric switcher locomotives at the two Port railyards (Strategy #65).

CARB plays an important role in implementing Plan Strategies. CARB regulates motor vehicle fuel specifications, emission standards for on- and off-road vehicles, and consumer product emissions. One of CARB's relevant regulatory authorities is to adopt measures to reduce emissions of toxic air contaminants from mobile sources, known as Airborne Toxic Control Measures (ATCM).[39] These regulatory measures include emissions limits, process requirements, and/or specify low emission technology. Much of the progress to-date in improving air quality in West Oakland is due to compliance with CARB's existing diesel particulate matter ATCMs and new engine standards. CARB is proposing a suite of amendments to existing ATCMs and adoption of new programs to further reduce emissions of diesel PM.

Several of the Strategies will require CARB to consider and to adopt new or amended regulations. Prior to starting formal regulatory proceedings, CARB staff will need to undertake studies of some of these Strategies.

- CARB develops a new Advanced Clean Truck Regulation and amendments to the existing drayage truck regulations to increase the number of zero-emission trucks operating in West Oakland (Strategy #29);
- CARB, in partnership with the Steering Committee, WOEIP, and the Air District, conducts a pilot study to assess local impacts from idling trucks and buses. The Steering Committee, WOEIP and

[39] California Health and Safety Code § 39650 et seq.

the Air District advocate for "Clean Idle" trucks and buses to idle no more than 5 minutes when in West Oakland (Strategy #30);

- CARB develops amendments to the transport refrigeration unit (TRU) regulation to transition the TRU fleet to zero emission operations by requiring both zero-emission technology and supporting infrastructure (Strategy #31);
- CARB develops amendments to the existing cargo handling equipment regulation, which includes yard trucks, rubber-tired gantry cranes, and top handlers, that may reduce idling and transition the various types of equipment to zero emission operation (Strategy #32);
- CARB develops regulations to expand California-specific standards for new light-duty vehicles, impacting 2026 and later model year vehicles, to increase the number of new zero emission and plug-in hybrid electric vehicles sold in California and increase the stringency of fleet-wide emission standards for greenhouse gases and criteria pollutants (Strategy #34);
- CARB develops new standards for small off-road engines (SORE), which are spark-ignition engines rated at or below 19 kilowatts and used primarily for lawn, garden, and other outdoor power equipment (Strategy #35);
- CARB develops amendments to the At-Berth ATCM to further reduce ship emissions at berth by strengthening the regulation to cover more vessel visits and types of ships (Strategy #60);
- CARB develops amendments to the Commercial Harbor Craft Air Toxics Control Measure to achieve additional control of harbor craft emissions. The Steering Committee, WOEIP and the Air District advocate for early compliance by Harbor Craft operating near West Oakland (Strategy #61); and
- CARB develops regulations to reduce idling emissions from locomotives at rail yards, with an emphasis on reducing emissions from locomotives not pre-empted under the federal Clean Air Act. The Steering Committee, WOEIP and the Air District advocate for early compliance for locomotives operating in West Oakland (Strategy #62).

### Stationary Source Strategies

The Steering Committee identified several strategies to reduce exposure of emissions from stationary sources of pollution. Stationary sources in West Oakland include the East Bay Municipal Utility District wastewater treatment plant; recycling facilities like Schnitzer Steel, CASS, and California Waste Solutions; gas stations; back-up diesel generators; and auto-body shops.

The Air District is the regional agency responsible for assuring clean air in the San Francisco Bay Area. For the Plan, the Air District will implement strategies that include enhancing existing and adopting new regulations, enhancing compliance and enforcement, funding emissions- and exposure-reducing projects, and working with community and agency partners to advocate for, study, and implement innovative ways to decrease emissions and exposure to emissions in West Oakland.

A primary Strategy to control two significant stationary sources of toxic air contaminants, Schnitzer Steel and the EBMUD Wastewater Treatment Plant, are health risk assessments scheduled in 2020 and 2021 under the Air District's Rule 11-18 (Strategy #69). The Air District's Rule 11-18 is a health risk-based rule that was adopted in 2017 to enhance the Air District's existing Toxic "Hot Spots" Program. Compared to the Hot Spots Program, which is often called the "AB 2588 Program" after the enacted bill, Rule 11-18 sets risk action levels that are significantly more stringent and health-protective. Facilities subject to Rule 11-18 will be evaluated through a health risk assessment and are required to develop and implement a facility-specific risk reduction plan if risks exceed specified action levels. Additional controls at these two facilities will be guided by the results of the risk assessments. For more information on the Rule 11-18 implementation process, visit http://www.baaqmd.gov/community-health/facility-risk-reduction-program.

The Air District also will consider potential amendments to Rule 6-4, Metal Recycling and Shredding Operations, and Rule 12-13, Foundry and Forging Operations, to further reduce fugitive particulate matter emissions (Strategy #68). In addition, the Air District will consider other potential rule amendments related to the AB 617 schedule for expedited implementation of Best Available Retrofit Control Technology. As required by AB 617, the Air District adopted a schedule for implementation of Best Available Retrofit Control Technologies, which identified potential rule amendments for further development and consideration. This schedule includes potential amendments to Rule 8-5 to further reduce emissions from tanks used for organic liquid storage. Emissions from organic liquid storage tanks subject to Rule 8-5 may be further reduced by these potential rule amendments.

### Health Programs Strategies

The Steering Committee identified several strategies to improve health in the West Oakland community. As discussed in Chapter 2, West Oakland residents face higher rates of asthma, cardiovascular disease, premature death, and other poor health outcomes compared to other regions in the Bay Area.

The Alameda County Public Health Department is the county department responsible for providing public health services. For the Plan, the Public Health Department will implement strategies such as those that help the community access health services and educate the community about health risks, treatment, and prevention (Strategies #79, #80, #81).

Installation of high-efficiency filtration systems at schools, community centers, and retirement homes have been identified by the Steering Committee as means for reducing exposure of high pollution levels among sensitive populations (Strategy #75). As an initial step in completing this Strategy, by 2021, the Air District will develop a funding program to assist with the installation of filtration systems. The Air District recently approved funding for an initial effort to install filtration systems at schools located within West Oakland and other AB 617 communities. The lessons learned from this pilot effort will be used to expand installations to community centers, retirement homes, and other appropriate facilities.

A complementary Strategy by the City of Oakland will be the implementation of recent changes to the State of California's Building Energy Efficiency Standards. Beginning with building permit applications submitted on or after January 1, 2020, the air ventilation systems for residential buildings of four or more habitable floors will incorporate high-efficiency air filters to reduce exposure from outdoor air pollutants (Strategy #78).

## FURTHER STUDY MEASURES

The Co-leads and the Steering Committee devoted considerable time and effort to identifying the proposed strategies shown in Table 6-4, and the resulting list of actions is expected to improve air quality in West Oakland. However, it is quite likely that additional strategies or research questions will emerge during public review of the Draft Plan, as well as during the long-term implementation of this Plan. For example, further work will be needed to identify effective measures to reduce local impacts of backyard wood fires, refinements or ideas for additional measures may emerge as the various collaborating agencies implement the Plan measures. Additional research may be needed to better target our measures such as analyzing appropriate road dust emission rates for local streets or investigating potential rulemaking to limit fugitive dust from construction activity. A list of anticipated future study measures is presented in Table 6-5. The Co-leads will track such unresolved or emerging issues to make sure the Plan continues to include as robust a set of measures as possible. Any additional measures, research projects, or other emerging issues will be discussed with the Steering Committee and addressed in the annual reports submitted to CARB.

## IMPLEMENTATION

### Incentives

The Plan calls on multiple agencies to commit resources to implement the strategies. Incentive programs work to complement regulations to achieve additional emission reductions and accelerate the timing of reductions. Specifically, many of the strategies require incentive dollars awarded to businesses and equipment owners, individuals, and local government agencies to leverage private investment, accelerate the turnover of older equipment, and encourage the voluntary purchase of cleaner equipment and vehicles.

We have been making progress to reduce air pollution in West Oakland through incentives. Since 2009, the Air District has awarded over $39 million in incentive dollars for particulate filters and truck replacements at the Port. Port tenants, tug operators, and local drayage trucking firms have already taken the initial steps to reduce emissions through retrofitting 13 gantry cranes, repowering five tugboats, and participating in demonstrations of zero-emission trucks and equipment. (See Appendix D for a list of grant programs and a sample list of projects the Air District has funded in West Oakland over the next five years.)[40]

While the success of incentive funding requires willingness by equipment owners to apply for assistance, the use of public funding to accelerate the deployment of low- and zero emission engines,

[40] See http://www.baaqmd.gov/funding-and-incentives for additional information about grant programs.

equipment, and trucks is a critical tool for delivering emissions reductions in West Oakland. Based on current sources of funding, the Air District anticipates the following:

- Owners of tugboats and barges operating at the Port of Oakland voluntarily upgrade to cleaner engines in at least one tug or barge annually through 2025 (Strategy #50);
- The railways operating in or through West Oakland and the Port of Oakland voluntarily replace one locomotive with a U.S. EPA Tier 4 version annually (Strategy #51);
- Owners of trucks that are operated in or through West Oakland and the Port of Oakland voluntarily replace eight diesel trucks with zero emission trucks annually (Strategy #52);
- Owners of cargo-handling equipment and other off-road equipment operating within West Oakland or at the Port of Oakland voluntarily upgrade to cleaner engines or hybrid and zero-emission drivetrains annually (Strategy #54); and
- West Oakland residents voluntarily retire 100-130 qualifying older automobiles annually through 2025 with financial assistance from the Air District's Vehicle Buy Back and the Clean Cars for All programs (Strategy #48).

Some equipment owners believe these incentive programs can be onerous for small operators. The Air District will work with stakeholders to help potential grantees meet eligibility requirements, enter into funding contracts, and meet reporting requirements during the life of the contract. In addition, the Air District will work with CARB to streamline the grant application process and requirements for various projects. Furthermore, the Air District will increase outreach and assistance to individual owner-operators and small companies in West Oakland by providing coordinating workshops with the Steering Committee, the City of Oakland, the Port of Oakland, and CARB (Strategy #41).

### Advocacy

After the Plan is adopted, the Co-leads and the Steering Committee will continue to advocate for the implementation of the Plan. The Steering Committee will meet regularly to review plans, evaluate programs and budgets, and make recommendations. In addition, Steering Committee members, community members, business owners, and other stakeholders will likely need to communicate with the collaborating agencies to ensure their continued support for Plan strategies and the resources needed for implementation.

## QUANTIFYING BENEFITS OF PLAN STRATEGIES

### Baseline Targets and Future Year 2024 With the Plan

This section continues to address the question posed in Chapter 5, “How much emissions must be reduced, and from what sources to meet the community’s goals?” Specifically, this section presents modeled results to show how the Plan measures move us toward meeting the community’s equity targets. The assessments in this section show 2024 impact forecasts without the Plan and 2024 forecasts with the Plan strategies included. Key differences are highlighted between the 2024 forecast of impacts without the Plan and the 2024 forecast of impacts with the Plan.

This section also presents the emission reduction benefits associated with strategies in the Plan. These emission reduction benefits provide the emission reduction targets called for in CARB's Community Air Protection Blueprint. However, these emission reduction targets do not meet the Plan's equity-based targets presented in Chapter 4: additional emission reductions, yet to be identified, are needed to achieve the Plan's goals.

## Diesel PM

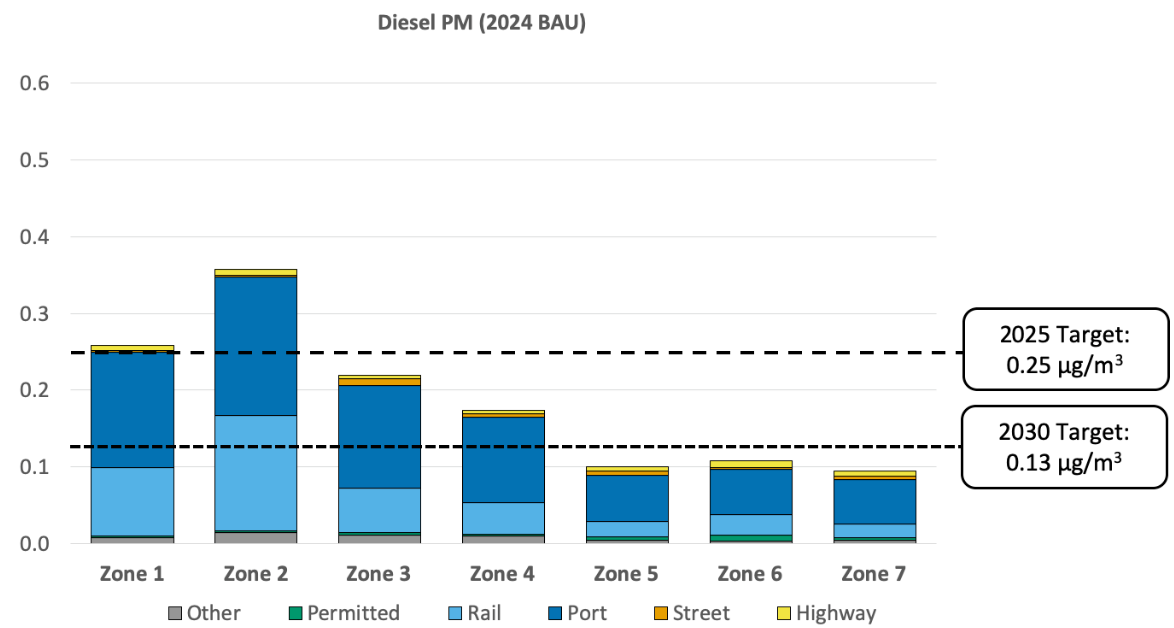



*Figure 6-1. Targets and Source Apportionment for Diesel PM in 2024 Without the Plan*

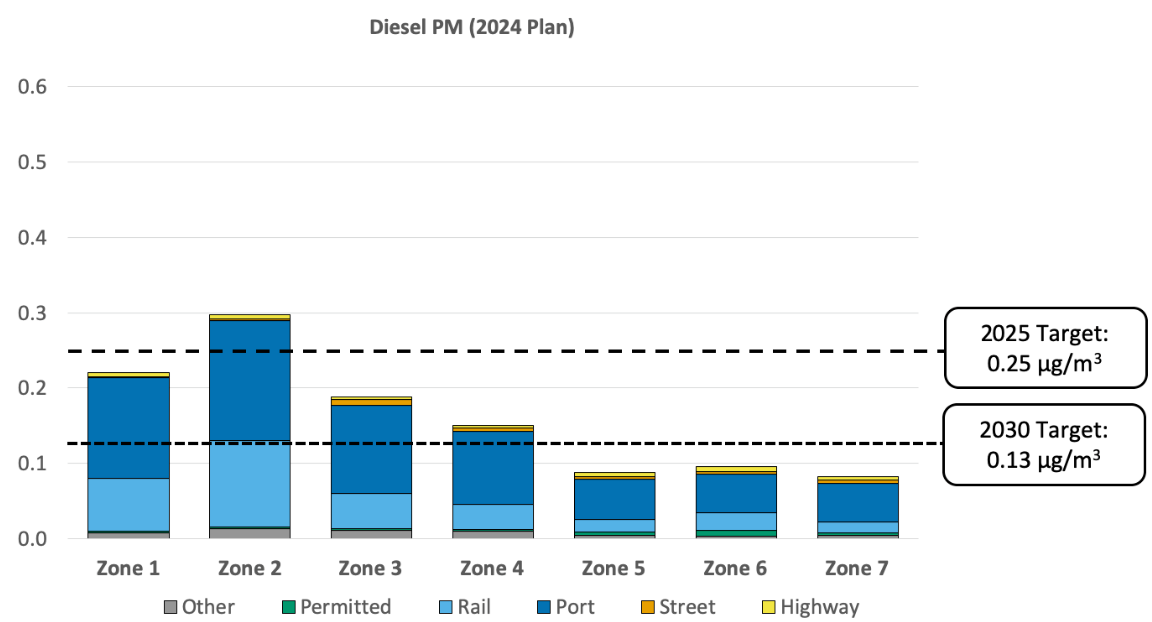



*Figure 6-2. Targets and Source Apportionment for Diesel PM in 2024 With the Plan*

Figure 6-1 shows modeled levels of diesel PM in 2024 without the Plan at each of the impact zones. Figure 6-2 shows the same information with the Plan. Impact reductions from the Plan—progress toward the Plan's equity-based targets—can be seen by comparing these two figures. Changes in diesel PM levels from the categories of modeled emission sources of diesel PM can also be compared between the bar charts in these figures.

**On-road Trucks.** As discussed in Chapter 5, emissions and impacts from on-road sources of diesel PM (orange and yellow bars in Figure 6-1) are dramatically reduced in 2024 relative to 2017 from fleet turnover and rules on the books. Some added benefits will be realized if additional CARB regulations, which would be part of this Plan, are adopted such as the Advanced Clean Trucks and Heavy-Duty Inspection and Maintenance rules.[41]

**Ocean-Going Vessels.** This Plan forecasts growth in container shipping using CARB's forecasts, which estimates about a 5% compound annual container ship activity growth rate between 2017 and 2030. Because most Ocean-Going Vessels (OGV) that call on the Port are container ships, OGV emissions and impacts generally will, absent any reductions, grow at this rate.[42] This Plan assumes that OGV "maneuvering" will grow at this rate. In contrast, diesel PM from the auxiliary engines that OGVs run while at berth will see reductions, resulting from increased use of shore power (plugging in) while at berth. The "with Plan" scenario assumes reductions from amendments to CARB's At-Berth regulation. These regulatory concepts have not been finalized or adopted by CARB's Board, and the emissions reduction estimates are draft and subject to change. As with any regulation, achieving expected reductions requires ongoing implementation efforts, including enforcement and, in some cases, new infrastructure. The Air District and CARB will continue to work together to estimate emissions reductions from this and other CARB strategies in West Oakland. For more information on the regulatory development process, visit https://ww3.arb.ca.gov/ports/shorepower/shorepower.htm.

**Harbor Craft.** The Air District has incentivized repowers of three more assist tugs, in addition to the two discussed in the previous chapter. These repowers, scheduled for completion before 2022, will result in an additional reduction of approximately -0.7 tons per year of diesel PM emitted in the modeling domain. Because the three tugs do not need to be repowered to meet the requirements stipulated by the existing harbor craft regulations (for 2022), we attribute these additional reductions to the Plan.

**Rail.** This Plan estimates that diesel PM emitted by switcher locomotives handling containerized freight at the UP railyard will be reduced by 0.32 tons between 2017 and 2024, while total diesel PM emissions at the UP railyard will decrease by 0.27 tons. These changes represent a 37% reduction in diesel PM emissions from UP switchers and a 24% reduction in total diesel PM emissions at the UP

[41] These regulatory concepts have not been finalized or adopted by CARB's Board, and the emissions reduction estimates are draft and subject to change.

[42] Base year and forecasted emissions for ocean-going vessels at berth were provided by CARB to BAAQMD via email communication on July 12, 2019. These emissions are consistent with the 2019 Draft Ocean Going Vessel At Berth Inventory. (A final version will be publicly posted 60 days before the CARB Board hearing for the At Berth Regulation Amendment.)

railyard, relative to 2017. To derive these estimates, emission reductions associated with AB 617-funded upgrades of five switcher engines to Tier 4 were calculated and applied to existing 2024 emission estimates for the railyard without the Plan. Note that total diesel PM emissions at the UP Railyard include emissions from line haul locomotives and cargo handling equipment as well as switchers; anticipated growth in emissions from cargo handling equipment somewhat offsets the emission reductions achieved through switcher replacements.

**Emission Reductions.** Columns on the left in Table 6-1 list diesel PM emission totals by source category for the base year and for 2024 with and without the Plan. Columns on the right list differences in diesel PM emissions: 2024 forecasts with and without the Plan are compared to the base year, and the 2024 forecast with the Plan is compared to 2024 without the Plan. The 2024 Plan versus without the Plan comparison shows the benefits, and emission-reduction targets, of the Plan by source category. The total diesel PM emission benefits of the Plan in 2024 relative to 2024 without the Plan is about -2.4 tons per year (-10.5%). The reductions in diesel PM in 2024 with the Plan relative to the base year is about -7.6 tons per year (-27%).

*Table 6-1. West Oakland Diesel PM Emissions Summaries and Differences (tons per year)*

| Source | Emissions (tons per year) | | | Difference (tons per year) | | |
|---|---|---|---|---|---|---|
| | 2017 Base | 2024 no Plan | 2024 with Plan | No Plan-Base | Plan-Base | Plan-No Plan |
| ***West Oakland sources included in community-scale modeling*** | | | | | | |
| **Highway** | **2.12** | **0.30** | **0.24** | **-1.82** | **-1.88** | **-0.06** |
| Non-truck vehicles | 0.19 | 0.07 | 0.07 | -0.12 | -0.12 | > -0.01 |
| HD/Medium HD trucks | 1.84 | 0.16 | 0.10 | -1.68 | -1.74 | -0.06 |
| Light HD trucks | 0.09 | 0.07 | 0.07 | -0.02 | -0.02 | > -0.01 |
| **Street** | **2.07** | **0.18** | **0.15** | **-1.89** | **-1.92** | **-0.03** |
| Non-truck vehicles | 0.09 | 0.03 | 0.03 | -0.06 | -0.06 | > -0.01 |
| HD/Medium HD trucks | 1.88 | 0.08 | 0.05 | -1.80 | -1.83 | -0.03 |
| Light HD trucks | 0.09 | 0.07 | 0.07 | -0.02 | -0.02 | > -0.01 |
| **Port** | **15.87** | **17.15** | **15.22** | **+1.28** | **-0.64** | **-1.92** |
| OGV maneuvering | 3.84 | 5.57 | 5.57 | +1.73 | +1.73 | – |
| OGV berthing | 4.31 | 5.24 | 3.93 | +0.93 | -0.38 | -1.31 |
| Harbor craft | 3.94 | 3.16 | 2.57 | -0.77 | -1.37 | -0.59 |
| Dredging | 1.16 | 0.79 | 0.79 | -0.37 | -0.37 | – |
| Bunkering | 0.28 | 0.26 | 0.26 | -0.03 | -0.03 | – |
| Port trucks | 0.50 | 0.12 | 0.10 | -0.38 | -0.40 | -0.02 |
| Cargo handling | 1.58 | 1.74 | 1.74 | +0.16 | +0.16 | – |
| OGRE Railyard | 0.08 | 0.08 | 0.08 | +0.01 | +0.01 | – |
| BNSF Railyard | 0.18 | 0.19 | 0.19 | +0.01 | +0.01 | – |
| **Rail** | **2.20** | **1.96** | **1.59** | **-0.23** | **-0.61** | **-0.38** |
| Rail lines | 1.09 | 0.74 | 0.74 | -0.34 | -0.34 | – |

| Source | Emissions (tons per year) | | | Difference (tons per year) | | |
|---|---|---|---|---|---|---|
| | 2017 Base | 2024 no Plan | 2024 with Plan | No Plan-Base | Plan-Base | Plan-No Plan |
| UP Railyard | 1.11 | 1.22 | 0.84 | +0.11 | -0.27 | -0.38 |
| **Permitted** | **0.30** | **0.30** | **0.30** | **+0.01** | **+0.01** | **0.00** |
| Schnitzer (stationary) | – | – | – | 0.00 | 0.00 | – |
| EBMUD | 0.09 | 0.09 | 0.09 | +0.01 | +0.01 | – |
| Dynegy | < 0.01 | – | – | < 0.01 | | – |
| Pinnacle Ag Services | – | – | – | – | – | – |
| Sierra Pacific | – | – | – | – | – | – |
| CASS | – | – | – | – | – | – |
| California Cereal | – | – | – | – | – | – |
| CA Waste (10th St) | – | – | – | – | – | – |
| Other | 0.21 | 0.21 | 0.21 | 0.00 | 0.00 | – |
| **Other** | **1.36** | **1.33** | **1.31** | **-0.04** | **-0.05** | **-0.01** |
| Ferries | 0.93 | 0.92 | 0.92 | -0.01 | -0.01 | – |
| Schnitzer (ships) | 0.30 | 0.37 | 0.37 | +0.07 | +0.07 | – |
| Schnitzer (trucks) | 0.01 | < 0.01 | 0.00 | -0.01 | -0.01 | > -0.01 |
| Truck-related businesses | 0.12 | 0.03 | 0.02 | -0.09 | -0.10 | > -0.01 |
| **Total** | **23.91** | **21.22** | **18.82** | **-2.70** | **-5.10** | **-2.40** |
| ***West Oakland sources not included in community-scale modeling*** | | | | | | |
| **Area** | **–** | **–** | **–** | **–** | **–** | **–** |
| Commercial cooking | – | – | – | – | – | – |
| Food and Agriculture | – | – | – | – | – | – |
| Residential fuel combustion | – | – | – | – | – | – |
| Commercial/industrial fuel combustion | – | – | – | – | – | – |
| Industrial processes | – | – | – | – | – | – |
| Solvent utilization | – | – | – | – | – | – |
| Consumer products | – | – | – | – | – | – |
| Other area sources | – | – | – | – | – | – |
| **Non-road** | **4.12** | **1.72** | **1.72** | -2.39 | -2.39 | – |
| Construction equipment | 3.33 | 1.42 | 1.42 | -1.91 | -1.91 | – |
| Commercial/industrial equipment | 0.51 | 0.21 | 0.21 | -0.31 | -0.31 | – |
| Lawn & garden equipment | 0.02 | 0.02 | 0.02 | < 0.01 | < 0.01 | – |
| TRUs | 0.26 | 0.07 | 0.07 | -0.18 | -0.18 | – |
| Other non-road sources | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | – |
| **Total** | **4.12** | **1.72** | **1.72** | **-2.39** | **-2.39** | – |
| **Grand Total** | **28.03** | **22.94** | **20.54** | **-5.09** | **-7.49** | **-2.40** |

## Cancer Risk

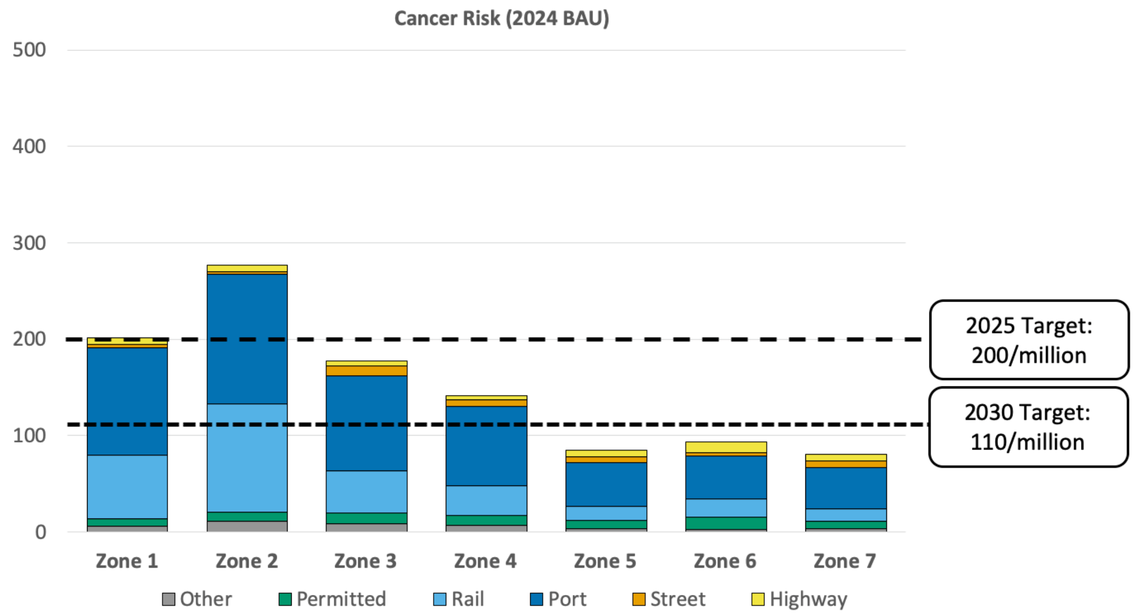



*Figure 6-3. Targets and Source Apportionment for Cancer Risk in 2024 Without the Plan*

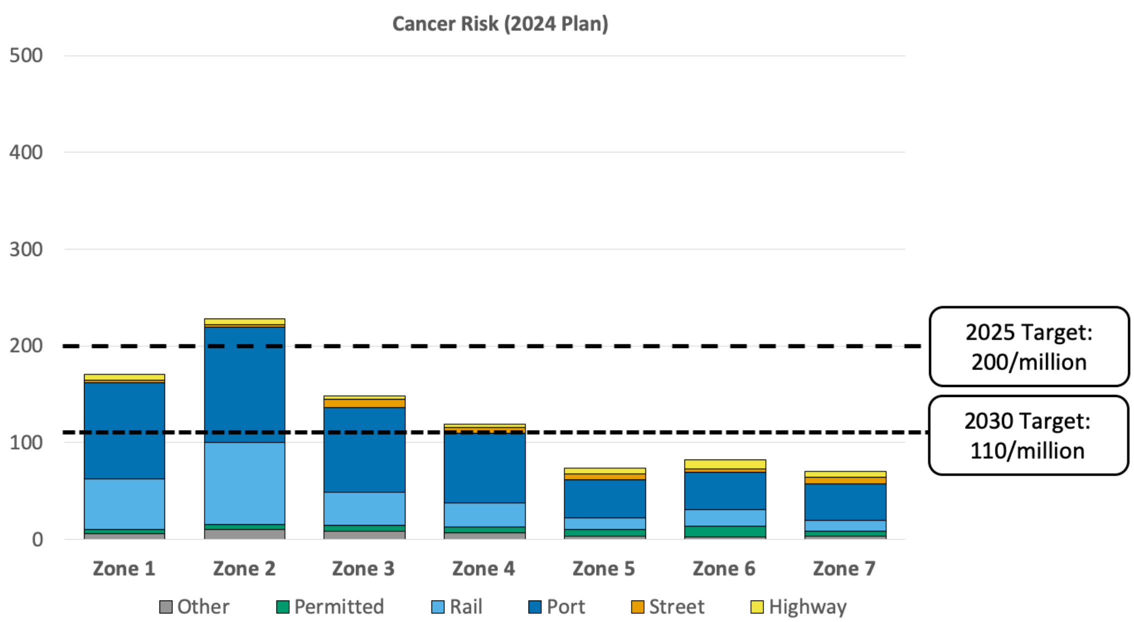



*Figure 6-4. Targets and Source Apportionment for Cancer Risk in 2024 With the Plan*

The charts of diesel PM (Figure 6-1 and Figure 6-2) and cancer risk (Figure 6-3 and Figure 6-4) look similar. This is because diesel PM contributes over 90% of the cancer impacts caused by toxic air contaminants in our model. Because of the large contribution of diesel PM to overall cancer risk from air pollution, all the reductions in diesel PM described above will similarly contribute to reducing cancer risk in West Oakland. Figure 6-4 shows some benefits in reducing levels of cancer risk with the Plan in 2024 relative to 2024 without the Plan, as shown in Figure 6-3.

**Permitted Sources.** To reduce the toxic emissions from EBMUD and Schnitzer Steel, this Plan will rely on Air District Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities, adopted in November 2017. Accelerated implementation of Rule 11-18 will drive down the toxic emissions at Schnitzer Steel. Specifically, accelerated implementation of Rule 11-18 will reduce toxic emissions from Schnitzer Steel by at least 70% due to use of a thermal oxidizer. These emission reductions are slated to occur by 2025, and so associated emission reductions are included in the 2024 forecast with the Plan. Changes in the associated impacts on the community will be modeled and assessed by the Air District once the specific changes needed at the facility to comply with Rule 11-18 are determined. [43]

**Emission Reductions.** Columns on the left in Table 6-2 list cancer risk-weighted toxic emission totals by source category for the base year and for 2024 with and without the Plan. Columns on the right list differences in cancer risk-weighted emissions: 2024 forecasts with and without the Plan are compared to the base year, and the 2024 forecast with the Plan is compared to 2024 without the Plan. The 2024 Plan versus no Plan comparison shows the benefits, and emission-reduction targets, of the Plan by source category. There is about a 12% reduction in total cancer risk-weighted toxic emissions from the Plan in 2024, relative to 2024 without the Plan. There is about a 28% reduction in cancer risk-weighted toxic emissions in 2024 with the Plan, relative to the base year.

[43] Under Rule 11-18, this facility will apply Toxic Best Available Control Technology (TBACT). Modeled risks once TBACT controls are installed are yet to be determined.

*Table 6-2. West Oakland Cancer Risk-Weighted Toxics Emissions Summaries and Differences (risk-weighted tons per year)*

| Source | Emissions (risk-weighted tons per year) | | | Difference (risk-weighted tons per year) | | |
|---|---|---|---|---|---|---|
| | 2017 Base | 2024 No Plan | 2024 with Plan | No Plan-Base | Plan-Base | Plan-No Plan |
| ***West Oakland sources included in community-scale modeling*** | | | | | | |
| **Highway** | **1,791** | **332** | **287** | **-1,460** | **-1,505** | **-45** |
| Non-truck vehicles | 331 | 159 | 158 | -172 | -172 | > -1 |
| HD/Medium HD trucks | 1,392 | 120 | 76 | -1,272 | -1,316 | -44 |
| Light HD trucks | 69 | 52 | 52 | -16 | -16 | > -1 |
| **Street** | **1,692** | **204** | **182** | **-1,488** | **-1,510** | **-22** |
| Non-truck vehicles | 183 | 87 | 86 | -96 | -96 | < -1 |
| HD/Medium HD trucks | 1,434 | 60 | 39 | -1,374 | -1,395 | -22 |
| Light HD trucks | 76 | 57 | 57 | -18 | -18 | > -1 |
| **Port** | **11,817** | **12,769** | **11,337** | **+951** | **-480** | **-1431** |
| OGV maneuvering | 2,859 | 4,145 | 4,145 | +1,286 | +1,286 | – |
| OGV berthing | 3,212 | 3,901 | 2,926 | +689 | -286 | -975 |
| Harbor craft | 2,932 | 2,355 | 1,914 | -577 | -1,018 | -441 |
| Dredging | 864 | 592 | 592 | -272 | -272 | – |
| Bunkering | 209 | 190 | 190 | -19 | -19 | – |
| Port trucks | 372 | 88 | 73 | -284 | -299 | -15 |
| Cargo handling | 1,177 | 1,293 | 1,293 | +117 | +117 | – |
| OGRE Railyard | 57 | 62 | 62 | +4 | +4 | – |
| BNSF Railyard | 136 | 143 | 143 | +7 | +7 | – |
| **Rail** | **1,637** | **1,462** | **1,182** | **-174** | **-455** | **-281** |
| Rail lines | 810 | 554 | 554 | -256 | -256 | – |
| UP Railyard | 826 | 909 | 628 | +82 | -199 | -281 |
| **Permitted** | **1,101** | **1,185** | **634** | **+84** | **-467** | **-551** |
| Schnitzer (stationary) | 823 | 900 | 350 | +78 | -473 | -551 |
| EBMUD | 110 | 117 | 117 | +7 | +7 | – |
| Dynegy | 1 | 0 | 0 | -1 | 0 | – |
| Pinnacle Ag Services | – | – | – | – | – | – |
| Sierra Pacific | – | – | – | – | – | – |
| CASS | < 1 | < 1 | 0 | < 1 | < 1 | – |
| California Cereal | < 1 | < 1 | 0 | < 1 | < 1 | – |
| CA Waste (10th St) | – | – | 0 | 0 | 0 | – |
| Other | 168 | 167 | 167 | < 1 | < 1 | – |
| **Other** | **1,016** | **987** | **979** | **-29** | **-37** | **-8** |
| Ferries | 695 | 688 | 688 | -7 | -7 | – |

| Source | Emissions (risk-weighted tons per year) | | | Difference (risk-weighted tons per year) | | |
|---|---|---|---|---|---|---|
| | 2017 Base | 2024 No Plan | 2024 with Plan | No Plan-Base | Plan-Base | Plan-No Plan |
| Schnitzer (ships) | 225 | 277 | 277 | +52 | +52 | – |
| Schnitzer (trucks) | 8 | < 1 | 0 | -8 | -8 | < 1 |
| Truck-related businesses | 87 | 21 | 14 | -65 | -73 | -8 |
| **Total** | **19,054** | **16,939** | **14,601** | **-2,115** | **-4,453** | **-2,337** |
| ***West Oakland sources not included in community-scale modeling*** | | | | | | |
| **Area** | **413** | **439** | **439** | **+26** | **+26** | **–** |
| Commercial cooking | 9 | 10 | 10 | +1 | +1 | – |
| Food and Agriculture | 13 | 13 | 13 | 0 | 0 | – |
| Residential fuel combustion | 18 | 16 | 16 | -2 | -2 | – |
| Commercial/industrial fuel combustion | 17 | 18 | 18 | +0 | +0 | – |
| Industrial processes | 176 | 192 | 192 | +16 | +16 | – |
| Solvent utilization | 125 | 135 | 135 | +10 | +10 | – |
| Consumer products | 41 | 44 | 44 | +3 | +3 | – |
| Other area sources | 13 | 11 | 11 | -2 | -2 | – |
| **Non-road** | **3,358** | **1,523** | **1,523** | **-1,835** | **-1,835** | **–** |
| Construction equipment | 2,501 | 1,074 | 1,074 | -1,427 | -1,427 | – |
| Construction dust | – | – | 0 | 0 | 0 | – |
| Commercial/industrial equipment | 436 | 205 | 205 | -231 | -231 | – |
| Lawn & garden equipment | 79 | 77 | 77 | -2 | -2 | – |
| TRUs | 192 | 57 | 57 | -135 | -135 | – |
| Other non-road sources | 151 | 109 | 109 | -42 | -42 | – |
| **Total** | **3,771** | **1,962** | **1,962** | **-1,809** | **-1,809** | **–** |
| **Grand Total** | **22,825** | **18,901** | **16,563** | **-3,925** | **-6,262** | **-2,337** |

## PM2.5

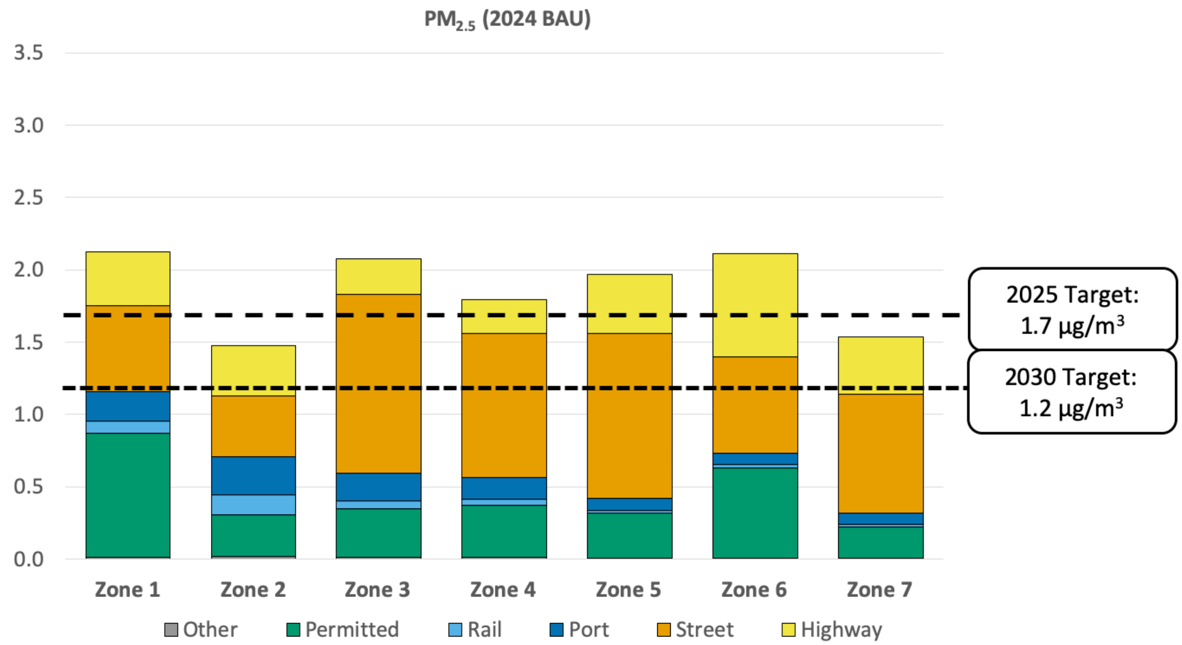



*Figure 6-5. Targets and Source Apportionment for $PM_{2.5}$ in 2024 Without the Plan*

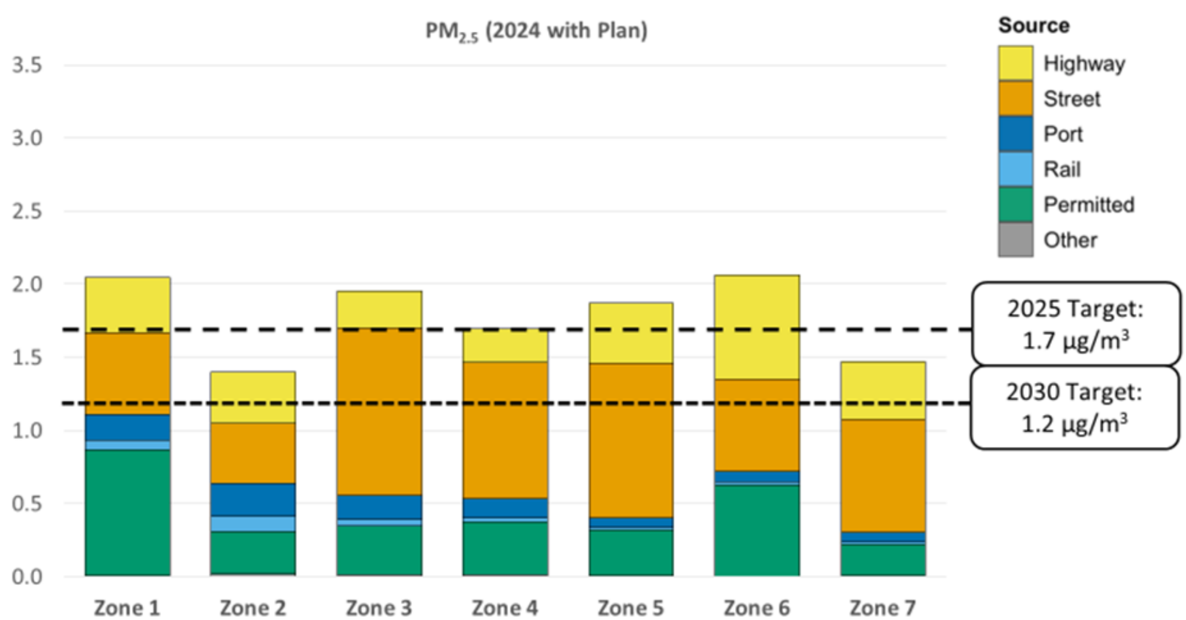



*Figure 6-6. Targets and Source Apportionment for $PM_{2.5}$ in 2024 With the Plan*

Figure 6-6 shows some benefits in reducing levels of $PM_{2.5}$ with the Plan in 2024 relative to 2024 without the Plan, as shown in Figure 6-5.

**Road Dust.** The Plan includes a Strategy that calls on the City of Oakland and Caltrans to implement an enhanced street sweeping program in West Oakland. This assessment reviewed existing street sweeping programs, including South Coast Air Quality Management District Rule 1186 for $PM_{10}$ emissions from paved and unpaved roads, which was adopted in 1997 and required new sweepers to be certified by the South Coast Air District. In the rulemaking report and appendices, the South Coast Air District estimated the control effectiveness from street sweeping to be 10% annually. This assessment for 2024 with the Plan includes a 10% reduction in road dust, to be achieved through enhanced street sweeping (streets; not highways).

**Permitted Sources.** The Air District will evaluate $PM_{2.5}$ emissions estimates from permitted facilities, especially those near Zones 1 and 6 to reduce the uncertainty associated with these emissions estimates and to assess the degree to which additional regulations could be effective in reducing impacts. The City of Oakland has begun discussions with the California Waste Solutions facility (near Zone 1) to relocate that facility further from residents, to the former Oakland Army Base near the East Bay Municipal Utilities District wastewater treatment plant.

**Port and Rail**. $PM_{2.5}$ reductions will occur along with diesel PM for Port and Rail, so the mechanisms discussed above (for diesel PM) also drive similar reductions here.

**Emission reductions.** Columns on the left in Table 6-3 list $PM_{2.5}$ emission totals by source category for the base year and for 2024 with and without the Plan. Columns on the right list differences in $PM_{2.5}$ emissions: 2024 forecasts with and without the Plan are compared to the base year, and the 2024 forecast with the Plan is compared to 2024 without the Plan. The 2024 Plan versus without the Plan comparison shows the benefits, and emission-reduction targets, of the Plan by source category. The total $PM_{2.5}$ emission benefits of the Plan in 2024, relative to 2024 without the Plan, is about -3.7 tons per year (-3%). The reductions in $PM_{2.5}$ in 2024 with the Plan, relative to the base year, is about -0.5 tons per year (-0.4%).

*Table 6-3 West Oakland $PM_{2.5}$ Emissions Summaries and Differences (tons per year)*

| Source | Emissions (tons per year) | | | Difference (tons per year) | | |
|---|---|---|---|---|---|---|
| | 2017 Base | 2024 no Plan | 2024 with Plan | no Plan-Base | Plan-Base | Plan-no Plan |
| ***West Oakland sources included in community-scale modeling*** | | | | | | |
| **Highway** | **20.29** | **19.77** | **19.70** | **-0.53** | **-0.60** | **-0.07** |
| Non-truck vehicles | 12.23 | 12.88 | 12.87 | +0.65 | +0.64 | -0.01 |
| HD/Medium HD trucks | 2.48 | 0.94 | 0.88 | -1.54 | -1.60 | -0.06 |
| Light HD trucks | 0.41 | 0.42 | 0.42 | +0.01 | +0.01 | < -0.01 |
| Road dust | 5.17 | 5.53 | 5.53 | +0.36 | +0.36 | – |

| Source | Emissions (tons per year) | | | Difference (tons per year) | | |
|---|---|---|---|---|---|---|
| | 2017 Base | 2024 no Plan | 2024 with Plan | no Plan-Base | Plan-Base | Plan-no Plan |
| **Street** | **22.38** | **21.97** | **20.48** | **-0.41** | **-1.90** | **-1.49** |
| Non-truck vehicles | 4.82 | 5.02 | 5.02 | +0.20 | +0.20 | > -0.01 |
| HD/Medium HD trucks | 2.44 | 0.77 | 0.74 | -1.67 | -1.70 | -0.03 |
| Light HD trucks | 0.35 | 0.35 | 0.35 | > -0.01 | > -0.01 | > -0.01 |
| Road dust | 14.77 | 15.83 | 14.37 | +1.06 | -0.40 | -1.46 |
| **Port** | **21.99** | **25.24** | **23.44** | **+3.25** | **+1.45** | **-1.80** |
| OGV maneuvering | 3.94 | 5.61 | 5.61 | +1.66 | +1.66 | – |
| OGV berthing | 7.83 | 10.29 | 9.09 | +2.46 | +1.26 | -1.20 |
| Harbor craft | 3.82 | 3.07 | 2.49 | -0.75 | -1.33 | -0.57 |
| Dredging | 1.12 | 0.80 | 0.80 | -0.32 | -0.32 | – |
| Bunkering | 0.27 | 0.25 | 0.25 | -0.02 | -0.02 | – |
| Port trucks | 0.93 | 0.66 | 0.64 | -0.27 | -0.29 | -0.02 |
| Road dust | 2.25 | 2.53 | 2.53 | +0.28 | +0.28 | – |
| Cargo handling | 1.59 | 1.78 | 1.78 | +0.19 | +0.19 | – |
| OGRE Railyard | 0.07 | 0.08 | 0.08 | +0.01 | +0.01 | – |
| BNSF Railyard | 0.17 | 0.18 | 0.18 | +0.01 | +0.01 | – |
| **Rail** | **2.04** | **1.84** | **1.47** | **-0.22** | **-0.57** | **-0.35** |
| Rail lines | 1.02 | 0.70 | 0.70 | -0.32 | -0.32 | – |
| UP Railyard | 1.02 | 1.12 | 0.78 | +0.10 | -0.25 | -0.35 |
| **Permitted** | **17.84** | **16.94** | **16.94** | **-0.91** | **-0.91** | **0.00** |
| Schnitzer (stationary) | 5.20 | 5.53 | 5.53 | +0.32 | +0.32 | 0.00 |
| EBMUD | 3.99 | 4.28 | 4.28 | +0.29 | +0.29 | – |
| Dynegy | 1.96 | 0.00 | 0.00 | -1.96 | – | – |
| Pinnacle Ag Services | 1.48 | 1.62 | 1.62 | +0.14 | +0.14 | – |
| Sierra Pacific | 0.91 | 1.00 | 1.00 | +0.09 | +0.09 | – |
| CASS | 0.72 | 0.78 | 0.78 | +0.06 | +0.06 | – |
| California Cereal | 0.58 | 0.63 | 0.63 | +0.05 | +0.05 | – |
| CA Waste (10th St) | 0.46 | 0.51 | 0.51 | +0.04 | +0.04 | – |
| Other | 2.53 | 2.59 | 2.59 | +0.06 | +0.06 | – |
| **Other** | **1.36** | **1.36** | **1.35** | **< 0.01** | **-0.01** | **-0.01** |
| Ferries | 0.91 | 0.92 | 0.92 | +0.02 | +0.02 | – |
| Schnitzer (ships) | 0.30 | 0.37 | 0.37 | +0.07 | +0.07 | – |
| Schnitzer (trucks) | 0.04 | 0.04 | 0.04 | > -0.01 | > -0.01 | > -0.01 |
| Truck-related businesses | 0.11 | 0.03 | 0.02 | -0.08 | -0.09 | -0.01 |
| **Total** | **85.91** | **87.09** | **83.38** | **+1.18** | **-2.53** | **-3.71** |

| Source | Emissions (tons per year) | | | Difference (tons per year) | | |
|---|---|---|---|---|---|---|
| | 2017 Base | 2024 no Plan | 2024 with Plan | no Plan-Base | Plan-Base | Plan-no Plan |
| ***West Oakland sources not included in community-scale modeling*** | | | | | | |
| **Area** | 30.40 | 33.83 | 33.83 | +3.43 | +3.43 | – |
| Commercial cooking | 20.63 | 23.90 | 23.90 | +3.27 | +3.27 | – |
| Food and Agriculture | – | 0.00 | 0.00 | 0.00 | 0.00 | – |
| Residential fuel combustion | 6.93 | 6.99 | 6.99 | +0.06 | +0.06 | – |
| Commercial/industrial fuel combustion | 2.30 | 2.39 | 2.39 | +0.09 | +0.09 | – |
| Industrial processes | 0.03 | 0.03 | 0.03 | < 0.01 | < 0.01 | – |
| Solvent utilization | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | – |
| Consumer products | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | – |
| Other area sources | 0.50 | 0.52 | 0.52 | +0.01 | +0.01 | – |
| **Non-road** | 13.00 | 11.71 | 11.71 | -1.29 | -1.29 | – |
| Construction equipment | 4.10 | 2.39 | 2.39 | -1.71 | -1.71 | – |
| Construction dust | 6.74 | 7.70 | 7.70 | +0.96 | +0.96 | – |
| Commercial/industrial equipment | 1.17 | 0.97 | 0.97 | -0.20 | -0.20 | – |
| Lawn & garden equipment | 0.12 | 0.13 | 0.13 | +0.01 | +0.01 | – |
| TRUs | 0.24 | 0.07 | 0.07 | -0.17 | -0.17 | – |
| Other non-road sources | 0.63 | 0.46 | 0.46 | -0.17 | -0.17 | – |
| **Total** | **43.40** | **45.54** | **45.54** | **+2.14** | **+2.14** | **–** |
| **Grand Total** | **129.31** | **132.63** | **128.92** | **+3.33** | **-0.38** | **-3.71** |

## STRATEGIES AND IMPLEMENTATION SCHEDULES

The Strategies and the proposed five-year implementation schedules are shown in Table 6-4. Implementation of some Strategies will be ongoing while others will occur in a single year or span multiple years. For Strategies that are regulatory in nature, the implementation schedule denotes the anticipated timing of action such as when a regulatory agency such as CARB or the Air District initiates rule development, adopts a new or revised regulation, or when rule or regulation implementation begins.

The implementation schedule and other aspects of the Strategies may evolve during implementation. The anticipated timing of regulatory development, action and implementation is subject to change, and for some Strategies extend beyond the 5-year implementation schedule provided in Table 6-4.

*Table 6-4. Owning Our Air: The West Oakland Community Action Plan Implementation Schedule*

| | | | **Implementation Timeframe** (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Strategies** | **Authority** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | **Land Use** | | | | | | |
| 1 | The City of Oakland continues working with California Waste Solutions and CASS, Inc. to relocate operations to the former Oakland Army Base and works with the property owners and local residents to redevelop the former sites in West Oakland with new business and light industrial uses that fit into a green economy. | City of Oakland | | | | | |
| 2 | The Air District will continue to engage in environmental review processes for development projects in West Oakland, such as the Oakland A's Ballpark and the MacArthur Maze Vertical Clearance Project, including coordinating with community partners and lead agency staff, providing data and technical assistance, and reviewing and commenting on CEQA documents through 2025. | Air District | | | | | |
| 3 | The Air District will study the potential air pollution and health outcomes of allowing truck traffic on I-580 and designating a truck lane on I-880. Allowing truck traffic on I-580 would require legislative approval, re-engineering, and re-construction. | Air District | | | | | |
| 4 | Consistent with measures in the West Oakland Specific Plan, the City of Oakland identifies locations outside of West Oakland for heavier industrial businesses currently in West Oakland that contribute to air pollution emissions and negative health outcomes in West Oakland. | City of Oakland | | | | | |
| 5 | The City of Oakland and Port of Oakland amends existing Ordinances, Resolutions, or Administrative policies to accelerate relocation of truck yards and truck repair, service, and fueling businesses in West Oakland currently located within the freeway boundaries that do not conform with the zoning designations adopted in the West Oakland Specific Plan. | City of Oakland, Port of Oakland | | | | | |
| 6 | The City of Oakland uses incentives and subsidies to relocate businesses away from West Oakland that do not conform with the zoning designations adopted in the West Oakland Specific Plan. The Air District will provide emissions data and technical support to assist the City in these efforts and to ensure that any relocated businesses do not cause exposure issues at the new location. | City of Oakland, Air District | | | | | |
| 7 | The City of Oakland revises business licensing procedures to require current and proposed businesses to disclose truck visits per day and works with Caltrans to determine the number of trucks that park in the Caltrans right-of-way near West Oakland. Caltrans works with WOEIP and the Air District to address air quality issues from truck parking leases, such as by modifying leases | City of Oakland, Caltrans | | | | | |

| | | | **Implementation Timeframe** (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Strategies** | **Authority** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | to allow for collecting surveys and partnering with the Air District and CARB to allow enforcement access. | | | | | | |
| 8 | The City of Oakland amends existing City Ordinances and Administrative policies to list new truck yards and truck service, repair and fueling businesses as prohibited uses within the area of West Oakland that is inside the freeways (excluding the Port, OAB, and 3rd St. corridor of Jack London Square from Brush St. to Union St.). | City of Oakland | | | | | |
| 9 | The City of Oakland develops a plan to limit the hours that trucks can operate in the community. | City of Oakland | | | | | |
| 10 | The City of Oakland creates a comprehensive, area-wide urban canopy and vegetation plan that identifies locations that trees can be added and maintained, such as parks and along Caltrans' right-of-ways and develops a plan to protect existing trees that reduce exposure to air pollution emissions in West Oakland. This includes partnering with local nonprofit groups, encouraging trees on private property, and working with the community on tree maintenance and (as needed) removal. The development of the Oakland Urban Forest Master Plan will inform this work. | City of Oakland, Caltrans | | | | | |
| 11 | The City of Oakland works with local groups to train residents to maintain biofilters. | City of Oakland | | | | | |
| 12 | The Air District and the West Oakland Environmental Indicators Project intends to implement the green infrastructure project currently under development between Interstate I-880 and the Prescott neighborhood in West Oakland by 2021. | Air District | | | | | |
| 13 | The City of Oakland conducts a study regarding development fees for environmental mitigations. | City of Oakland | | | | | |
| 14 | The Air District provides subsidized loans for local small businesses to install energy storage systems (e.g. batteries, fuel cells) to replace stationary sources of pollution (e.g. back-up generators). | Air District | | | | | |
| 15 | The City of Oakland continues requiring new developments to provide infrastructure for electrical vehicle charging stations. | City of Oakland | | | | | |
| 16 | The City of Oakland, in partnership with the Steering Committee, CARB and the Air District, studies the exposure reduction benefit of requiring solid or vegetative barriers to be incorporated into site design between buildings and sources of air pollution (for example, a freeway). | City of Oakland CARB, Caltrans, Air District | | | | | |
| 17 | The City of Oakland adopts policies to lessen air quality impacts of residential and office buildings through the reduction or elimination of natural gas systems. | City of Oakland | | | | | |

| | | | **Implementation Timeframe** (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Strategies** | **Authority** | **2020** | **2021** | **2022** | **2023** | **2024** |
| 18 | The Air District advocates for more electrical infrastructure and power storage, including development of (1) fast-charging facilities, (2) truck charging stations and (3) better land use support for electric trucks by 2025. | PG&E | | | | | |
| 19 | The Port of Oakland adopts an Electrical Infrastructure Plan for the maritime waterfront areas of Oakland. This Plan seeks to remove barriers to adoption of zero-emission trucks, such as cost, land, and ownership of charging equipment. | Port of Oakland | | | | | |
| 20 | The City of Oakland revises development requirements to require the implementation of as many transportation demand management (TDM) strategies as feasible by developers of new buildings. | City of Oakland | | | | | |
| 21 | The Air District works with the City and Port of Oakland and other agency and local partners to create a Sustainable Freight Advisory Committee to provide recommendations to each agency's governing board or council. The Committee's scope includes: air quality issues, enhanced/increased enforcement of truck parking and idling, improved referral and follow-up to nuisance and odor complaints related to goods movement, improvements to the Port appointment system, charging infrastructure and rates, developing land-use restrictions in industrial areas, funding, and consideration of video surveillance to enforce truck parking, route, and idling restrictions. | Air District, Port of Oakland, City of Oakland | | | | | |
| 22 | The City of Oakland adopts more stringent air quality construction and operations requirements. | City of Oakland | | | | | |
| 23 | The City adds the AB 617 Steering Committee Co-Chairs to the official lists to receive notification of "Applications on File" for discretionary planning projects and "Meeting Agendas" of the Planning Commission and its five subcommittees, and the Landmarks Preservation Board. | City of Oakland | | | | | |
| 24 | The Air District works with agency and local partners to improve referral and follow-up on nuisance and odor complaints by 2021. This work includes updates to complaint processes, enforcement procedures, and coordination with other public agencies regarding odors, backyard burning, and other complaints. | Air District | | | | | |
| 25 | To address potential changes in local pollution exposure, the City of Oakland works with local community groups to address gentrification and the pricing out of long-term residents caused by gentrification. This effort includes meetings with local community groups and incentives and loans targeted to existing businesses and residents. Funding for this effort is identified as needed. | City of Oakland | | | | | |
| 26 | The City and Port of Oakland will work to establish permanent locations for parking and staging of Port related trucks and cargo equipment, i.e. tractors, chassis, and containers. Such facilities will | City of Oakland, Port of Oakland | | | | | |

| | | | **Implementation Timeframe** (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Strategies** | **Authority** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | provide long-term leases to parking operators and truck owner-operators at competitive rates. Such facilities will be at the City or Port logistics center or otherwise not adjacent to West Oakland residents. | | | | | | |
| 27 | The City of Oakland and other appropriate local agencies limit fugitive dust from construction activity through better enforcement of existing regulations and permit requirements. | City of Oakland | | | | | |
| | **Mobile Sources** | | | | | | |
| 28 | The California Air Resources Board develops improvements to the existing truck and bus inspection and maintenance programs. Potential improvements include increasing warranty requirements, adding a lower in-use emissions performance level, increasing inspections in West Oakland, using aggregated GPS and other telecommunication records to identify locations of idling trucks and buses, and partnering with the Air District to develop a system using on-board diagnostic and remote sensing devices to identify and fix faulty emissions abatement devices on trucks and buses. | CARB | A | | | | |
| 29 | The California Air Resources Board develops the following regulations to increase the number of zero-emission trucks and buses operating in West Oakland:<br>• The Advanced Clean Trucks regulation to transition to zero-emission technology those truck fleets that operate in urban centers, have stop-and-go driving cycles, and are centrally maintained and fueled.<br>• Amendment to the drayage truck regulation to transition the drayage truck fleet to zero emissions. | CARB | A | | | | I |
| 30 | The California Air Resources Board, in partnership with the Steering Committee, WOEIP and the Air District, conduct a pilot study to assess local idling impacts from trucks and buses. The Steering Committee, WOEIP and the Air District advocate for "Clean Idle" trucks and buses to idle no more than 5 minutes when in West Oakland. | CARB | I | | | | |
| 31 | The California Air Resources Board develops amendments to the transport refrigeration unit (TRU) regulation to transition the TRU fleet to zero-emission operations by requiring both zero-emission technology and supporting infrastructure. | CARB | A | | I | | |
| 32 | The California Air Resources Board develops amendments to the existing cargo handling equipment regulation, which includes yard trucks, rubber-tired gantry cranes, and top handlers, that may reduce idling and transition the various types of equipment to zero-emission operation. | CARB | | | A | | |

| | | | Implementation Timeframe (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Strategies** | **Authority** | **2020** | **2021** | **2022** | **2023** | **2024** |
| 33 | The California Air Resources Board develops a handbook that identifies best practices for the siting, design, construction, and operation of freight facilities to minimize community exposure to air pollution. | CARB | A | | | | |
| 34 | The California Air Resources Board develops regulations to expand California-specific standards for new light-duty vehicles, impacting 2026 and later model year vehicles, to increase the number of new zero-emission and plug-in hybrid electric vehicles sold in California and increase the stringency of fleet-wide emission standards for greenhouse gases and criteria pollutants. | CARB | | A | | | |
| 35 | The California Air Resources Board develops new standards for small off-road engines (SORE), which are spark-ignition engines rated at or below 19 kilowatts and used primarily for lawn, garden, and other outdoor power equipment. | CARB | A | | | | |
| 36 | The City of Oakland requires industrial and warehouse facilities to provide electrical connections for electric trucks and transport refrigeration units in support of CARB regulations. | City of Oakland | | | | | |
| 37 | The Port of Oakland, as part of the 2020 and Beyond Seaport Air Quality Plan, supports the transition to zero-emission drayage truck operations, including setting interim year targets out to 2035, coordinating an extensive zero-emission truck commercialization effort, working with the City of Oakland to amend local ordinances to increase the allowable weight limits for single-axle, zero-emission trucks on local streets located within the Port and the Oakland Army Base/Gateway areas, and developing an investment plan for needed upgrades to the Port's electrical infrastructure. The Port of Oakland also works with the California Public Utilities Commission and the California Energy Commission to study the development of time-of-day electric rate structures favorable to truck operators. | Port of Oakland | | | | | |
| 38 | The City of Oakland, consistent with the West Oakland Truck Management Plan: 1) improves training for police officers, community resource officers, and parking control technicians who issue truck and trailer parking tickets; 2) changes the parking regulations so they are easier to enforce; 3) increases truck parking fines; 4) targets enforcement at specific times and locations; and 5) improves signage directing drivers to available truck parking. | City of Oakland | | | | | |
| 39 | The City of Oakland, consistent with the West Oakland Truck Management Plan: 1) improves signage regarding existing truck routes; 2) works with businesses on preferred routes to use when destinations are not located on truck routes; and 3) adds to, or changes, truck routes and prohibited streets. | City of Oakland | | | | | |

| | | | **Implementation Timeframe** (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Strategies** | **Authority** | **2020** | **2021** | **2022** | **2023** | **2024** |
| 40 | The City of Oakland, consistent with the West Oakland Truck Management Plan, implements, in consultation with West Oakland residents, traffic calming measures to keep truck traffic off residential streets. | City of Oakland | | | | | |
| 41 | The Air District works with CARB to streamline the process for providing financial incentives for fueling infrastructure, and for low and zero-emission equipment. The Air District increases outreach and assistance to individual owner-operators and small companies by providing two workshops and enhanced outreach in West Oakland by 2022. | Air District | | | | | |
| 42 | The City and Port of Oakland award long-term leases to vendors that will deliver trucker services (including mini-market and convenience stores, fast food, and fast casual restaurants), and parking to keep trucks off West Oakland streets. | City of Oakland, Port of Oakland | | | | | |
| 43 | The Port of Oakland studies the effects on truck flow and congestion due to increasing visits from larger container ships, the feasibility of an off-terminal container yard that utilizes zero-emission trucks to move containers to and from the marine terminals, and the potential efficiency gains from increasing the number of trucks hauling loaded containers on each leg of a roundtrip to the Port. | Port of Oakland | | | | | |
| 44 | The Alameda County Transportation Commission works with West Oakland residents and businesses to develop mitigations to short- and long-term impacts caused by the construction of the 7th St Grade Separation East Project and the implementation of other elements of the GoPort Initiative. | ACTC | | | | | |
| 45 | The City of Oakland collaborates with AC Transit, BART, Emery-Go-Round, and the local community to implement the broad array of transit improvements identified in the West Oakland Specific Plan. | City of Oakland, AC Transit, BART, City of Emeryville | | | | | |
| 46 | The City of Oakland collaborates with MTC and ACTC to consider a program for extending car sharing to low-income individuals and groups. | City of Oakland, MTC, ACTC | | | | | |
| 47 | AC Transit implements the Grand Avenue transit improvements identified in its Bus Rapid Transit Plan, as well as mitigations if the improvements cause increases in truck and auto idling on Grand Avenue. | AC Transit | | | | | |
| 48 | The Air District plans to offer up to $7 million per year to replace older autos through the Vehicle Buy Back program, and up to $4 million per year through the Clean Cars for All program to replace | Air District | | | | | |

| | | | **Implementation Timeframe** (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Strategies** | **Authority** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | older autos and provide an incentive for a hybrid electric, plug-in hybrid electric, battery electric vehicle, or Clipper Card for public transit. | | | | | | |
| 49 | The Air District offers financial incentives to replace box and yard diesel trucks with zero emission trucks owned by West Oakland businesses every year. | Air District | | | | | |
| 50 | The Air District plans to offer financial incentives to upgrade tugs and barges operating at the Port of Oakland with cleaner engines every year. | Air District, Port of Oakland | | | | | |
| 51 | The Air District plans to offer financial incentives to upgrade line-haul, passenger, and switcher (yard) locomotives with cleaner engines every year. | Air District | | | | | |
| 52 | The Air District plans to offer financial incentives to support the development of a hydrogen refueling station and the purchase of trucks and off-road equipment powered by fuel cells every year. | Air District | | | | | |
| 53 | The Air District offers financial incentives to replace long-haul diesel trucks with zero-emission trucks owned by West Oakland businesses every year. | Air District | | | | | |
| 54 | The Air District will award up to $1 million in funding incentives to pay for the cost of purchasing cleaner equipment in West Oakland, potentially including: electric lawn and garden equipment, battery electric Transport Refrigeration Units, and cargo-handling equipment, by 2021. | Air District | | | | | |
| 55 | The Bay Area Rapid Transit District will develop a bike station with controlled access at the West Oakland BART Station. | BART | | | | | |
| 56 | The City of Oakland implements the broad array of bicycle and pedestrian improvements identified in the West Oakland Specific Plan, the 2019 Oakland Bike Plan, and the 2017 Oakland Walks Pedestrian Plan. | City of Oakland | | | | | |
| 57 | Through the Pilot Trip Reduction Program, the Air District offers incentives for the purchase of electric bicycles for bike share programs. | Air District | | | | | |
| 58 | The Oakland Unified School District and the City of Oakland, as part of the Safe Routes to Schools Program in West Oakland, begin twice a day street closures next to public schools in West Oakland to keep cars and trucks away from arriving and departing students. | Oakland Unified School District, City of Oakland | | | | | |
| 59 | The City of Oakland increases the frequency of street sweeping to decrease road dust, particularly on streets adjacent to schools, on designated truck routes, and on streets near freeways. The California Department of Transportation increases the frequency of street sweeping along the I- | City of Oakland Caltrans | | | | | |

| # | Strategies | Authority | Implementation Timeframe (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2020 | 2021 | 2022 | 2023 | 2024 |
| | 880, I-980, and I-580 freeways. Consideration is given to technology and techniques that avoid re-suspending road dust. | | | | | | |
| 60 | The California Air Resources Board develops amendments to the At-Berth Air Toxics Control Measure to further reduce ship emissions at berth by strengthening the regulation to cover more vessel visits and types of ships. | CARB | A | I | | | |
| 61 | The California Air Resources Board develops amendments to the Commercial Harbor Craft Air Toxics Control Measure to achieve additional control of harbor craft emissions. The Steering Committee, WOEIP, and the Air District advocate for early compliance of harbor craft operating near West Oakland. | CARB | A | | | I | |
| 62 | The California Air Resources Board develops regulations to reduce idling emissions from locomotives at rail yards with an emphasis on reducing emissions from locomotives not pre-empted under the federal Clean Air Act. The Steering Committee, WOEIP, and the Air District advocate for early compliance for locomotives operating in West Oakland. | CARB | A | | | I | |
| 63 | The Port of Oakland implements a Clean Ship Program to increase the frequency of visits by ships with International Maritime Organization Tier 2 and Tier 3 engines. | Port of Oakland | | | | | |
| 64 | The Port of Oakland implements a Clean Locomotive Program to increase the number of U.S. EPA Tier 4 compliant locomotives used by the UP, BNSF, and OGRE railways to provide service in and out of the Port of Oakland. | Port of Oakland | | | | | |
| 65 | The Port of Oakland studies the feasibility of using electric switcher locomotives at the two Port railyards. | Port of Oakland | | | | | |
| 66 | The Air District works with Schnitzer Steel to study the feasibility of installing a shore-power or bonnet system to capture and abate vessel emissions at the West Oakland facility by 2021. | Air District | | | | | |
| 67 | The Air District intends to seek authority in 2021 to reduce emissions and risk from magnet sources, such as the Port of Oakland, freight operations and warehouse distribution centers. | Air District | | | | | |
| | **Stationary Sources** | | | | | | |
| 68 | The Air District proposes amendments to existing regulations to further reduce emissions from metal recycling and foundry operations, such as changes to: 1) Rule 6-4: Metal Recycling and Shredding Operations, which requires metal recycling and shredding facilities to minimize fugitive PM emissions through the development and implementation of facility Emission Minimization Plans; and 2) Rule 12-13: Foundry and Forging Operations, which requires metal foundries and | Air District | | | | | D |

| # | Strategies | Authority | Implementation Timeframe (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| | | | **2020** | **2021** | **2022** | **2023** | **2024** |
| | forges to minimize fugitive emissions of PM and odorous substances through the development and implementation of facility Emission Minimization Plans by 2025. | | | | | | |
| 69 | The Air District's Rule 11-18: Reduce Risk from TACS at Existing Facilities requires selected Bay Area facilities to reduce risk or install best available retrofit control technology for toxics on all significant sources of toxic emissions. Based on the results of the facility-specific health risk assessment, the Air District may require Schnitzer Steel and the East Bay Municipal Utility District to adopt a Risk Reduction Plan if the health risk exceeds a risk action level per the requirements of Rule 11-18 implementation. | Air District | | | | | |
| 70 | The Air District intends to provide incentives to replace existing diesel stationary and standby engines (fire pumps, dryers, conveyor belts, cranes) with Tier 4 diesel or cleaner engines. Priority is given to upgrading Tier 0, 1 & 2 engines located closest to schools, senior citizen centers, childcare facilities, and hospitals. | Air District | | | | | |
| 71 | The Air District proposes new regulations to reduce emission sources from autobody and other coating operations, including the use of vanishing oils and rust inhibitors by 2025. | Air District | | | | D | A |
| 72 | The Air District proposes new regulations to reduce emissions from wastewater treatment plants and anaerobic digestion facilities, such as a regulation to reduce emissions of methane, reactive organic gases, and oxides of nitrogen by 2020. | Air District | D | A | | | |
| 73 | The Air District proposes amendments to existing Regulation 8-5 to further reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020. Organic liquid storage tanks are defined in Regulation 8-5. | Air District | A | | | | |
| 74 | The Air District advocates for a plan that East Bay Clean Energy and PG&E are spearheading to replace the Dynegy Power Plant with a cleaner and more reliable source of energy by 2022. The proposed location for this initiative is the Oakland C, Oakland L, Maritime Port of Oakland, and Schnitzer Steel substation pocket, which is located within PG&E's Oakland distribution planning area. Eligible resource types include: (1) in-front-of-the-meter renewable generation; (2) in-front-of-the-meter energy storage, and (3) behind-the-meter energy storage. EBCE is seeking to procure the energy, resource adequacy (RA), and renewable energy credits (RECs) associated with these local resources, while PG&E will focus on meeting Oakland's transmission reliability needs. | East Bay Clean Energy, PG&E | | | | | |

| | | | **Implementation Timeframe** (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Strategies** | **Authority** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | **Health Programs** | | | | | | |
| 75 | The Air District intends to develop and fund a program to reduce exposure to air pollution at schools, day care facilities, senior centers, health facilities, public facilities, apartments and homes in West Oakland by 2021. This Strategy includes policies or grants for building energy efficiency upgrades to reduce infiltration of pollutants and the installation of high-efficiency air filtration systems (rated MERV 14 or higher). | Air District | | | | | |
| 76 | The City of Oakland works with local and agency partners to implement regional and local adoption of the State Department of Public Health's Health In All Policies program. | City of Oakland | | | | | |
| 77 | Consistent with the Healthy Development Guidelines, the City of Oakland implements a project-wide smoking ban in Oakland at new developments. | City of Oakland | | | | | |
| 78 | Consistent with the State's Building Energy Efficiency Standards for air filtration in effect as of January 1, 2020, the City of Oakland requires newly constructed buildings of four or more habitable floors to include air filtration systems equal to or greater than MERV 13 (ASHRAE Standard 52.2), or a particle size efficiency rating equal to or greater than 50 percent in the 0.3-1.0 µm range and equal to or greater than 85 percent in the 1.0-3.0 µm range (AHRI Standard 680). | City of Oakland | | | | | |
| 79 | The City of Oakland works with agency and community partners to undertake participatory budgeting with West Oakland community members to allocate local health improvement grants that reduce emissions or exposure to emissions. | City of Oakland | | | | | |
| 80 | The Air District researches actions that are potentially exposure-reducing, such as: 1) an engineering evaluation of exhaust stacks and/or vents to determine if relocation will reduce local exposure; (2) a study to determine if smart air filtration systems can reduce exposure by in-taking air during daily non-peak vehicle travel times, such as between midnight and four a.m.; and (3) a study of the potential air quality benefits of a centralized package delivery site such as personal lockers by 2025. | Air District | | | | | |
| 81 | The City of Oakland works with local businesses, partner agencies, and community members to develop a Green Business Strategic Plan to attract, retain, and support innovative green companies in West Oakland. This effort includes coordination with State and local agencies to develop criteria for green business certification for new and existing businesses. | City of Oakland | | | | | |

| | | | **Implementation Timeframe** (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| **#** | **Strategies** | **Authority** | **2020** | **2021** | **2022** | **2023** | **2024** |
| 82 | The California Office of Environmental Health Hazard Assessment, in partnership with the Steering Committee, the City of Oakland, CARB, and the Air District, studies setting a limit on West Oakland's cumulative exposure to TACs. | OEHHA | | | | | |
| 83 | The City of Oakland works with community partners to implement the Healthy Development Guidelines for new building projects. | City of Oakland | | | | | |
| 84 | The Alameda County Public Health Department expands its Asthma Management programs. | Alameda County Public Health Department | | | | | |
| 85 | The City of Oakland works with Alameda County Public Health Department to improve access to medical services within West Oakland. This work expands existing programs such as: (1) Child Health and Disability Prevention Program free health check-ups for infants through teens; (2) Asthma Management at schools; (3) Building Blocks for Health Equity which works to correct inequity in health outcomes for children; (4) Urban Male Health Initiative which is charged with reducing the premature mortality of men and boys in Alameda County; and (5) Alameda County Health Improvement Plan to develop and implement a five-year county plan to improve health and achieve health equity. | City of Oakland, Alameda County Public Health Department | | | | | |
| 86 | The Alameda County Public Health Department works with agency and local partners to investigate the use of green building approaches in housing construction and renovation that will reduce emissions and exposure to air pollution emissions. This work examines weatherization/energy efficiency and renewable energy services. This work draws from the Contra Costa County Health Department's pilot effort in cooperation with the Regional Asthma Management Program. | Alameda County Public Health Department | | | | | |
| 87 | CARB conducts a technology assessment of commercial cooking rules and control strategies and proposes incentives and/or a Suggested Control Measure for commercial cooking. The Air District offers incentives and/or proposes a regulation to reduce emissions from commercial cooking. | Air District, CARB | | | | | |
| 88 | The City of Oakland studies revising standard conditions of approval and/or similar requirements for large projects to require "opt-up" to East Bay Community Energy's Brilliant 100 carbon-free electricity supply. | City of Oakland | | | | | |

| # | Strategies | Authority | Implementation Timeframe (A = regulatory action; I = regulatory implementation; D= regulatory development) | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2020 | 2021 | 2022 | 2023 | 2024 |
| 89 | The Alameda CTC and Caltrans will continually engage with the community, at a minimum through participation in quarterly meetings of the WOCAP implementation committee, on early project planning and delivery for projects in West Oakland where Alameda CTC and/or Caltrans is the project sponsor in order to ensure projects do not increase transportation impacts on residents. These projects will undergo appropriate reviews to assess the environmental and health impacts, and potential local benefits, and adopt associated mitigation measures so they do not result in a net increase in air pollution or health inequities for residents most impacted by the county's freight transportation system in West Oakland. | ACTC, Caltrans | | | | | |

*Table 6-5. Further Study Measures*

| | Further Study Measures | Authority | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|
| 1 | The Air District will investigate local impacts of backyard wood fires and strategies to minimize these impacts. | Air District | | | | | |
| 2 | The Air District will analyze road dust emission rates for local streets. | Air District | | | | | |
| 3 | The Air District will investigate potential rulemaking to limit fugitive dust from construction activity. | Air District | | | | | |
| 4 | The Air District will work with CARB, EBMUD, and other agency and community partners to identify strategies and incentives to address community concerns about odors, health-related emissions, and disclosing to the community information about complaints and complaint resolutions from the EBMUD facility in the Owning Our Air plan area. | Air District | | | | | |
| 5 | The Air District will investigate the feasibility of amending Regulation 5 (Open Burning) and/or Reg. 6-3 (Wood Burning Devices) to prohibit recreational fires | Air District | | | | | |
| 6 | The Air District works with the Port of Oakland to optimize the Port appointment system to minimize truck idling. | Air District, Port of Oakland | | | | | |

# Chapter 7 – Enforcement

AB 617 requires that community emissions reduction programs include an enforcement plan to ensure Air District and CARB enforcement efforts support reducing emissions and improving air quality and public health in the West Oakland community. This enforcement plan uses three years of stationary and mobile source enforcement data to gain a better understanding of the local air quality issues in West Oakland, specifically in the 94607 and 94608 zip codes. Enforcement responsibilities are jointly shared between CARB and the Air District, with CARB primarily responsible for enforcement of mobile sources and the Air District primarily responsible for stationary sources. In West Oakland, inspections of stationary and mobile sources may be conducted jointly by Air District and CARB staff. Historical stationary and mobile source enforcement data is shared with the West Oakland Steering Committee in this plan to help identify and affirm enforcement strategies and address community concerns that are above and beyond existing Air District and CARB enforcement programs.

## ENFORCEMENT AUTHORITY

The primary function of enforcement is to ensure compliance and minimize local and regional impacts from air pollution. This section explains the enforcement authorities over stationary and mobile sources.

### STATIONARY SOURCES

The California Health and Safety Code grants Air Districts the authority to adopt and enforce air pollution regulations to achieve state and federal air quality standards. The Air District's Compliance and Enforcement Division enforces Air District, state, and federal regulations for a variety of stationary sources in West Oakland. The following are some examples of stationary sources in the West Oakland area and some of the corresponding Air District regulations for those types of operations:

- Metal facilities (Rule 12-13 and Rule 6-4)
- Power plants (Rule 9-9 and Rule 9-11)
- Sewage treatment plants (source specific rule under development, Rule 9-1 and Rule 9-2)
- Cement and asphalt plants (Rule 6-1 and Rule 6-6)
- Recycling facilities (Rule 6-1, Rule 6-4 and Rule 6-6)
- Gasoline stations (Rule 8-7)
- Stationary and portable engines and generators (Rule 9-8)
- Boilers (Rule 9-7)
- Auto body shops (Rule 8-45)
- Coating operations (Rule 8-4, Rule 8-19, Rule 8-31, and Rule 8-32)
- Asbestos renovation and demolition projects (Rule 11-2 and Rule 11-14)

### MOBILE SOURCES

CARB is the primary authority responsible for developing and enforcing regulations to control emissions from portable and mobile sources and consumer products in California, except in cases where federal law preempts CARB's authority.  Although CARB has authority to regulate emissions from these sources, it does not have authority to enforce where vehicles drive or park. Beginning in 2009, CARB and the Air District entered a Memorandum of Understanding (MOU) that allows the Air District to enforce portable and mobile sources regulations. Per this agreement, in West Oakland inspection and enforcement for the following sources may be conducted by both CARB and Air District staff:

- Portable equipment
- Heavy-duty idling
- Cargo handling equipment
- Off-road construction equipment
- Commercial harbor craft
- Ocean-going vessels (shore power)
- Drayage trucks
- Transport refrigeration units
- On-board incineration on cruise ships
- Fuel sulfur and operational requirements within 24 nautical miles for ocean-going vessels

The authority to regulate and enforce parking and truck routes within West Oakland is held by the City's Police and Code Enforcement departments. It will be the responsibility of those departments to apply any truck parking or traffic strategies in West Oakland.

## ENFORCEMENT OF STATIONARY SOURCES

### AIR DISTRICT ENFORCEMENT PROGRAM

The Air District has a robust Compliance and Enforcement Division that is responsible for performing core enforcement program activities. Approximately 60 inspectors are assigned to geographic areas within the nine Bay Area counties. Two inspectors are assigned to the West Oakland area to conduct inspections and enforce Air District rules and regulations. The enforcement program includes:

- unannounced, compliance inspections of Air District permitted facilities,
- investigations of community complaints and general air quality concerns, and
- responding to and investigating major incidents such as fires associated with manufacturing or industrial processes, or other major air emission releases.

It is the Air District's goal to respond to complaints immediately, in-person, on the day they are received. In situations where complaints are received after business hours or on weekends, the inspector will respond on the next workday. In the course of their investigations, inspectors will document the compliance status of permitted sources with air pollution regulations.

Occasionally, inspectors discover unpermitted sources that fall within the Air District's jurisdiction. In these situations, the inspector may work with the facility owner to facilitate the permitting process. Inspectors also document when a facility is in violation of an air quality regulation and facilities are required to take corrective actions and prevent it from happening again. As part of this process, the inspector will track the progress of the corrective actions and provide compliance assistance if necessary.

### *Stationary Sources in West Oakland*

Enforcement staff conduct routine, unannounced inspections of stationary sources of air pollution. Figure 7-1 provides a closer look at the different types of Air District permitted facilities located in the West Oakland area. The chart also shows the number of each type of facility in the area. See Appendix E in the enforcement plan for a complete list of Air District permitted facilities located in 94607 and 94608 zip codes.

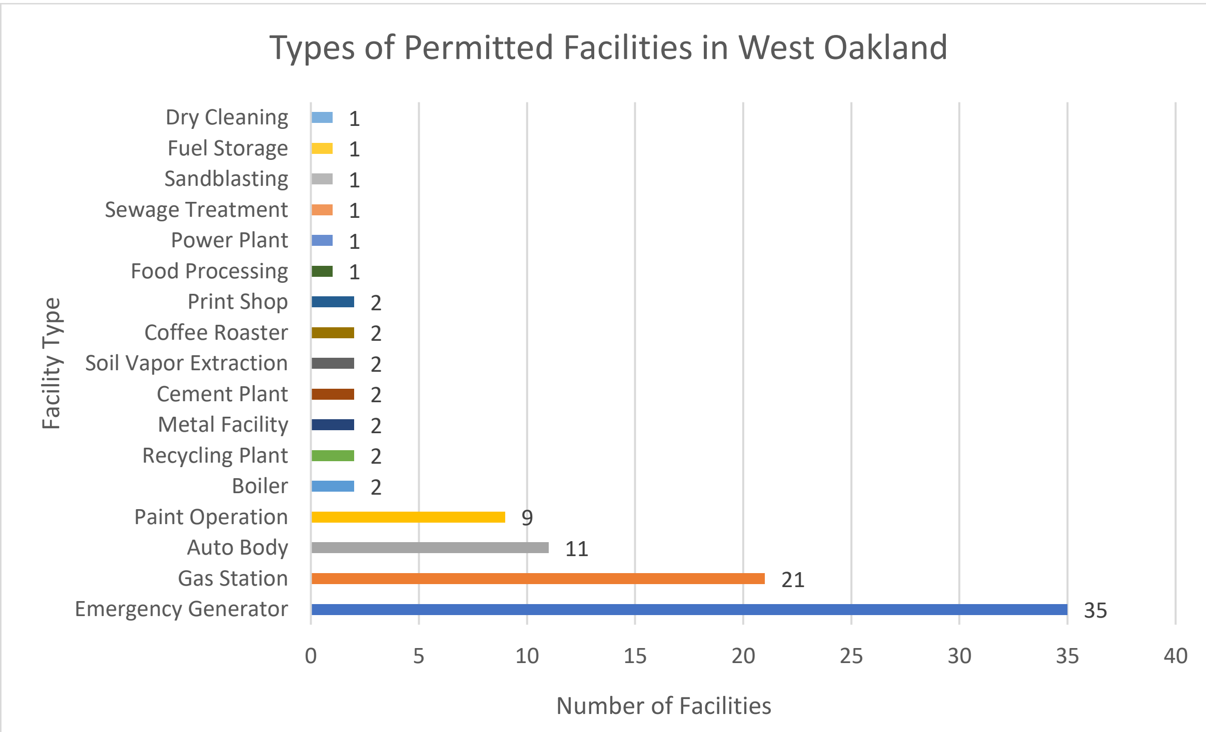



*Figure 7-1. Types of Permitted Facilities in West Oakland*

## 3-Year Enforcement History of Stationary Sources

The Air District compiled a 3-year enforcement history in the West Oakland area for stationary sources. These data include a 3-year summary of compliance inspections, complaint investigations, and violations from January 2016 through December 2018.

### *Compliance Inspections*

West Oakland has approximately 96 Air District permitted facilities as of December 2018. Unannounced compliance inspections are conducted at sites that have an Authority to Construct or Permit to Operate. As part of the inspection, Air District inspectors meet with the owner or operator of a facility to ensure sources are operating in compliance with Air District regulations, permit requirements and other State and Federal Air Quality Regulations. Inspectors conduct inspections of equipment, operational processes and review associated records to determine a facility's compliance status. In the 3-year period, Air District inspectors completed 196 routine compliance inspections at the 96 Air District permitted facilities.

In addition to inspections at permitted facilities, Air District inspectors also conduct compliance inspections at various sites of construction and demolition projects that are subject to the Air District's Asbestos Demolition and Renovation Program. In the 3-year period, Air District inspectors completed 50 asbestos demolition and renovation site inspections. Beyond routine compliance inspections at permitted facilities and asbestos demolition and renovation sites, Air District inspectors initiate compliance inspections at facilities when responding to complaints and investigating potential compliance concerns, such as those associated with, but not limited to:

- process upsets and equipment malfunctions at permitted facilities;
- deviations to a facility's permit, operating parameters, monitoring and recordkeeping requirements;
- major incidents such as fires or other air emission releases; and
- facilities and sites of operation that do not already have an Air District permit where there may be an air quality concern.

As shown in Figure 7-2, an analysis of the inspection program shows a compliance rate of approximately 92% for the West Oakland area, which includes inspections of permitted stationary sources and asbestos demolition and renovation sites.

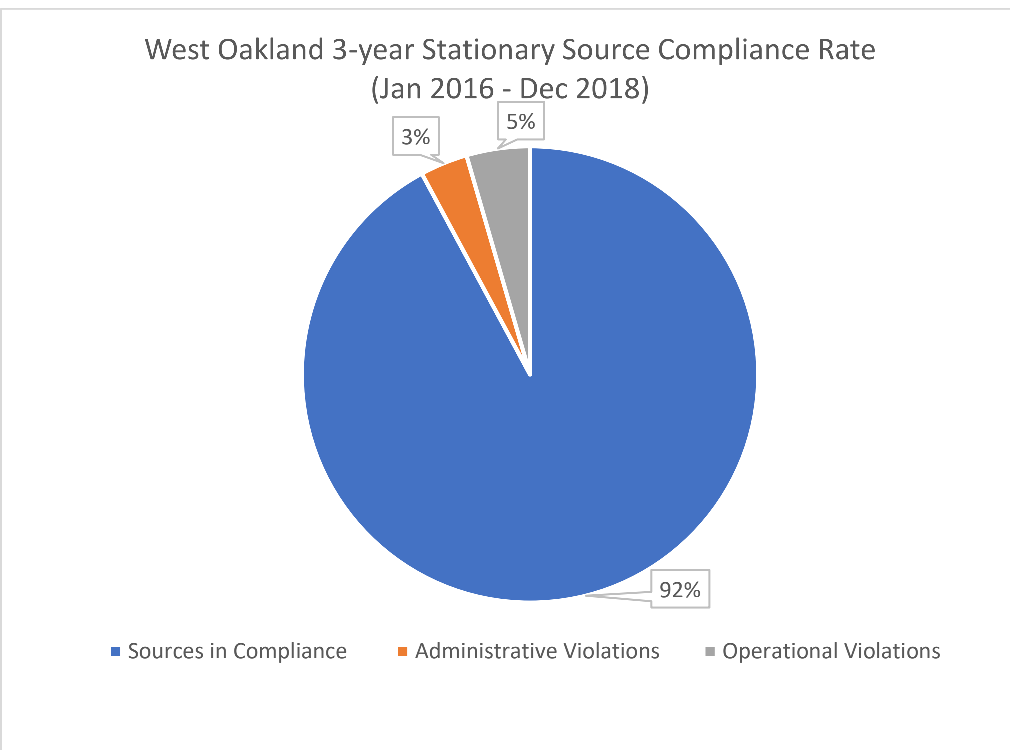



*Figure 7-2. West Oakland 3-year Stationary Source Compliance Rate*

### *Complaint Investigations*

Community members are often the first to notice an air pollution concern, such as visible emissions or odors. In response to civic concerns, Air District staff investigate every complaint to achieve early intervention on potential problems and allow the District to be proactive in protecting public health. Inspectors respond and investigate air pollution complaints that have impacts on individuals, and which may result in Air District enforcement actions, including public nuisance and/or violations for smoke, odors, dust, particulate matter or other air contaminants.

The Air District receives a wide variety of air quality related complaints. For each complaint, the inspector responds and investigates to determine whether the alleged source is violating an air pollution regulation. The inspector takes appropriate enforcement actions when the alleged source is determined to be in violation. In situations where the inspector is unable to establish that a violation has occurred, the inspector notifies the facility of the complaint and works with the owner/operator to resolve the air quality concern.

Complaint investigations make up a large portion of the enforcement activities in West Oakland. In the 3-year period, a total of 124 air quality complaints were received by the Air District. Figure 7-3 summarizes the complaint type as received by the Air District. Within the West Oakland area, odors are the greatest concern of the community, followed by complaints of dust. Other types of complaints made up less than 20 complaints for the period reviewed.

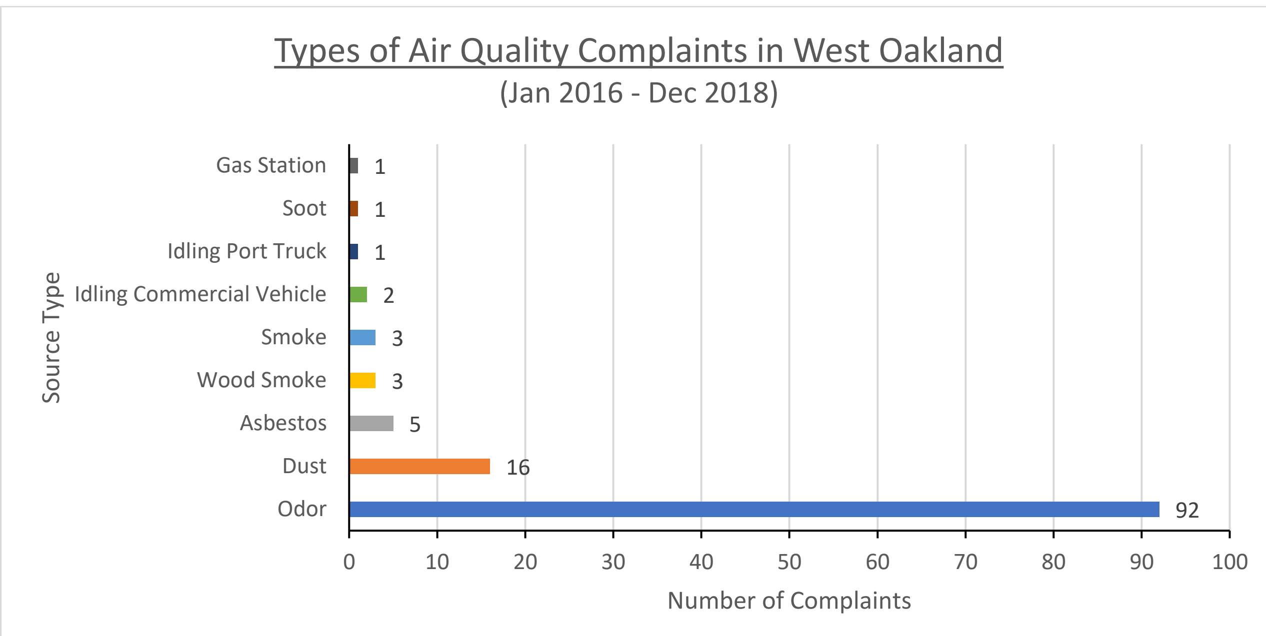



*Figure 7-3. Types of Air Quality Complaints in West Oakland*

Figure 7-4 below is a closer evaluation of the complaint data. The graph shows many odor complaints received by the Air District allege several specific facilities or sources. *Custom Alloy,* a metal foundry, received the most odor complaints of the facilities in West Oakland. *California Waste Solutions*, a waste processing facility, also received a notable number of odor complaints during the 3-year period.

Approximately 26 percent of the complaints filed by complainants did not allege a specific source. Additionally, 10 percent of the complaints in West Oakland were one-time, single complaints.

Of the 16 dust complaints that occurred in West Oakland, 12 were attributable to a construction activity. See Appendix E for a complete list of complaints received in West Oakland.

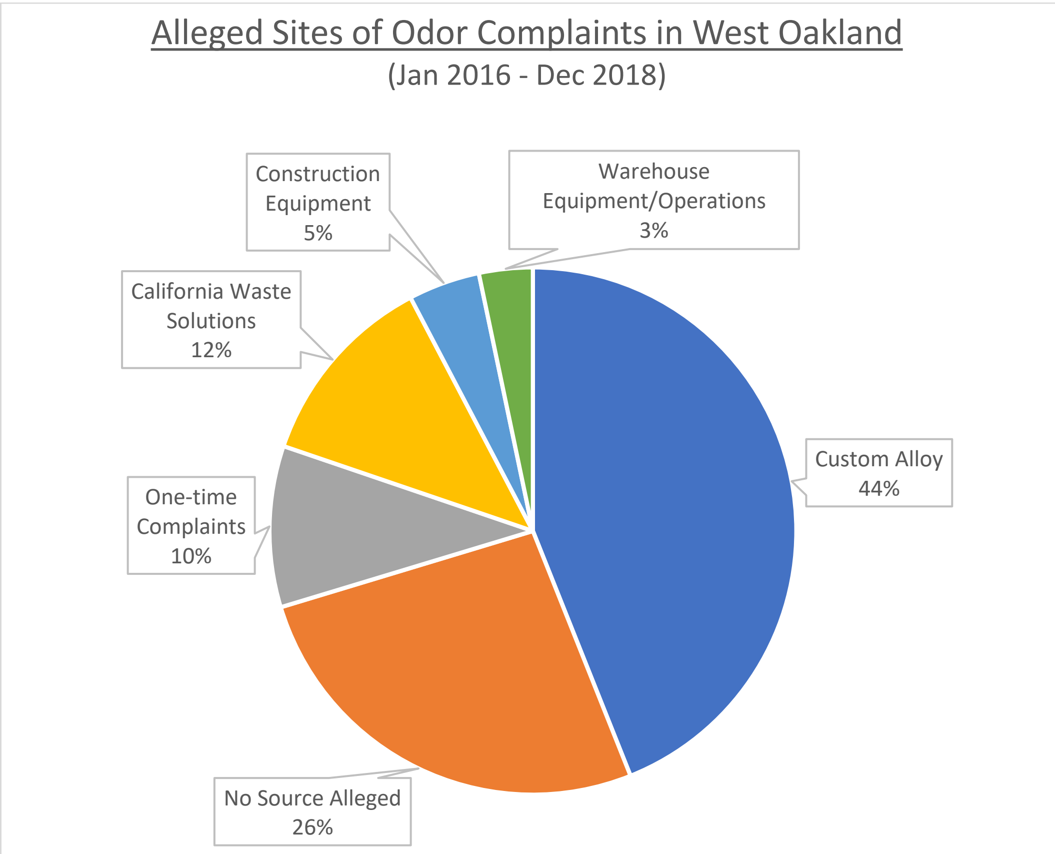



*Figure 7-4. Alleged Sites of Odor Complaints in West Oakland*

### *Notice of Violations*

Notice of Violations are issued to facilities found to be operating a source in violation of air quality regulations. In addition to citing the types of sources and regulations violated, these notices document the compliance issue and cause, the extent of harm associated with the violation and how the violation was stopped or corrected.

When a Notice of Violation is issued, the facility is required to correct the violation and may have to pay a monetary penalty, including taking steps to prevent it from happening again. Facilities that do not correct violations or take measures to prevent them risk increased penalties for repeat violations. In the 3-year period, a total of 21 Notices of Violations were issued as shown in Figure 7-5.

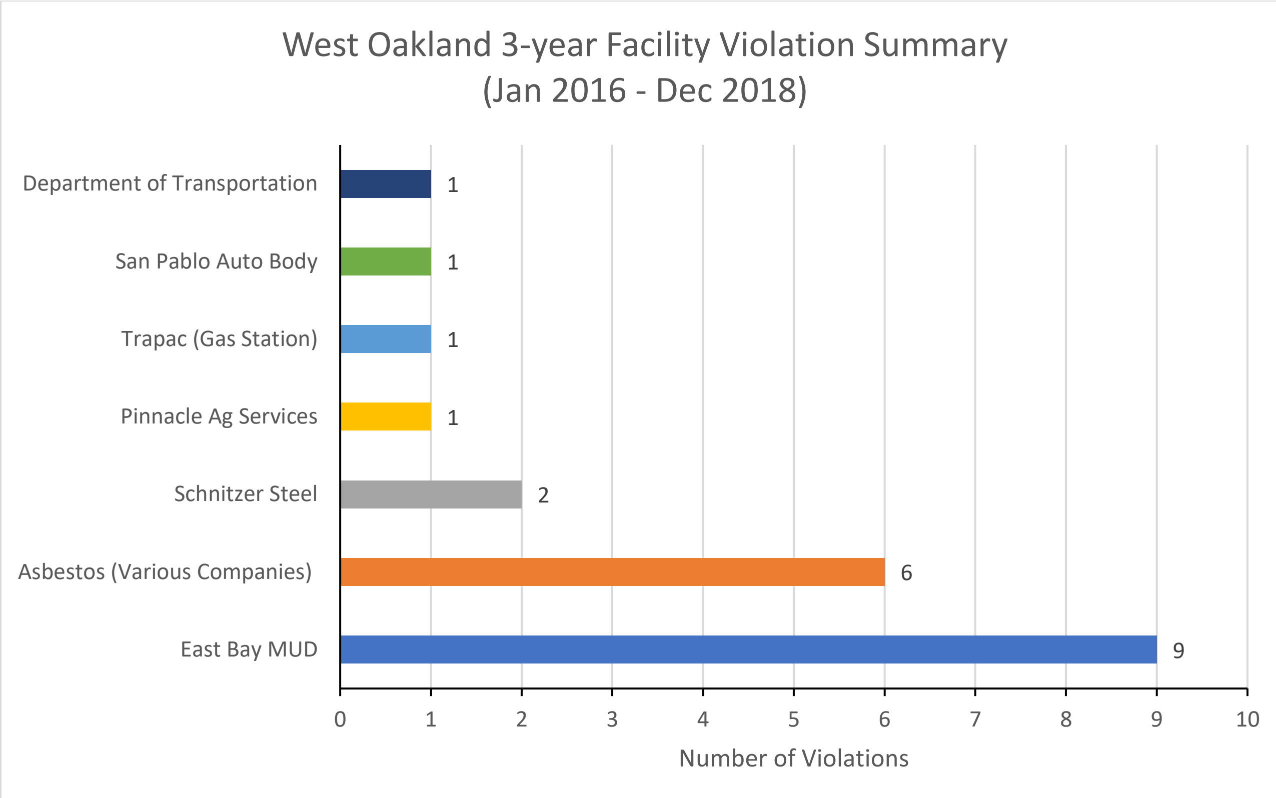



*Figure 7-5. West Oakland 3-Year Violation Summary*

For minor violations, a Notice to Comply may be issued to correct the violation. A Notice to Comply is an enforcement action to place the facility on notice that there is a compliance concern. A Notice to Comply may only be issued to address violations that are administrative in nature and do not cause air emissions. In the 3-year period between January 2016 and December 2018, 1 Notice to Comply was issued. See Appendix E for a complete list of violations issued in West Oakland.

## ENFORCEMENT OF MOBILE SOURCES

### CARB ENFORCEMENT PROGRAMS

The California Air Resources Board (CARB) enforcement programs cover the vehicles we drive, the diesel engines that power our economy, consumer products that we purchase, and greenhouse gas (GHG) emissions from our industries and activities. The goal of CARB enforcement programs is to achieve comprehensive compliance in every regulation the Board adopts. Through enforcement, we work to bring responsible parties into compliance and in doing so achieve a level playing field across industry so that no company can benefit from non-compliance at the expense of another; and to deter industry from future violations. We take compliance seriously because the success of our programs, and public health protection, depends on it.

CARB applies enforcement programs professionally in accordance with our enforcement policy, which we updated in 2017.[44] We use data and inspections to identify potential non-compliance, and then

[44] CARB's enforcement policy is available here: https://ww2.arb.ca.gov/resources/documents/enforcement-policy.

investigate each case. Once a violation is identified, we notify the responsible party and evaluate what happened. We work with the party to achieve compliance and measure the relevant facts and circumstances of each case, relative to eight factors set in law and described in our enforcement policy, to determine an appropriate penalty. The case is settled when the responsible party has achieved compliance and paid an appropriate penalty. If the case cannot be settled, we work with CARB legal staff to refer the case to California's Attorney General for litigation.

Field inspectors are a critical component of the diesel enforcement program. The inspectors work across the state to inspect trucks and other equipment for compliance with CARB's diesel regulations, such as the Heavy-Duty Diesel Vehicle Inspection Program, Solid Waste Collection Vehicle, Drayage Truck, Statewide Truck and Bus, Tractor-Trailer Greenhouse Gas, and Transport Refrigeration Unit. Field inspectors also conduct inspections for compliance with Public Agencies and Utilities, In-Use Off-Road, and School Bus Idling regulations. CARB inspectors examine heavy-duty vehicles and equipment at numerous locations throughout California, such as at California Highway Patrol scale facilities, warehouses, fleet yards, construction sites, random roadside locations, truck stops, rest areas, ports, and rail yards.

In addition, CARB has a Supplemental Environmental Project (SEP) Policy that allows community-based projects to be funded from a portion, up to 50 percent, of the penalties received during settlement of enforcement actions. SEPs can improve public health, reduce pollution, increase environmental compliance, and bring public awareness to neighborhoods most burdened by environmental harm.

### CARB'S THREE-YEAR ENFORCEMENT HISTORY

#### *Heavy-Duty Diesel Vehicles*

Over the last three years, CARB has conducted 939[45] inspections on Heavy-Duty Diesel Vehicles (HDDV) within West Oakland. Table 7-1 represents a year-by-year breakdown of enforcement action for CARB HDDV programs in the community between 2016 and 2018 (inspections per year are program based and some occur concurrently). These inspections occurred across 10 of 12 CARB HDDV enforcement programs. The two programs not included in Table 7-1 are the Fleet Rule for Public Agency and Utility (PAU) and the Solid Waste Collection Vehicle Regulation (SWC). No inspections for these programs occurred in the West Oakland community from 2016-2018 because the deadline for fleets to demonstrate compliance has long past and traditionally the West Oakland area has had high compliance rates with these rules.

[45] Number is preliminary and may change as data is reviewed.

*Table 7-1. Enforcement History of Heavy-Duty Vehicles in West Oakland*

| | | 2016 | | Violations | | 2017 | | Violations | | 2018 | | Violations | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Program | Inspections | Compliant Units | Emission | Non-Emission | Inspections | Compliant Units | Emission | Non-Emission | Inspections | Compliant Units | Emission | Non-Emission |
| Heavy Duty Vehicle Inspection Program | Diesel Exhaust Fluid | 3 | 3 | 0 | 0 | 6 | 6 | 0 | 0 | 8 | 8 | 0 | 0 |
| | Emission Control Label | 32 | 32 | 0 | 0 | 51 | 50 | 0 | 1 | 87 | 85 | 0 | 2 |
| | Smoke Opacity | 70 | 70 | 0 | 0 | 53 | 53 | 0 | 0 | 90 | 90 | 0 | 0 |
| | Tampering | --- | --- | --- | --- | 10 | 10 | 0 | 0 | 90 | 89 | 1 | 0 |
| | Idling | 68 | 68 | 0 | 0 | 11 | 11 | 0 | 0 | 32 | 32 | 0 | 0 |
| | Off-Road | 7 | 7 | 0 | 0 | 6 | 5 | 0 | 1 | 10 | 10 | 0 | 0 |
| | Smart Way | --- | --- | --- | --- | 1 | 1 | 0 | 0 | 32 | 32 | 0 | 0 |
| | Transport Refrigeration Unit | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | --- | -- | --- |
| | Drayage | 56 | 54 | 2 | 0 | 53 | 52 | 0 | 1 | 89 | 87 | 1 | 1 |
| | Truck and Bus | 40 | 38 | 2 | 0 | 16 | 14 | 2 | 0 | 15 | 15 | 0 | 0 |
| | **Total** | **278** | **273** | **5** | **0** | **208** | **203** | **2** | **3** | **453** | **448** | **2** | **3** |

**CARB Heavy-Duty Diesel Vehicle Program descriptions:**

**Heavy-Duty Vehicle Inspection Program** (HDVIP): The HDVIP program requires heavy-duty trucks and buses to be inspected for excessive smoke and tampering, and engine certification label compliance. Any heavy-duty vehicle traveling in California, including vehicles registered in other states and foreign countries, may be tested. Tests are performed by CARB inspection teams at border crossings, CHP weigh stations, fleet facilities, and randomly selected roadside locations. Owners of trucks and buses found in violation are subject to minimum penalties starting at $300 per violation.

**Idling**: Idling and opacity inspections are performed to ensure a heavy-duty vehicle (HDV) is compliant with emission standards and is not violating CARB's Idling regulation. Idling for more than five minutes is prohibited unless the HDV is certified clean idle and the vehicle is more than 100 feet away from a school or restricted area (exceptions apply). Vehicle owners and drivers in violation are subject to minimum penalties starting at $300 per violation and up to $1000 per day.

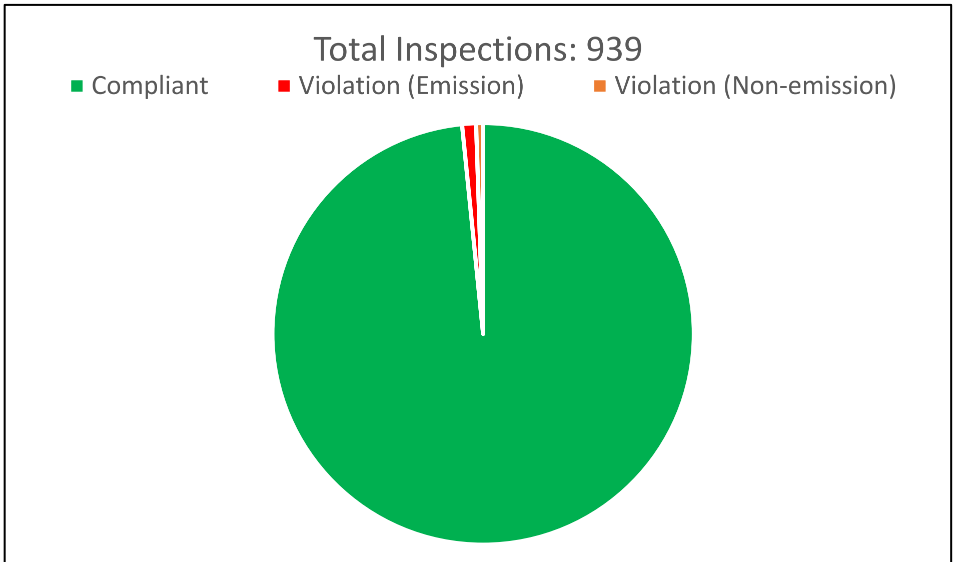
**Off-Road Construction Equipment (off-road regulation)**: Construction equipment is a major contributor to air pollution, especially when large construction projects are adjacent to neighborhoods. To address this source of air pollution, CARB adopted the nation's first regulation aimed at cleaning up off-road construction equipment such as bulldozers, graders, and backhoes. The off-road regulation requires off-road fleets to meet fleet average emission standards and be equipped with Best Available Control Technology (BACT) (a few specific exceptions apply).

**Smart Way**: The Tractor-Trailer Greenhouse Gas Regulation requires 53-foot or longer dry van or refrigerated van trailers and the tractors that pull them on California highways to use certain equipment that the U.S. Environmental Protection Agency Smart Way program has verified or designated to meet their efficiency standards.

**Transport Refrigeration Unit** (TRU): Transport Refrigeration Units (TRUs) are refrigeration systems powered by diesel internal combustion engines designed to refrigerate or heat perishable products that are transported in various containers, including semi-trailers, truck vans, shipping containers, and rail cars. Since diesel particulate matter has been identified as a toxic air contaminant, CARB adopted an Airborne Toxic Control Measure (ATCM) for TRUs and TRU generator sets. CARB staff inspect TRUs to ensure that the units are meeting labeling and in-use performance standards identified in the TRU regulation.

**Drayage**: The Drayage Truck Regulation is part of CARB's ongoing efforts to reduce particulate matter (PM) and oxides of nitrogen (NOx) emissions from diesel-fueled engines and improve air quality associated with goods movement. Heavy-Duty Vehicles that carry goods to or from a port or intermodal facility are required to be equipped with a 2007 or newer model year engine. This requirement becomes stricter in 2023, when Drayage trucks are required to be equipped with a 2010 or newer model year engine, because Drayage trucks will be required to meet the standards of the Truck and Bus Regulation.

**Statewide Truck and Bus** (STB): The Statewide Truck and Bus regulation requires diesel trucks with a Gross Vehicle Weight Rating (GVWR) greater than 14,000 pounds that operate in California to install diesel particulate filters or replace older engines with cleaner engine technology on a schedule based on the model year of the engine and GVWR.




| Results | Total | Percent |
|---|---|---|
| Compliant | 924 | 98.4% |
| Violation (Emission) | 9 | 1% |
| Violation (Non-Emission) | 6 | 0.6% |

*Figure 7-6. Heavy-Duty Vehicle Inspections (2016-2018)*

Preliminary analysis of Heavy-Duty Vehicle program inspections suggests that the compliance rate within the West Oakland community is high. As seen in Figure 7-6, from 2016-2018, 98.4 percent of Heavy-Duty Vehicle program inspections showed compliance. All Heavy-Duty Vehicle programs have more than a 90 percent compliance rate when averaged over a three-year period. During this period, 15 citations were issued to Heavy-Duty Vehicles within the community. Further breakdown of the citations data indicates that nine citations were issued for emission violations and six citations were issued for non-emission violations. The difference between emission and non-emission citations is that emission violations contribute to air pollution while non-emissions violations do not. An example of a non-emission violation would be a truck not complying with labeling requirements. For a breakdown of violations per CARB enforcement program and location, see the map provided in Figure 7-7. CARB is working to compile information on the resolution of violations issued in West Oakland and will provide this data to the community Steering Committee as it becomes available.

CARB will work closely with the Steering Committee to better determine areas of non-compliance within the West Oakland area. The high compliance rate observed in the 3-year history may demonstrate the need for more targeted inspections to identify compliance issues.

The inspection history includes several program inspections that were conducted in and around the West Oakland community. The maps shown in Figure 7-8 indicate the approximate locations and number of inspections in the above-mentioned mobile program areas in the West Oakland Community in 2016-2018. The goal of the maps is to visually display the location of program inspections to help determine gaps in CARB enforcement activity as well as where enhanced enforcement is necessary to deter potential violators within the community. For an interactive web version of CARB's enforcement activity, visit CARB's enforcement data visualization tool: [https://webmaps.arb.ca.gov/edvs/](https://webmaps.arb.ca.gov/edvs/).


*Figure 7-7. CARB Citations (2016-2018)*

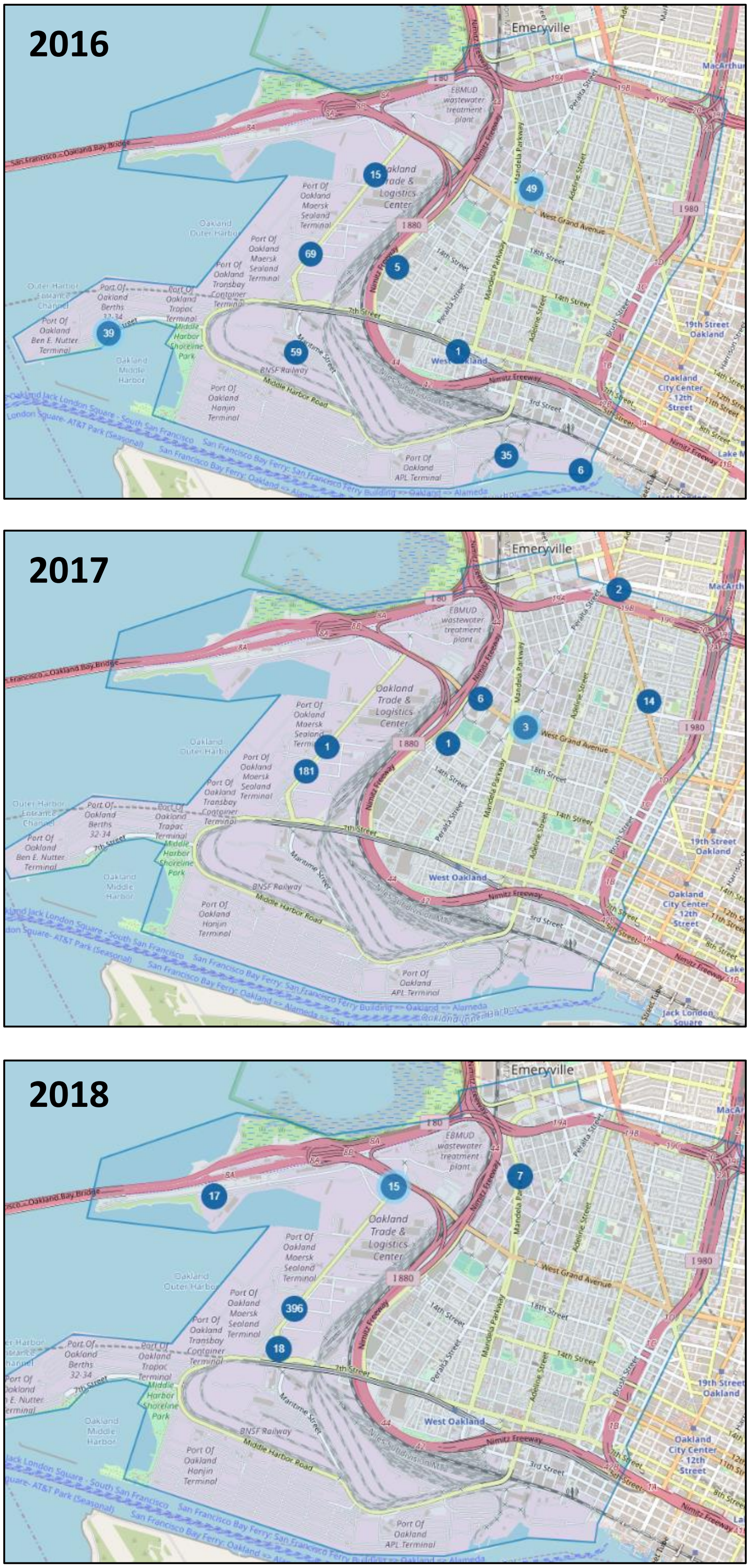



*Figure 7-8. Heavy-Duty Vehicle Program Inspections (2016-2018)*

### *Marine Enforcement*

From 2016-2018 CARB staff performed at least 167 inspections in the Port of Oakland. CARB has recently developed strategies to better track the locations of Marine enforcement activities, which will improve our ability to identify the location of cargo handling equipment, shore power, and other marine inspection locations. We will include these data in future updates.

*Table 7-2. Marine Enforcement History (2016-2018)*

| | 2016 | | 2017 | | 2018 | |
|---|---|---|---|---|---|---|
| Program | Inspections | Non-compliant Units | Inspections | Non-compliant Units | Inspections | Non-compliant Units |
| Ocean-Going Vessels | 37 | 0 | 32 | 1 | 23 | 0 |
| Shore Power | 15 | 1 | 13 | 1 | Pending | Pending |
| Cargo Handling Equipment | --- | --- | 3 | Pending | Pending | Pending |
| Commercial Harbor Craft | 0 | 0 | 0 | 0 | 44 | 2 |
| **Total** | **52** | **1** | **48** | **2** | **67** | **2** |

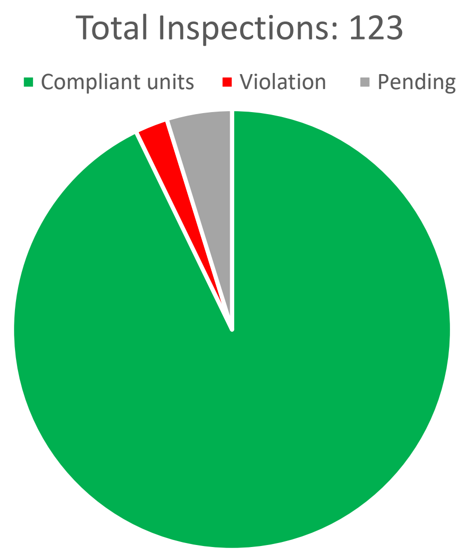
**CARB Marine Enforcement Program descriptions:**

**Ocean-Going Vessels** (OGV) – This regulation is designed to reduce particulate matter, diesel PM, oxides of nitrogen, and sulfur oxide emissions from ocean-going vessels. Such vessels are required to switch to cleaner fuel within 24 nautical miles of the California coast.

**Shore Power**: The purpose of the At-Berth Regulation is to reduce emissions from diesel auxiliary engines on container ships, passenger ships, and refrigerated-cargo ships while berthing at a California Port.

**Cargo Handling Equipment** (CHE) – The Mobile Cargo Handling Equipment (CHE) Regulation was adopted in 2005 to reduce toxic and criteria emissions to protect public health. This regulation was fully implemented by the end of 2017, hence the lack of data prior to 2017. As part of CARB's continuing efforts to reduce greenhouse gas (GHG), diesel PM, and NOx emissions in California, the CARB staff investigate opportunities to reduce idling emissions from cargo handling equipment used at ports and intermodal rail yards. Cargo handling equipment is used to transfer goods or perform maintenance and repair activities and includes equipment such as yard trucks, rubber-tired gantry cranes, top handlers, side handlers, forklifts, and loaders.

**Commercial Harbor Craft** (CHC) - There are several types of harbor craft in California, including fishing vessels, ferries, excursion vessels, tugboats, tow boats, crew and supply boats, barges, dredges, and other vessel types. The Commercial Harbor Craft (CHC) Regulation was adopted to reduce toxic and criteria emissions to protect public health.




| Results | Total | Percent |
|---|---|---|
| Compliant | 156 | 93.4% |
| Violation | 3 | 3.0% |
| Pending | 4 | 3.6% |

*Figure 7-9. Port of Oakland Inspections (2016-2018)*

Analysis of the enforcement data for inspection activities in the Port of Oakland suggests that there is a high compliance rate. However, given the lack of spatial data for some programs within the Marine enforcement section, CARB acknowledges the need for better data management, which will allow for higher resolution of enforcement activities within the community. CARB has developed a data management measure (detailed later in this chapter as CARB measure 6 under Enforcement Goals and Strategies) to better track and manage Marine enforcement activities in the Port of Oakland California.

Therefore, while lacking spatial data in certain program areas, Figure 7-10 indicates the approximate location and number of inspections in the above-mentioned Marine program areas in the West Oakland Community from 2016-2018. Commercial harbor craft inspections are not currently included in the marine inspection map. However, as CARB's data visualization tool[46] is updated, these data will become publicly available. While most commercial harbor craft inspections were conducted across the Oakland Inner Harbor in Alameda, these vessels will often enter the Oakland Inner Harbor and can impact West Oakland residents.

[46] CARB's data visualization tool is available at https://webmaps.arb.ca.gov/edvs/.

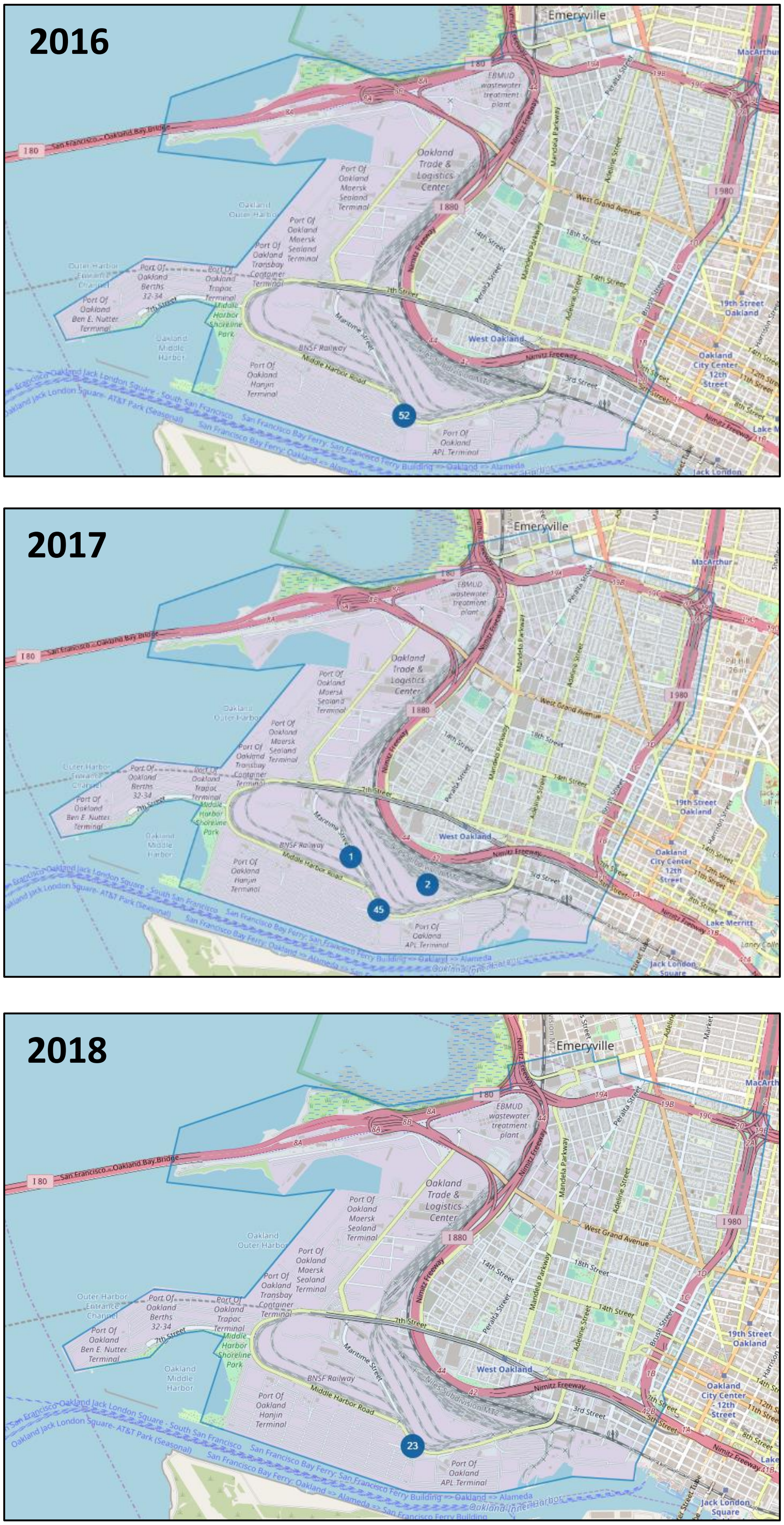



*Figure 7-10. Marine Inspection Locations (2016-2018)*

### Consumer Products

Consumer product inspections are an important regulatory tool to improve public health in the community. Consumer products, such as hairsprays, deodorants and flooring, are widely used but can be sources of toxic air containments (TACs) and volatile organic compounds (VOC) that community members willingly bring into their homes.

In 2017, CARB conducted approximately 57 consumer products inspections within the West Oakland community. Table 7-3 represents a breakdown of enforcement action in the community in 2017:

*Table 7-3. Consumer Products Investigations (2017)*

| Program | Investigations | Compliant Products | Violations |
|---|---|---|---|
| Composite Wood | 20 | 19 | 1 |
| Consumer Products | 37 | 33 | 4 |
| **Total** | **57** | **52** | **5** |

**Program Descriptions:**

**Composite Wood Products** – CARB's Airborne Toxic Control Measure (ATCM) to control formaldehyde emissions from composite wood specifically focuses on three products: hardwood plywood, particleboard, and medium density fiberboard. Investigators in the Composite Wood Products program purchase samples of regulated products from outlets all over California. They inspect products and packaging for compliance with labeling requirements and send selected products to the laboratory for testing.

**Consumer Products** - Consumer Products are chemically formulated products used by household and institutional consumers. Some examples are: detergents, cleaning compounds; polishes, floor finishes; cosmetics and personal care products; home, lawn, and garden products; disinfectants and sanitizers; aerosol paints and automotive specialty products. Consumer Products do NOT include: other paint products, furniture coatings, or architectural coatings. Investigators in the Consumer Products program purchase samples of regulated consumer products from outlets all over California. They inspect product containers for compliance with registration and dating requirements and send selected products to the laboratory for testing.

Preliminary analysis appears to show a high compliance rate with consumer product programs. In 2017, 57 inspections occurred in the West Oakland community, of which 5 resulted in violations. CARB staff will continue to assess consumer products data as it becomes available.

### *Summary of Complaints Received and Their Resolution*

CARB's previous complaint management system for complaints related to heavy-duty diesel vehicles lacked the ability to track complaints by specific location. However, CARB staff have begun to track all complaints through the California Environmental Protection Agency Complaint Reporting system. This will allow CARB staff to better track complaints by the community and to see the resolution of the complaint. Furthermore, this process will enhance CARB's complaint response by encouraging better complaint referrals (e.g. referring complaints to the proper agency and/or identifying complaints that may require multiple agencies to be involved in their resolution).

## ENFORCEMENT GOALS AND STRATEGIES

The goal at the Air District is to have facilities establish a robust environmental program by performing routine self-inspections, catching problems early, reporting and correcting any non-compliance issues upon discovery, mitigating compliance concerns expeditiously, and developing strategies that prevent violations from reoccurring. The Air District ensures facilities operate in compliance with air pollution regulations by conducting routine inspections and investigations into community concerns; and if violations are issued to a facility, staff provide extensive compliance assistance to help the facility return to compliance status.

Over the last year, Co-leads and members of the West Oakland Steering Committee have attended monthly meetings with a variety of Air District and CARB staff and representatives from City of Oakland planning, permitting and building departments. Community members predominantly expressed concerns regarding the following:

- truck idling near residents, schools, and elder care facilities;
- compliance concerns at an unpermitted facility – Ponoko (custom laser cutting);
- odor concerns at a permitted facility – Custom Alloy (metal foundry); and
- residential, backyard burning in West Oakland.

Acknowledging these concerns, Air District staff expeditiously conducted investigations to ensure compliance with air regulations. Compliance and Enforcement staff increased patrols to monitor for idling vehicles in West Oakland, inspected Ponoko and assisted the facility in submitting a permit application,[47] and investigated odor complaints at Custom Alloy.

**Enforcement Measures**

The Air District and CARB recognize that enhancing enforcement is a top priority for the West Oakland community and intends to implement the following enforcement measures, programs and policies in addition to the existing, ongoing enforcement activities to help improve air quality in West Oakland:

### Air District Enforcement Measures

1. Increase Frequency of Compliance Inspections at Stationary Sources

   To ensure compliance with air quality standards, rules and regulations, the Air District's Compliance & Enforcement Division will enhance inspection frequencies in the West Oakland area for the next 5 years:

   - Inspect all the permitted facilities and sources within a 2-year period;

[47] *Application is under review by Air District Engineering Division.*

- Inspect any unpermitted facilities and sources identified by the Steering Committee; and
- Annually track and document the number of inspections conducted, including type, date and location.

2. Develop education and outreach material on open burning

   To address the community concern of illegal backyard burning in West Oakland, Air District Compliance & Enforcement staff will develop outreach materials to ensure the community understands health and air quality impacts from backyard burning. Informational fliers will help the community understand particulate emissions and air quality regulations that specifically prohibit open burning of garbage, tree pruning and other combustible material in residential fireplaces and open firepits.

3. Provide Annual Report on Enforcement Activities of Stationary Sources

   The Air District's Compliance & Enforcement Division will provide an annual update to the Steering Committee summarizing the progress of the West Oakland Enforcement Strategy at the end of each calendar year for the next 5 years. The update will include the following information:

   - Provide an annual inspection summary to the Steering Committee noting inspection results and a general description of violations in the West Oakland area;
   - Number of complaints received in the West Oakland area, including a description of the types of complaints.

4. Update Air District Complaint Policy

   While the Air District has a robust complaint policy and procedure to promptly respond to air quality complaints and other compliance incidents/episodes, the Air District recognizes the need to review the complaint procedure, including the evaluation of new technologies to streamline complaint receipt, response and investigations. Air District staff plans to conduct a series of community workshops throughout the Air District in the last quarter of 2019 to solicit input from Bay Area residents. Air District staff will work with the West Oakland Steering Committee in this endeavor.

5. Enhanced Enforcement Referral Process

   Through the course of Air District work in West Oakland, Air District inspectors may identify compliance concerns that fall within another local enforcement authority or jurisdiction. The Compliance and Enforcement Division will develop an enhanced referral system with the different agencies having jurisdiction in West Oakland. Any issues identified beyond the scope of Air District's authority will be referred to the appropriate agency on the day of the investigation.

6. Identify Unpermitted Sources

   CARB and District staff will consult the community for areas where there may be potentially unpermitted sources of emissions.

### CARB Enforcement Strategies

CARB acknowledges that the high compliance rates identified in the enforcement history may not necessarily reflect compliance across the community. In cases where enhanced enforcement activities uncover non-compliance issues, CARB's goal will be to achieve the same or higher compliance rates as observed in the three-year history. CARB staff will also work closely with the community steering committee, the Air District, and other agencies (e.g. City of Oakland, Port of Oakland, etc.) to address gaps in the enforcement of mobile sources and seek opportunities to close these gaps.

To support achieving these goals, CARB is committed to enhancing enforcement activities within West Oakland by utilizing the following tools:

- Assess the enforcement history data;
- Target areas that may require additional enforcement with guidance from the community Steering Committee.

CARB will utilize current regulations and enforcement programs across all sources CARB regulates to target areas of non-compliance within the West Oakland community. In addition, CARB and Air District staff will use the above-referenced tools to continue coordination on enforcement of mobile source rules and regulations in and around the community. This cooperation is in part due to CARB and the Air District's MOU and the District's Mobile Source Compliance Plan, which lays out a comprehensive measure for enforcement of specified CARB Air Toxic Control Measures. The use of MOUs between CARB and BAAQMD may not be the only opportunity to utilize this type of relationship; CARB will explore opportunities to expand the use of MOUs with other enforcement agencies.

Listed below are CARB's enforcement strategies to help improve air quality in the West Oakland community:

1. Increase the frequency of compliance inspections with guidance from the community steering committee.

   CARB will collaborate with the West Oakland community emissions reduction program Co-leads to work with the Steering Committee to actively enhance enforcement activities. This will be done through a combination of improved complaint reporting, more focused inspections, and report-back meetings to update the community Steering Committee on both the status of inspections and to obtain additional areas of mobile source concern. CARB will work with the Co-leads to meet annually with the community Steering Committee in order to prioritize enforcement measures and identify possible locations where non-compliant vehicles are present. CARB will additionally report to the community the number of inspections performed, mapped locations of the enforcement, and the number of citations and/or Notices of Violations issued.

As of July 2019, the community Steering Committee has guided CARB staff to focus enforcement efforts in the following areas:

a. Idling heavy-duty vehicles near 7th Street and Adeline;
b. The U.S. Postal Service Distribution Center trucking fleet;
c. Idling heavy-duty vehicles near schools and residential areas; and
d. Transport Refrigeration Units that are being operated near residents and sensitive receptors.

2. Coordinate and conduct inspections of Stationary Source with Air District staff.

CARB will coordinate with Air District staff and will select, based on Steering Committee input, stationary sources for joint inspections. CARB is also committed to assisting Air District staff with compliance inspections of unpermitted sources identified by the Steering Committee.

3. Achieve Compliance with the Truck and Bus Regulation via Senate Bill 1.

In April 2017, the Governor signed Senate Bill 1 (SB 1) into law which included a provision that, beginning in 2020, a vehicle must demonstrate compliance with the State Truck and Bus regulation before it can be registered with the Department of Motor Vehicles (DMV). Beginning in 2020, the DMV, in conjunction with data provided by CARB, will deny vehicle registration to non-compliant heavy-duty vehicles based on the model year of the vehicle.

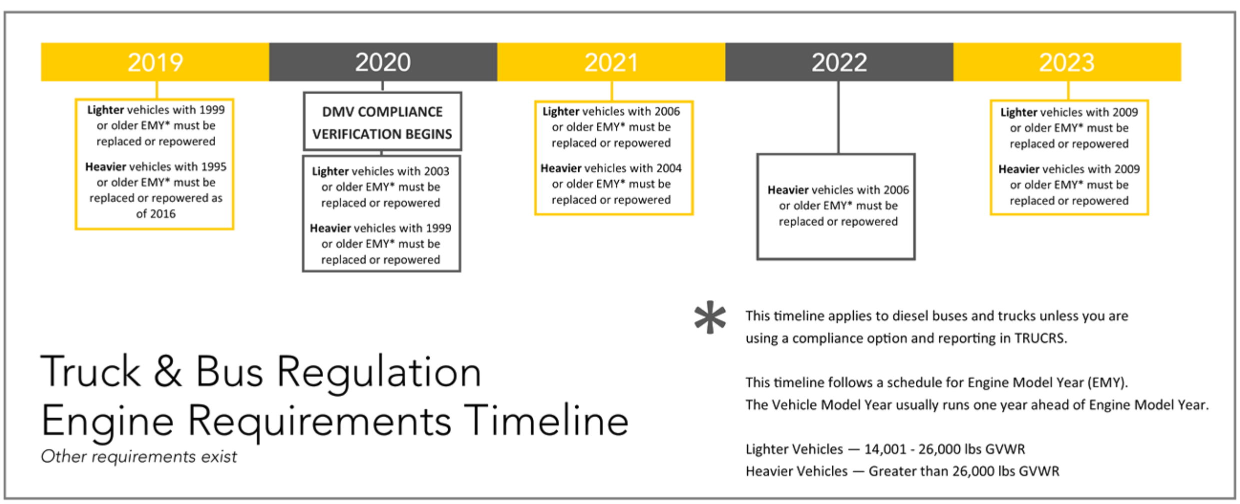



*Figure 7-11. Truck and Bus Regulation Engine Requirements Timeline*

4. Provide Annual Report of Enforcement Activities.

   CARB's enforcement division will provide an annual report to the Steering Committee to update and summarize CARB's enforcement activities within the community.

5. Coordinate with other agencies.

   CARB will seek opportunities to coordinate with other agencies with enforcement authority in West Oakland like the City and Port of Oakland. One such opportunity could involve CARB staff working with the City of Oakland to provide truck idling signage in areas where community members observe trucks idling.

6. Enhance CARB's Data Management Practices.

   CARB is committed to enhancing the quality of enforcement data for the West Oakland community. Moving forward, CARB will maintain the location of enforcement activity and received complaints to provide the Steering Committee with the most accurate data available. CARB has recently completed a visualization tool that makes CARB enforcement data more transparent and available. The tool can be accessed online by visiting https://webmaps.arb.ca.gov/edvs/.

7. Provide in-person community specific training.

   CARB will develop and implement a new program that will be offered to the West Oakland community. Information will cover topics like the fundamentals of enforcement, how the enforcement process works, instructions on filing a thorough complaint, and what to expect from the enforcement process after filing a complaint. Through this program, community members will be able to better support CARB or air district enforcement processes. CARB may also develop online trainings in the future.

8. Update enforcement measures as applicable.

   CARB staff are committed to updating enforcement strategies as requested by the Steering Committee, if said strategies are enforceable by CARB staff or if CARB can reasonably accommodate the request (e.g., additional enforcement training for idling vehicles). As new CARB regulations included in the Plan are adopted, CARB will enforce these measures and integrate associated activities and data into the West Oakland enforcement measures.

# Chapter 8 – Tracking Progress

The Plan goal is to protect and improve community health by eliminating disparities in exposure to local air pollution. Chapter 4 describes the Plan goal and targets. Progress towards the targets will be achieved by implementing the Strategies described in Chapter 6 and the Enforcement Plan described in Chapter 7. This chapter addresses how the Co-leads and the Steering Committee will track progress on individual Strategies and the entire Plan.

## ANNUAL PROGRESS REPORT

The Co-leads will work with the Steering Committee to track progress on Plan implementation, and will develop an annual progress report on the Plan that will include:

- A status update on individual Strategies in the Plan and completed Plan elements;
- A qualitative progress assessment, including a description of Plan implementation and community engagement;
- Updates on the metrics used for tracking progress;
- Updates to the community profile;
- Plan or programmatic changes based on progress to date;
- Updates on interim milestones identified by CARB; and
- Recommendations on new or modified Strategies to further reduce emissions and exposure.

Annual Progress Reports will be electronically available on the project website www.baaqmd.gov/ab617woak.

## TRACKING PLAN PROGRESS AND STRATEGY IMPLEMENTATION

The Co-leads will, on a regular and ongoing basis, track Plan progress and Strategy implementation using a suite of qualitative and quantitative metrics. A summary of the tracking metrics will be shared with the Steering Committee at quarterly implementation meetings and be made available on the project website. During Plan implementation, tracking metrics will be reviewed and updated as needed by the Co-leads and the Steering Committee.

Plan targets discussed in Chapter 4 are framed in terms of local concentrations of $PM_{2.5}$, diesel PM, and cancer risk in seven impact zones. We will use a combination of modeling and measurements to track progress towards these targets. The Air District's fixed-site monitoring station located at 1100 21$^{st}$ St. will continue to measure air quality in West Oakland.[48] The Air District has also contracted with Aclima to measure particulate matter, ozone, nitrogen oxides, carbon monoxide, and carbon dioxide on every street throughout the Bay Area. Aclima is anticipated to complete its measurements for the updated annual baseline by 2021. Measured levels of air pollutants reflect year to year changes in meteorology and sources outside of the Plan boundary, as much as changes in local emissions. Therefore, it may not

[48] Detailed information about the Air District's monitoring station in West Oakland, including what pollutants are measured, are found in the Air District's annual Air Monitoring Network Plans. These Plans are located at http://www.baaqmd.gov/about-air-quality/air-quality-measurement/ambient-air-monitoring-network

be possible to reliably connect changes in measured air quality to the implementation of specific strategies or to show progress towards the Plan's targets. Therefore, the Air District commits to modeling air quality from pollution sources five years after the Plan's implementation. This timeframe is expected to provide a more granular look at progress being made from each of the quantifiable strategies identified in this Plan.

To the extent feasible, we will track emissions reductions resulting from implemented Strategies. Emissions reductions can be readily quantified for Strategies such as Air District and CARB regulations and Air District grants and incentives. As much as possible, we will strive to quantify emission reductions from other measures such as relocation of truck-related businesses, truck route changes, or vegetative buffers. Reductions that cannot be readily quantified will be described qualitatively.

Tracking of Strategy implementation will include metrics describing the status of rules and regulations adopted or implemented, incentives awarded, reduction measures implemented, inter-agency coordination, public outreach, and additional enforcement activities undertaken.

Examples of potential tracking metrics are provided below. These and other metrics will be considered by the Co-leads and Steering Committee at initiation of the implementation phase.

*Table 8-1: Example Tracking Metrics*

| | Example Metrics | Frequency |
|---|---|---|
| Plan Goal | Reduction in local concentrations of $PM_{2.5}$, diesel PM, and cancer risk in seven impact zones | Model 5 years after Plan adoption |
| Plan Targets | Annual tons/year emissions reduced resulting from implementation of specific Strategies | Annual |
| Strategy Implementation | Number of emission reduction Strategies | Annual/Ongoing |
| | • Rule development: Workshops held for stakeholder engagement; staff reports released; draft regulatory language released; board hearings to consider proposed rule adoption or amendments. | |
| | • Technology: Number of trucks/vehicles/equipment replaced/upgraded with cleaner technology; (i.e., # of ocean-going vessels plugging in at Port of Oakland). | |
| | • Incentives: Number of incentive dollars invested to achieve specified diesel PM, $PM_{2.5}$ or TACs reductions from trucks and equipment. | |

| | | |
|---|---|---|
| | • Public outreach: Workshops/community meetings held for stakeholder engagement; number of events/attendees. | |
| | • Exposure reduction: number of vegetative buffers and trees planted; number of schools or sensitive receptor facilities funded for air filtration systems. | |
| | • Inter-agency coordination: number of meetings or discussions; agency actions. | Annual |
| Enforcement | Numbers and types of: inspections, complaints received, citations and/or Notice of Violations, referrals to other agencies, public meetings, trainings or workshops held. | |

## TRACKING HEALTH CONDITIONS

As noted above, the goal of the Plan is to protect and improve community health by eliminating disparities in exposure to local air pollution. As such, we will continue to investigate and track long-term health outcomes in the community. We will seek to answer a basic question: *Have health outcomes improved?*

To answer this question, health conditions in West Oakland will be compiled and reported on a periodic basis during implementation of the Plan. This is for two primary reasons. First, it will take years to implement the Plan and to see evidence of changes in health outcomes in rates of asthma, cancer, heart disease, and strokes. Second, many factors besides air quality influence community health, such as access to health care, quality of housing, allergies and genetics, and more. While we hope to see health improvements during the 5-year implementation timeline, it will not be possible to reliably connect these health improvements to implementation of specific strategies or the Plan. While there is a vast body of research that connects exposure to emissions with higher rates of asthma, cancer, heart disease, and stroke deaths, *air pollution is not the sole risk factor contributing to these health outcomes*. Air pollution is *one* critical factor affecting health in West Oakland, and thus tracking long-term trends in health conditions will be an important indicator of the overall effectiveness of this Plan.

To track health outcomes, data on asthma emergency visits, asthma hospitalization, and cancer, heart disease, and stroke death rates are needed. The Co-leads will work closely with the Alameda County Public Health Department to collect, analyze and report these data. To the extent feasible, we will strive to estimate economic benefits of improved health conditions. The Co-leads will work with local schools and health services providers to explore potential connections between absenteeism and respiratory illness.

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## Glossary

**AB 617** – Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) directs the state and local air districts to identify communities in California that are exposed to high levels of air pollution and established the Community Air Protection Program. Air districts with input from residents and stakeholders are to develop community focused action plans and community air monitoring plans to address localized air pollution and reduce exposure to particulate matter and toxic air contaminants.

**abatement device** – Devices designed to capture, remove and/or reduce pollutants that would otherwise be emitted into the air. Examples are baghouses, scrubbers, dust collectors, direct flame afterburners, vapor recovery units, and water sprayers.

**area sources** – Sources of air pollutants that individually emit relatively small quantities of air pollutants, but that may emit considerable quantities of emissions when aggregated over a large area. Examples include water heaters, lawn maintenance equipment, and consumer products.

**average (or "expected") concentrations** – This is the amount of air pollution concentrations expected over a period of time. Many estimates of health impacts are driven by calculations involving an annual average, and important air quality standards are also set based on annual averages.

**back-up diesel generator** (BUG) – BUGs include stationary generators and portable generators. Stationary generators are often sources of emergency power for commercial, industrial, and residential buildings. Portable generators are used as temporary power when and where an electrical grid is not available, at construction sites, outdoor gatherings such as concerts and festivals, and disaster recovery sites. See also diesel engine.

**Bay Area Air Quality Management District** (Air District or BAAQMD)—A regional air pollution control agency with jurisdiction over the nine counties that surround the Bay (except northeastern Solano and northern Sonoma counties); the Air District oversees policies and adopts regulations for the control of air pollution from stationary sources.

**best available control technology** (BACT) – These are the most stringent requirements for new or modified sources. An emissions limitation based on using the most up-to-date methods, systems, techniques, and production processes available to achieve the greatest feasible emission reductions.

**best available retrofit control technology** (BARCT) – An emissions limitation based on the maximum degree of reduction achievable for existing sources considering environmental, energy, and economic impacts.

**best practices to reduce emissions** – Measures that reduce emissions, and therefore reduce health risks from air pollution. Examples include retrofitting diesel generators to low or zero emitting technology, electrifying loading docks, limiting truck idling times, requiring low or zero emitting truck engines, and adding abatement devices to stationary sources.

**best practices to reduce exposure** – Measures that do not reduce actual emissions but reduce people's *exposure* to pollutants and reduce health risks. Examples include HVAC (heating ventilation, air conditioning) air filters, planting vegetation between a source of pollution and residential units and prohibiting trucks on residential streets.

**black carbon** – Black carbon is the sooty black material emitted from gasoline and diesel engines, coal-fired power plants, and other sources that burn fossil fuel. It comprises a significant portion of particulate matter. Inhalation of black carbon is associated with health problems including respiratory and cardiovascular disease, cancer, and birth defects.

**boiler** – A water heater for generating steam.

**bulk cargo** – Cargo which is loaded into a ship's hold without being boxed, bagged, or hand stowed, or is transported in a large tank space.

**bus rapid transit** (BRT) – High quality bus-based transit system that delivers fast and efficient service that may include dedicated lanes, busways, traffic signal priority, off-board fare collection, elevated platforms and enhanced stations.

**California Air Resources Board** (CARB) – The State of California agency responsible for air pollution control. Responsibilities include: establishing State ambient air quality standards, setting allowable emission levels for motor vehicles in California and oversight of local air quality management districts.

**California Environmental Quality Act** (CEQA) – Legislation requiring state and local agencies to disclose the significant environmental impacts of a project through the preparation of an Initial Study, Negative Declaration or Environmental Impact Report, including actions to mitigate any significant environmental project impacts.

**cancer risk** – The likelihood that a person will develop cancer during their lifetime.

**cargo handling equipment (CHE)** – Equipment used to move containers within a marine terminal. Cargo-handling equipment includes rubber-tired gantry (RTG) cranes, yard tractors, side-picks, and top-picks. The large ship-to-shore cranes that move containers from the vessel to the container yard and vice-versa are not included in the definition of CHE.

**chrome plating** – A process that involves the electroplating of a thin veneer of chromium onto an underlying metal.

**commercial land use** – Use of land for commercial purpose, including building offices, shops, resorts and restaurants as opposed to residential development.

**community-scale modeling** – Air quality modeling to characterize the ambient air toxic concentrations within communities and potential exposures to certain susceptible populations.

**complete streets** – Streets designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and transit riders of all ages and abilities should be able to safely move along and across a complete street.

**concentrations** – Pollution in the air is typically expressed as a *concentration*. A concentration is the amount that could be extracted from a given volume of air (like a cubic meter). For example, we express the intensity of particulate matter concentrations in terms of "micrograms per cubic meter ($\mu g/m^3$)." This is a measure of the amount of particulate matter collected if you were to draw a cubic meter of air through a clean filter, and then weigh the filter on a scale that can measure millionths of a gram. Today we would expect, on average, to be able to collect about 10 µg of $PM_{2.5}$ from a cubic meter of ambient air in West Oakland.

**container cranes** – A container crane is a type of large dockside crane found at container terminals for loading and unloading intermodal containers from container ships.

**criteria air pollutants** – As required by the Clean Air Act, the U.S. Environmental Protection Agency (EPA) identifies and set standards to protect human health and welfare for six pollutants: ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxide. The term "criteria pollutants" derives from the requirement that the U.S. EPA must describe the characteristics and potential health and welfare effects of these pollutants. U.S. EPA periodically reviews new scientific data and may propose revisions to the standards as a result.

**cumulative air quality impact** – The impact on the environment and the public which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

**diesel engine** – An internal combustion engine in which ignition of the fuel, which is injected into the combustion chamber, is caused by the elevated temperature of the air in the cylinder due to mechanical compression.

**diesel particulate filter** (DPF) – An emission control technology that reduces particulate matter emissions by trapping the particles in a flow filter until the particles are either physically removed or oxidized (burned off) in a process called regeneration.

**diesel particulate matter (DPM)** – The particles found in the exhaust of diesel-fueled compression ignition engines. Diesel PM may combine and adsorb other species to form structures of complex physical and chemical properties.

**dozer** – A tractor with a large, shovel like blade on the front, for pushing or moving earth debris, tree stumps and rocks.

**drayage trucks** – A truck used to haul containers to and from the container terminals. It consists of the tractor unit and a semitrailer consisting of the container on a chassis (wheeled base).

**emissions** – A gas or liquid stream containing one or more air contaminants discharging or emitting into the atmosphere.

**Environmental Protection Agency** (EPA) – The United States federal agency responsible for control of air and water pollution, toxic substances, solid waste, and cleanup of contaminated sites.

**excavators** – A large machine used for removing soil from the ground, especially on a building site.

**exposure** – Time duration to assess cancer exposure based on OEHHA recommendations. The key dimensions of *exposure* are *intensity* (or concentration) and *time* — for example, an exposure to 1 $\mu g/m^3$ of benzene for 30 years. Today we would expect, on average, to be able to collect about 10 µg of $PM_{2.5}$ from a cubic meter of ambient air in West Oakland. For perspective, most people breathe an average of 10 cubic meters per day, so a West Oakland resident might expect to inhale about 10 x 10 = 100 µg daily. That would weigh about as much as a few human eyelashes. Implicit in the idea of exposure is that a person (or group of persons) be exposed. The average *concentration* of a pollutant may be high at a given location, but if no people are breathing it, then the (inhalation) *exposure* is zero. (If the population will change — if people will move in — then it may become nonzero.) The other key dimensions of exposure are *intensity* and *time*: for example, an exposure of 100 people to 0.1 $\mu g/m^3$ of diesel PM for 1 year.

**fine particulate matter** ($PM_{2.5}$) – Particulate matter (PM) is a mixture of solid particles and liquid droplets suspended in the air. Of these particles, those less than 2.5 micrometers in diameter, called fine PM or $PM_{2.5}$, pose the greatest risk to health. See particulate matter.

**gasoline dispensing facilities** (GDF) – Retail service station or private facility that stores and/or dispenses gasoline into fuel tanks.

**greenhouse gases** (GHG) – Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), halogenated fluorocarbons (HCFCs), ozone (O3), perfluorocarbons (PFCs), sulfur hexafluoride (SF6) and hydrofluorocarbons (HFCs).

**health risk assessment** (HRA) – A detailed comprehensive analysis to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations, and to assess and quantify both the individual and population wide health risks associated with those levels of exposure.

**high efficiency particulate air filters (HEPA filters)** – A high efficiency particulate air filter capable of filtering 0.3 micron particles with 99.97 percent efficiency.

**hot spot** – An area where large number of diesel-powered transit vehicles (diesel buses, diesel commuter rail locomotives, or diesel ferryboats) will congregate.

**indirect sources** – Land uses and facilities that attract or generate motor vehicle trips and thus result in air pollutant emissions; for example, shopping centers, office buildings, warehouses, and airports.

**industrial land use** – Land used for industry. These are typically businesses that manufacture products sold to commercial businesses. Also includes storage facilities, factories, warehouses and shipping operations.

**intensity** – When modeling or measuring air pollution, we are concerned with the *intensity* of pollution. This can be expressed in more than one way. See concentrations.

**magnet sources** – Magnet sources include, parking lots, port docking facilities, warehouses, cargo staging and handling areas, fuel sales, truck and other mobile equipment maintenance facilities, weigh stations, and even food service for drivers and other logistics workers. Magnet sources attract trucks, trains, and ships, creating mobile source traffic and contributing to air pollution in communities.

**Minimum efficiency reporting value (MERV)** – Developed by the American Society of Heating, Refrigerating and Air Conditioning Engineers, MERV rates the effectiveness of air filters. The higher the number, the finer the filtration.

**mixed-use land use** – A range of land uses including residential, commercial, and industrial to be co-located in an integrated way that supports sustainable forms of transportation.

**mobile sources of air pollution** – Any motor vehicle that produces air pollution, e.g., cars, trucks, motorcycles (on-road mobile sources) or airplanes, trains and construction equipment (off-road mobile sources).

**National Ambient Air Quality Standards** (NAAQS) – The Clean Air Act requires U.S. EPA to set National Ambient Air Quality Standards (NAAQS) at a levels determined to be protective of public health within an adequate margin of safety for six pollutants referred to as criteria pollutants. Standards are set based on scientific research and policy assessments reviewed by the Clean Air Scientific Advisory Committee.

**new source review** (NSR) – A pre-construction permitting review requirement that ensures that when a new source of air pollution is built, or when an existing source is modified, the source will implement effective emission control technology and will comply with related regulatory requirements pertaining to air emissions.

**off-road vehicles** – An off-road vehicle is any type of vehicle which can drive on and off paved or gravel surfaces. They are generally characterized by having large tires, open treads, a flexible suspension or caterpillar tracks. Other vehicles that do not travel public streets or highways are called off-highway vehicles and include tractors, forklifts, cranes, backhoes, bulldozers and golf carts.

**on-road vehicles** – A vehicle designed to legally carry people or cargo on public roads and highways such as buses, cars, trucks, vans, motor homes, and motorcycles.

**particulate matter** (PM) – PM includes a wide range of disparate particles that vary greatly in terms of their size and mass, physical state (solid or liquid), chemical composition, toxicity, and how they behave and transform in the atmosphere. PM is commonly characterized based on particle size. Ultrafine PM includes the very smallest particles less than 0.1 micron in diameter (one micron equals one-millionth of a meter). Fine PM or $PM_{2.5}$ consists of particles 2.5 microns or less in diameter (includes ultrafine PM). Coarse PM refers to particles between 2.5 microns and 10 microns in diameter. The term “coarse” particles may be misleading; it should be emphasized that even “coarse” particles are still very tiny, many times smaller than the diameter of a human hair. $PM_{10}$ consists of particles 10 microns or less in diameter (includes ultrafine, fine and coarse PM).

**ppb** (parts per billion) – A weight-to-weight ratio used to describe concentrations. Parts per billion (ppb) is the number of units of mass of a contaminant in the air per 1000 million units of total mass.

**ppm** (parts per million) – A weight-to-weight ratio used to describe concentrations. Parts per million (ppm) is the number of units of mass of a contaminant in the air per million units of total mass.

**PZEV** or **partial zero emission vehicle** – PZEV is an automobile that has zero *evaporative* emissions from its fuel system and meets Super Ultra Low Emissions Vehicle (SULEV) tailpipe-emission standards. Evaporative emissions are the gasoline fumes that escape during refueling or from the fuel tank and supply lines. See also ZEV.

**regional-scale modeling** – Air quality modeling at a regional level, to determine air pollution emissions within the region. See also community-scale modeling.

**residential impact** – An approximation of the average intensity of pollution to which the members of a residential population are exposed. Calculated as the weighted average ambient concentration, using residential population data for weighting. This does not consider any differences between outdoor and indoor air, nor any other variation in the air that people are exposed to as they go about their day. (See also *exposure* and *concentration*.)

**residential land use** – Land designated by the local governing body for dwelling units. Can include single-family and/or multi-family housing, often specifies the number of dwelling units allowed per lot or acre; for example, R-1 means the parcel is zoned for a single-family residence.

**Safe Routes to School** (SRTS) – A program to increase the number of students that walk and bicycle to school by making conditions for walking and bicycling safer.

**sensitive land uses** – Places where sensitive populations are most likely to spend their time, such as schools, playgrounds, daycare centers, nursing homes, medical facilities, and residential communities.

**sensitive populations** or **sensitive receptors** – Members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses.

**solvent cleaning operations** – A process using solvents or solvent vapor to remove water-insoluble contaminants such as grease, oils, waxes, carbon deposits, fluxes, and tars from metal, plastic, glass, and other surfaces.

**stationary sources of air pollution** – A fixed, non-mobile producer of pollution, usually found at industrial or commercial facilities.

**toxic air contaminants** (TACs) – TACs are air pollutants, identified by CARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential health hazard. Health effects may occur at extremely low levels of TACs.

**tractor-trailer** – The combination of a tractor unit and one or more semi-trailers to carry freight. A semi-trailer attaches to the tractor with a fifth wheel hitch, and much of its weight is borne by the tractor.

**transit-oriented development** (TOD) – A type of development that links land use and transit facilities to support the transit system and help reduce sprawl, traffic congestion and air pollution. TOD generally places residential uses in close proximity to retail, office, schools, government services, with access to local and regional transit systems.

**transloading** – Process of transferring a shipment from one mode of transportation to another. It is most commonly done when one mode cannot be used for the entire trip, such as when goods must be shipped internationally from one inland point to another.

**transport refrigeration unit** (TRU) – Refrigeration systems powered by integral internal combustion engines designed to control the environment of temperature sensitive products that are transported in trucks and refrigerated trailers. TRUs may be capable of both cooling and heating.

**vehicle miles traveled** (**VMT)** – One vehicle (whether a car carrying one passenger or a bus carrying 30 people) traveling one mile constitutes a vehicle mile. VMT is one measure of the use of Bay Area freeways and roads.

**yard tractor** – Tractor unit designed specifically for use in a container yard; also referred to as a yard truck, utility tractor rig, yard goat, yard hostler, or prime mover.

**yard truck** – A yard truck is a vehicle designed for moving trailers in or around commercial freight yards**.**

**zero-emission vehicle** (ZEV) – Vehicles which produce no emissions from the on-board source of power (for example, a fully electric vehicle).

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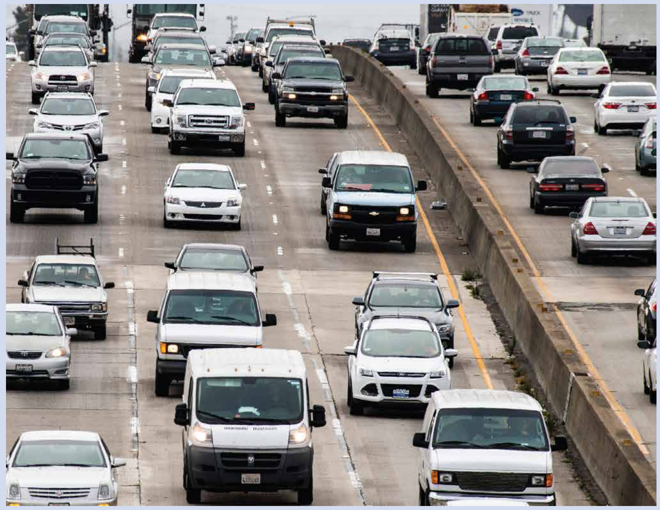

# OWNING OUR AIR

## The West Oakland Community Action Plan – **Volume 2: Appendices**

October 2019

A joint project of the Bay Area Air Quality Management District and West Oakland Environmental Indicators Project


BAY AREA AIR QUALITY MANAGEMENT DISTRICT

West Oakland Environmental Indicators Project
know which way the wind blows

# Owning Our Air:

The West Oakland Community Action Plan

Volume 2

# Table of Contents

## VOLUME 2

Appendix A – Technical Support Document .................... A-1
Appendix B – Community Engagement Materials .................... B-1
Appendix C – Steering Committee Charter and Participation Agreement .................... C-1
Appendix D – Strategies and Implementation Background .................... D-1
Appendix E – Enforcement Support Document .................... E-1

# Appendix A – Technical Support Document

# Appendix A – Technical Support Document

## Part I: Base Year Emissions Inventory and Air Pollutant Dispersion Modeling

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# Table of Contents

**1. Introduction ........................................ 1**
1.1 Context ........................................ 1
1.2 Background and Technical Framework ........................................ 2
1.3 Objectives ........................................ 5

**2. Emissions Inventory ........................................ 7**
2.1 Development and Overview ........................................ 7
2.1.1 Pollutants ........................................ 7
2.1.2 Domain ........................................ 7
2.1.3 Emissions Sources and Base Year ........................................ 8
2.1.4 Approach ........................................ 12
2.1.5 Emissions by Category ........................................ 13
2.2 Permitted Stationary Sources ........................................ 18
2.3 On-Road Mobile Sources ........................................ 22
2.3.1 Roadway Attributes ........................................ 24
2.3.2 Travel Activity ........................................ 27
2.3.3 Emission Factors ........................................ 32
2.3.4 Emissions ........................................ 33
2.4 Truck-Related Businesses ........................................ 34
2.4.1 Surveyed Businesses ........................................ 34
2.4.2 Schnitzer Steel ........................................ 36
2.5 Ocean-Going Vessels ........................................ 37
2.5.1 Port of Oakland ........................................ 37
2.5.2 Schnitzer Steel ........................................ 40
2.6 Commercial Harbor Crafts ........................................ 41
2.6.1 Operation and Maintenance Dredging and Disposal ........................................ 41
2.6.2 Assist Tugs ........................................ 42
2.6.3 Bunkering Barges ........................................ 44
2.7 Cargo Handling Equipment ........................................ 45
2.8 Port Trucks at Terminals ........................................ 48
2.9 Locomotives (Rail Lines) ........................................ 50
2.9.1 Freight Haul Lines ........................................ 50
2.9.2 Passenger Rail Lines ........................................ 51
2.10 Railyards ........................................ 53
2.10.1 BNSF ........................................ 53
2.10.2 OGRE ........................................ 55
2.10.3 UP ........................................ 56
2.11 Commuter Ferries and Excursion Vessels ........................................ 56

**3. Air Dispersion Modeling ........................................ 60**
3.1 Modeling Approach ........................................ 60
3.2 Meteorological Data ........................................ 61

3.2.1 Surface meteorology ....................61
3.2.2 Upper-air meteorology ....................63
3.3 AERMOD Model Configuration ....................64
3.4 Sources ....................65
3.4.1 Overview ....................65
3.4.2 Permitted Stationary Sources ....................68
3.4.3 On-Road Mobile Sources ....................69
3.4.4 Truck-Related Businesses ....................75
3.4.5 Ocean-Going Vessels ....................76
3.4.6 Commercial Harbor Crafts ....................79
3.4.7 Cargo handling equipment ....................81
3.4.8 Port Trucks at Terminals ....................81
3.4.9 Locomotives (Rail Lines) ....................82
3.4.10 Railyards ....................83
3.4.11 Commuter Ferries and Excursion Vessels ....................83
3.5 Receptors ....................85
3.6 Background Concentrations ....................86

**4. Analysis Methods ....................90**
4.1 Estimating Pollutant Concentration and Cancer Risk ....................90
4.1.1 Totals at Receptors ....................90
4.1.2 Pollutant Concentration ....................91
4.1.3 Cancer Risk ....................91
4.2 Spatial Distributions and Source Apportionment ....................94
4.2.1 Source Apportionment ....................94
4.2.2 Interpreting Map Products ....................94
4.2.3 Spatial Aggregation ....................95

**5. Results ....................99**
5.1 $PM_{2.5}$ Concentrations ....................99
5.2 DPM Concentrations ....................99
5.3 Cancer Risk ....................102
5.4 Source Apportionment ....................102

**6. Limitations, Uncertainties, and Future Improvements ....................106**
6.1 Emissions Inventory ....................106
6.1.1 Permitted Stationary Sources ....................106
6.1.2 On-Road Mobile Sources ....................106
6.1.3 Truck-Related Businesses ....................109
6.1.4 Port-Related Sources ....................109
6.1.5 UP Locomotives and Railyard ....................110
6.1.6 Omitted Emissions Sources from Air Dispersion Modeling ....................112
6.2 Air Dispersion Modeling ....................115
6.2.1 Model Formulation ....................115
6.2.2 Dispersion Modeling and Emissions Source Parameters ....................116
6.2.3 Receptors ....................118
6.3 Risk Assessment Methodology ....................119

**7. References ...... 121**

**Attachment 1. Toxic Air Contaminants ...... 128**

**Attachment 2. Permitted Stationary Sources ...... 130**

**Attachment 3. Truck-Related Businesses ...... 138**

# Notation

## Acronyms

| | |
|---|---|
| AADT | annual average daily traffic |
| AB | Assembly Bill |
| ABAG | Association of Bay Area Governments |
| AERMAP | American Meteorological Society/Environmental Protection Agency Regulatory Model terrain pre-processor |
| AERMET | American Meteorological Society/Environmental Protection Agency Regulatory Model Meteorological Processor |
| AERMOD | American Meteorological Society/Environmental Protection Agency Regulatory Model |
| agl | above ground level |
| APCS | automated pavement condition survey |
| ASF | age sensitivity factor |
| asl | above sea level |
| AQS | Air Quality System |
| BAAQMD | Bay Area Air Quality Management District |
| BAU | business-as-usual |
| CalEPA | California Environmental Protection Agency |
| CAPCOA | California Air Pollution Control Officers Association |
| CAPP | Community Air Protection Program |
| CARB | California Air Resources Board |
| CARE | Community Air Risk Evaluation |
| CAS | Chemical Abstract Service |
| CEIDARS | California Emissions Inventory Development and Reporting System |
| CHC | commercial harbor craft |
| CHE | cargo handling equipment |
| CHEI | Cargo Handling Equipment Inventory (model) |
| CMAQ | Community Multi-scale Air Quality (model) |
| CPF | cancer potency factor |
| CRW | cancer risk-weighted |
| CT-EMFAC | Caltrans-EMissions FACtors (model) |
| DBR | daily breathing rate |
| DPM | diesel particulate matter |
| EBMUD | East Bay Municipal Utility District |
| EC | elemental carbon |
| ED | exposure duration |
| EDF | Environmental Defense Fund |
| EMFAC | EMission FACtors (model) |
| EPA | Environmental Protection Agency |
| EZ | exclusion zone |
| FAH | fraction of time at home |
| FHWA | U.S. Federal Highway Administration |
| GVWR | gross vehicle weight rating |

| | |
|---|---|
| HDV | heavy-duty vehicle |
| HHDT | heavy heavy-duty truck |
| HRA | health risk assessment |
| IDW | inverse distance weighting |
| LDV | light-duty vehicle |
| LHDT | light heavy-duty truck |
| LST | local standard time |
| MSAT | mobile source air toxic |
| MDV | medium-duty vehicle |
| MHDT | medium heavy-duty truck |
| NAD83 | North American Datum of 1983 |
| NEI | National Emissions Inventory |
| NEPA | National Environmental Policy Act |
| NOAA | National Oceanic and Atmospheric Administration |
| NT | Non-Truck |
| OEHHA | Office of Environmental Health Hazard Assessment |
| OGV | ocean-going vessel |
| O&M | operation and maintenance |
| O-D | origin-destination |
| PeMS | Performance Measurement System |
| PM | particulate matter |
| $PM_{10}$ | particulate matter 10 micrometers or less in diameter |
| $PM_{2.5}$ | particulate matter 2.5 micrometers or less in diameter |
| POM | polycyclic organic matter |
| POAK | Port of Oakland |
| PSD | prevention of significant deterioration |
| QA | quality assure/assurance |
| SIC | Standard Industrial Classification |
| SMOKE | Sparse Matrix Operator Kernel Emissions (model) |
| SRTM | Shuttle Radar Topography Mission |
| TAC | toxic air contaminants |
| TIGER | Topographically Integrated Geographic Encoding and Referencing |
| TOG | total organic gases |
| TRU | transport refrigeration unit |
| UP | Union Pacific |
| USGS | United States Geological Survey |
| UTM | Universal Transverse Mercator |
| VHT | vehicle hours traveled |
| VMT | vehicle miles traveled |
| WD | weekday |
| WE | weekend |
| WETA | Water Emergency Transportation Authority |
| WOEIP | West Oakland Environmental Indicators Project |
| WRF | Weather Research and Forecasting (model) |

## Units

| | |
|---|---|
| g | gram |
| kg | kilogram |
| lb | pound |
| mg | milligram |
| ton | U.S. ton (2,000 lb) |
| tpy | tons per year (U.S. ton/y) |
| µg | microgram |
| | |
| L | liter |
| gal | gallon |
| | |
| ft | feet |
| nmi | nautical mile |
| m | meter |
| mi | mile |
| | |
| h | hour |
| min | minute |
| s | second |
| | |
| mph | miles per hour (mi/h) |
| kt | knot (1.15078 mph) |
| | |
| °C | degrees Celsius |
| °F | degrees Fahrenheit |
| K | Kelvin |
| | |
| ppm | parts per million |
| | |
| bhp | brake horsepower |
| hp | horsepower |
| kW | kilowatt |

# 1. Introduction

The technical work performed to support the West Oakland Community Action Plan pursuant to Assembly Bill 617 is described in this document. The objective of this technical work was to spatially map the contribution of emissions from major emissions sources to pollutant concentrations and estimate cancer risk within the West Oakland community that may potentially impact current and future residents.

## 1.1 Context

The California State Assembly adopted Assembly Bill (AB) 617 in 2017 (C. Garcia, Chapter 136, Statutes of 2017). The bill established the Community Air Protection Program (CAPP),[1] which focuses on reducing exposure in communities most impacted by air pollution. Local air districts are tasked with partnering with community groups, environmental organizations, regulated communities, and other stakeholders to develop a new community-focused action framework for community protection.

To meet AB 617 statutory requirements, the California Air Resources Board (CARB) was directed to provide "[a] methodology for assessing and identifying the contributing sources or categories of sources, including, but not limited to, stationary and mobile sources, and an estimate of their relative contribution to elevated exposure to air pollution in impacted communities…" (following California Health and Safety Code §44391.2(b)(2)).[2] CARB outlined a general methodology in its *Community Air Protection Program Blueprint* (California Air Resources Board 2018a), and five recommended technical approaches in an accompanying document, *AB 617 Recommended Source Attribution Approaches* (California Air Resources Board 2018a). These approaches include creating "community inventory ratios" (Approach 1), where community-specific emissions inventories are developed and ratios of emissions from different sources are compared, and "community-specific air quality modeling" (Approach 2), which uses the community-specific emissions inventory, meteorological data, and air quality models to estimate the impacts and contributions of emission sources on overall air pollution concentrations within the community.

The Bay Area Air Quality Management District (BAAQMD, the "District") identified West Oakland as a Year 1 community under the CAPP (Bay Area Air Quality Management District 2018). West Oakland is considered one of the most impacted areas in the San Francisco Bay Area due to presence of many sources of diesel particulate matter (DPM). The technical work performed to support the West Oakland Community Action Plan ("Action Plan") pursuant to AB 617 is described in this document. The objective of this technical work was to spatially map the contribution of emissions from major emissions sources to pollutant concentrations within the West Oakland community that may potentially impact current and future. Following CARB's suggested technical approaches, to identify areas with elevated air pollutant concentrations and higher population exposure, a bottom-up air pollutant *emissions inventory* was developed, and *air pollution dispersion modeling* was performed to support a *source apportionment* analysis. This

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[1] http://www.baaqmd.gov/community-health/community-health-protection-program.
[2] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB617.

document therefore describes how emissions from major source categories were estimated, how the dispersion model was selected and configured, and presents the output from the dispersion model.

## 1.2 Background and Technical Framework

West Oakland is bounded by three major freeways (I-580, I-880, I-980), is adjacent to large industrial sources and the Port of Oakland (the "Port"), and is the location of a major U.S. Postal Service Distribution Center (**Figure 1-1**). Based on modeling and field studies conducted under the District's Community Air Risk Evaluation Program (CARE), the District identified West Oakland as a community impacted by poor air quality (elevated fine particulate matter and DPM), where residence have poor health outcomes and are subjected to elevated cancer risk.[3]

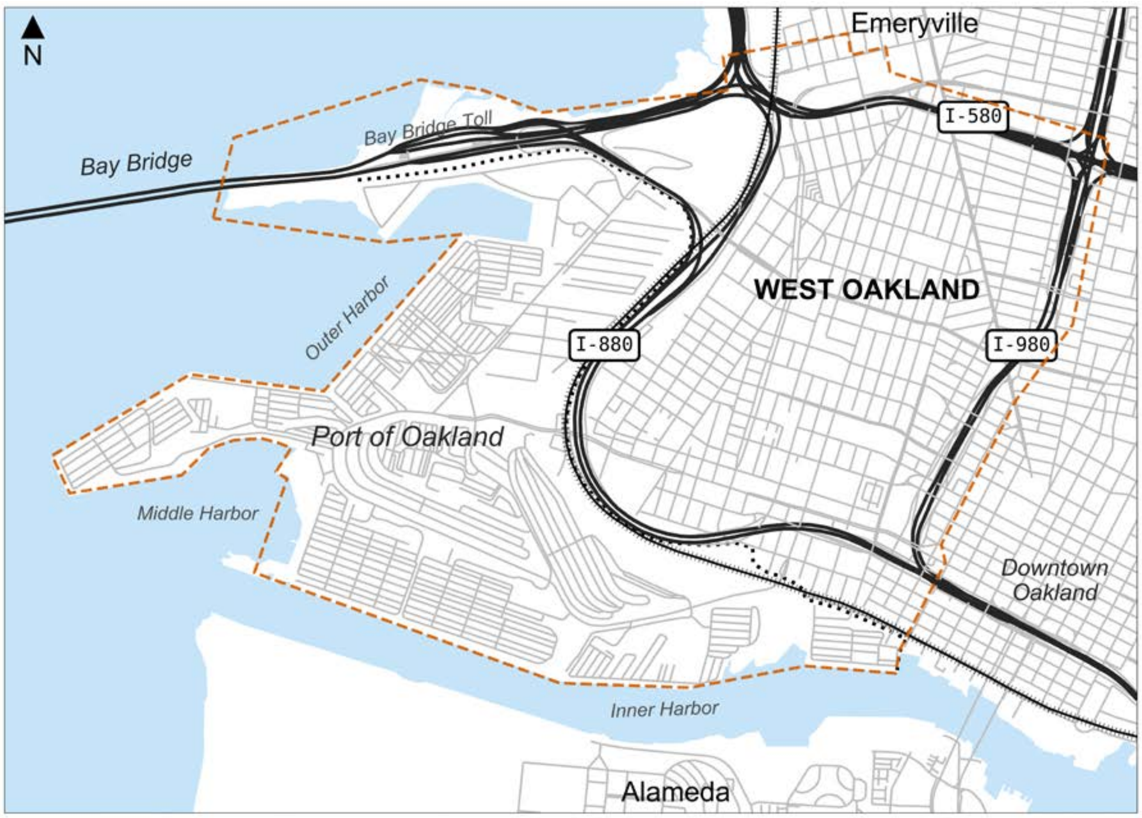


**Figure 1-1.** Map of the West Oakland. The extents of West Oakland community (dashed red line) and the Port of Oakland (dotted black line), roadways (solid black and grey lines) and rail lines (hatched black lines) are denoted.

Emissions inventories contain information on the quantity of air pollutants that are emitted from specific sources or source categories over a specific period. In this analysis, emissions inventories of fine particulate matter (particulate matter 2.5 micrometers or less in diameter [$PM_{2.5}$]) and toxic

[3] Previous analyses (Bay Area Air Quality Management District 2014) identified impacted areas based on elevated fine particulate matter concentrations and high rates of cancer, incidences of mortality, hospitalization rates, and respiratory illnesses.

air contaminants (TACs) that have documented cancer toxicities (see **Attachment 1**) were developed. The emissions inventory accounts for *primary pollutants* only.[4] $PM_{2.5}$ and TACs are the primary air pollutants which pose the greatest risk to the health of residents in West Oakland and are further described below.

> **Toxic Air Contaminants (TACs):** CARB is responsible for identifying TACs, which are defined as pollutants that "may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health."[5] Exposure to TACs can cause serious health effects, including cancer and birth defects. Other adverse health effects can include damage to immune, neurological, reproductive (reduced fertility), developmental, and respiratory systems. TACs are emitted from many sources in the Bay Area, including: diesel engines, vehicles (e.g., cars, trucks), industrial processes, and gas stations. Types of TACs include DPM, lead, benzene, formaldehyde, and hexavalent chromium (a complete list of TACs examined in this analysis is provided in **Attachment 1**). DPM is the most significant TAC in the Bay Area, accounting for ~85% of the cancer risk.
>
> **Fine Particulate Matter ($PM_{2.5}$):** $PM_{2.5}$ is composed of a mixture of many small airborne particles or liquid droplets. $PM_{2.5}$ originates from a variety of sources, including fossil fuel combustion, residential wood burning and cooking, and natural sources (such as wildfires and re-entrained road dust). Epidemiological studies have established that exposure to $PM_{2.5}$ has serious adverse health impacts (e.g., Cohen and Pope 1995, Krewski *et al.* 2009, Health Effects Institute 2010). $PM_{2.5}$ can enter deep into lungs and the bloodstream. Exposure to $PM_{2.5}$ has negative effects on the respiratory system (such as triggering asthma attacks, aggravating bronchitis, and diminishing lung function), cardiovascular system (and may cause atherosclerosis [hardening of the arteries], ischemic strokes [caused by an obstruction of the blood supply to the brain], and heart attacks). Because of the serious cardiovascular effects of exposure to $PM_{2.5}$, studies have found a clear correlation between exposure to elevated $PM_{2.5}$ levels and mortality. Studies also indicate that exposure to $PM_{2.5}$ may be related to other negative health effects, including impacts on the brain (such as reduced cognitive function), and increased risk of diabetes. Exposure to $PM_{2.5}$ remains the leading public health risk and contributor to premature death from air pollution in the Bay Area. More information on fine PM and associated health effects can be found in the report *Understanding Particulate Matter: Protecting public health in the San Francisco Bay Area*, prepared by the District (Bay Area Air Quality Management District 2012).

The emissions inventory developed for this analysis includes emissions from various local pollutant sources in West Oakland: permitted stationary sources (small and large complex facilities regulated by the District), on-road mobile sources (vehicles on all surface streets and freeways, and

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[4] Primary pollutants are those compounds emitted directly into the atmosphere. In dispersion modeling, primary pollutants are also assumed to be nonreactive. *Secondary pollutants* (compounds formed in the atmosphere as a result of chemical reactions) were not included in this analysis because (1) their formation involves complex chemical reactions that cannot be accounted for in the dispersion models, and (2) near-source exposures tend to be driven by emissions of primary pollutants; secondary pollutants form downwind of sources and tend to be distributed at a regional scale.

[5] California Air Resources Board Glossary: https://ww2.arb.ca.gov/about/glossary (accessed January 2019).

extended idling from trucks operating at certain large businesses), marine operations and railyard activity at the Port, locomotives, and commuter ferries and excursion vessels.[6]

Emissions inventories were developed for three years: a ("current") base year (effective 2017), a forecasted near-term future year (2024), and a far-term future year (2029). The base year is used to establish initial concentrations where mitigation strategies may be developed to reduce future-year exposures. The future-year emissions inventories include anticipated reductions from existing regulations and known changes in source activity (*business-as-usual* [BAU] conditions); additional anticipated reductions from presumed implementation of proposed mitigation measures under this Action Plan were also included to show where high levels of air pollution may persist, and additional actions may be warranted. The base year emissions inventory is further described in this document (**Section 2**); forecasted future-year emissions inventories are described in *Appendix A – Technical Support Document Part II: Business-As-Usual Future Year Emissions Inventory and Air Pollutant Dispersion Modeling* ("Part II"), and estimates of reductions from strategies of the Action Plan are described in *Appendix A – Technical Support Document Part III: Community Action Plan Emission Reduction Estimates* ("Part III").

Air pollutant concentrations at a *receptor* (a location where concentrations are sampled) represent the sum of all concentration contributions from many emissions *sources*; that is, the total concentrations at a receptor can be *apportioned* to different sources. From a spatiotemporal perspective, concentrations at a receptor also represent the sum of concentrations due to local sources and those from regional sources. Accordingly, two modeling analyses were performed:

(1) "Regional-scale modeling" was used to provide an estimate of the "background" pollutant concentrations,[7] i.e., the air pollutant concentrations in West Oakland in the absence of any local emission sources in West Oakland. Pollutant concentrations were simulated within 1 km grid cells over the entire Bay Area using a modeling framework consisting of a numerical meteorological model (Weather Research and Forecasting [WRF] model), an emissions inventory model (Sparse Matrix Operator Kernel Emissions [SMOKE] modeling system), and a chemical transport model (Community Multiscale Air Quality [CMAQ] modeling system), where local emissions sources within West Oakland were excluded.

(2) "Community-scale modeling" was used to quantify the local impacts from emissions sources on air pollutant concentrations in West Oakland at a finer spatial scale. Dispersion models use a time-averaged, simplified representation of turbulent atmospheric dispersion to approximate how pollutants are transported and diluted. Critical inputs to the dispersion models are estimates of emissions from major air pollution sources and source characteristics. Dispersion factors were generated using the American Meteorological Society/ Environmental Protection Agency Regulatory Model

[6] Emission estimates from these sources are further described in this document (**Section 2**); emissions from other local sources that were not included are described in **Section 2.1.5** (**Table 2-3**) and discussed in **Section 6.1.6**. Local concentrations are also influenced by pollutant emitted elsewhere (outside of the West Oakland area); the "background" concentrations are addressed in **Section 3.6**.

[7] The regional-scale modeling was also used for a modeling platform evaluation, where modeled air pollutant concentrations were compared to concentrations measured at local air quality monitors within the Bay Area.

(AERMOD) system with a single year of representative meteorological data (2014). Year-specific emissions inventories were then convolved with the dispersion factors to obtain year-specific air pollutant concentrations for the West Oakland community.

Using this approach, the results of the AERMOD dispersion modeling, which only accounts for local emissions sources, could be added to the background concentration from the regional modeling to yield a concentration that approaches the total concentration (**Figure 1-2**).[8] The results from the dispersion modeling can also be thought of as the "additional burden" caused by the local emissions in West Oakland alone. The community-scale modeling using AERMOD is further described in this document (**Section 3**); the regional-scale modeling is briefly described herein (**Section 3.6**), and fully documented elsewhere (Tanrikulu *et al.* 2019a, Tanrikulu *et al.* 2019b).

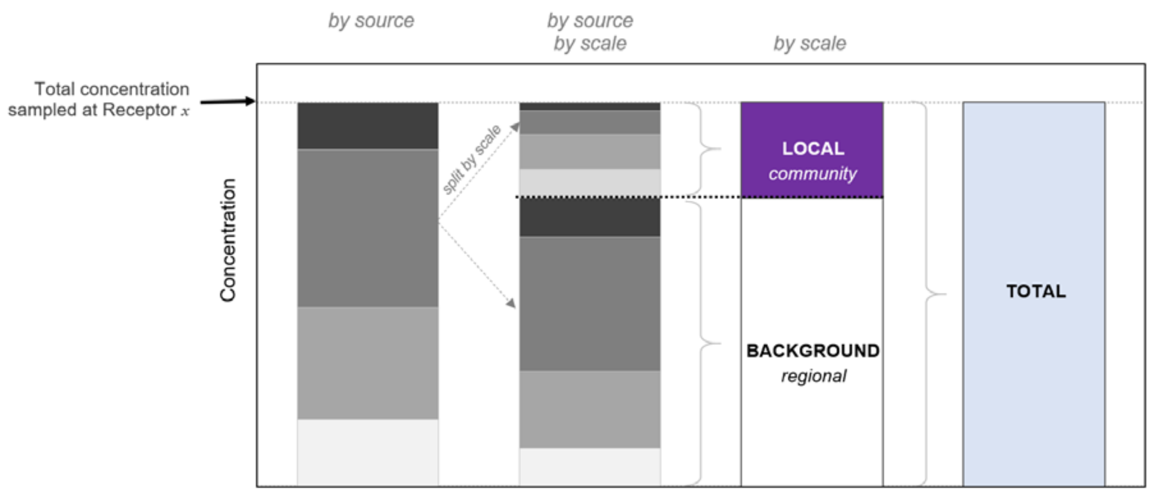


**Figure 1-2.** Schematic representation of how concentration contributions are disaggregated in a source apportionment analysis using "regional-scale" and "community-scale" modeling. Grey bar sections represent the concentration contributions from different arbitrary source categories.

## 1.3 Objectives

The District, in partnership with the West Oakland Environmental Indicators Project (WOEIP), developed an Action Plan for West Oakland to promote innovative policies to improve air quality. The objective of this technical work was to understand the spatial distribution of pollutant concentrations in West Oakland due to local emissions sources. Collaboration with WOEIP helped the District identify specific goals and action-oriented strategies for West Oakland that will focus on reducing exposure to $PM_{2.5}$, DPM, and TACs. To assist with this effort, the District performed a community-scale analysis to:

[8] A model evaluation can be performed by comparing the total concentration to those observed at monitoring locations within the same domain. This analysis is not discussed in this document.

- Develop a base year emissions inventory and risk assessment for all major emissions sources impacting West Oakland residents;
- Provide source apportionment of (a) emissions and (b) air pollutant concentrations at receptors by source category (i.e., trucks, locomotives, etc.) or source origin (e.g., Port of Oakland, freeways);
- Establish a baseline to track the benefits of future emission reductions on the burden of future new emissions sources.
- Develop a framework for modifying and expanding the emissions inventory for local emissions sources.

In this analysis, an emissions inventory was developed (**Section 2**), air dispersion modeling was performed (**Section 3**), and pollutant concentrations and cancer risk estimates were calculated (**Section 4**). A brief overview of the results (**Section 5**), and a discussion of sources of uncertainty in the methods (**Section 6**) are also presented.

# 2. Emissions Inventory

The District developed bottom-up emissions inventories for $PM_{2.5}$ and TACs from all emissions sources in West Oakland for which emissions information (quantity, physical characteristics, spatiotemporal resolution) was available and sufficiently resolved at the time of analysis. A summary of the emissions inventory developed for the Action Plan for the base year (effective 2017) is described in this section by source category, including: permitted stationary sources, on-road mobile sources, truck-related businesses, sources due to activity in the Port of Oakland (ocean-going vessels, commercial harbor crafts, cargo handling equipment, Port Trucks at terminals, railyards), locomotives, railyards, and commuter ferries and excursion vessels. Emissions inventories from Port-related sources were based on the *Port of Oakland 2017 Seaport Air Emissions Inventory* (Ramboll 2018), unless otherwise indicated. Specific temporal and spatial allocation information for emissions source categories are discussed in **Section 3**, as they pertain to the emissions and dispersion modeling.

For emissions sources where emission information was not readily available (e.g., woodsmoke, construction), the District developed top-down emissions inventories (see **Table 2-3** and a discussion in **Section 6.1.6**). Emissions from these categories are included in the emissions inventory, but not in subsequent dispersion modeling and risk analysis.

## 2.1 Development and Overview

### 2.1.1 Pollutants

AB 617 focuses on evaluating local community risk impacts associated with $PM_{2.5}$ and TACs (which includes DPM), which are the primary air pollutants that pose the greatest risk to the health of residents in West Oakland (California Air Resources Board 2008a). A full list of TACs compounds included in this analysis is provided in **Attachment 1**. In the following emissions inventories and modeling results, DPM is both included in TAC emission estimates and presented separately from $PM_{2.5}$ and TACs. Only $PM_{2.5}$ emissions and concentrations from directly emitted $PM_{2.5}$ and TACs were evaluated; secondary $PM_{2.5}$ and TACs were not included.

### 2.1.2 Domain

All sources in this analysis were located within the "Source Domain", which encompasses the entire West Oakland community and Port of Oakland, as well as part of downtown Oakland (**Figure 2-1**). For comparison purposes, the extents of the Source Domain were defined such that they correspond to a subset of the two-dimensional grid cells used in the regional-scale modeling analysis (see **Section 3.6**). The Source Domain is 7 km × 5 km. All emission sources discussed in this section are located within the Source Domain; if an emissions source's extents were beyond those of the Source Domain, only the emissions associated with the area within the Source Domain were included in the inventory.

**Figure 2-1.** Extents of the Source Domain (red dotted lines) used to develop the emissions inventories. The extents of the map represent the extents of the Source Domain. The inner tiles represent the 1 km × 1 km grid cells of the regional-scale modeling.

### 2.1.3 Emissions Sources and Base Year

The emissions inventory consists of emissions from various source categories, as shown in **Figure 2-2** and **Table 2-1**. These sources include stationary and mobile (on-road, off-road) sources of emissions. Annual emissions estimates were developed for a base year, effective 2017 (i.e., the emissions data from the year closest to 2017 was used for each source category).[9]

In West Oakland, a large number of emissions source types are attributed to activity from the Port of Oakland. The Port is the eighth busiest port in the U.S.[10] and serves as a gateway for intermodal cargo transport. In 2017, the Port consisted of four active marine terminals (TraPac, Nutter (STS/Everport), Oakland International Container Terminal [OICT], and Matson), and two railyards (Burlington Northern Santa Fe [BNSF], and Oakland Global Rail Enterprise [OGRE]). A fifth terminal (the Charles P. Howard terminal, located on the southeastern corner of the Port), is not currently being used as a marine shipping terminal, but rather hosts several operational truck-related companies. Presently, the American Baseball League the Oakland Athletics (the A's) is investigating the possibility of building a baseball stadium on the site that is currently being used for long term Port (drayage) Truck parking.

[9] Forecasted inventories for 2024 and 2029 are presented in Part II.
[10] Based on 2017 cargo volume data, from: https://www.oaklandseaport.com/performance/facts-figures/ (accessed August 2019).

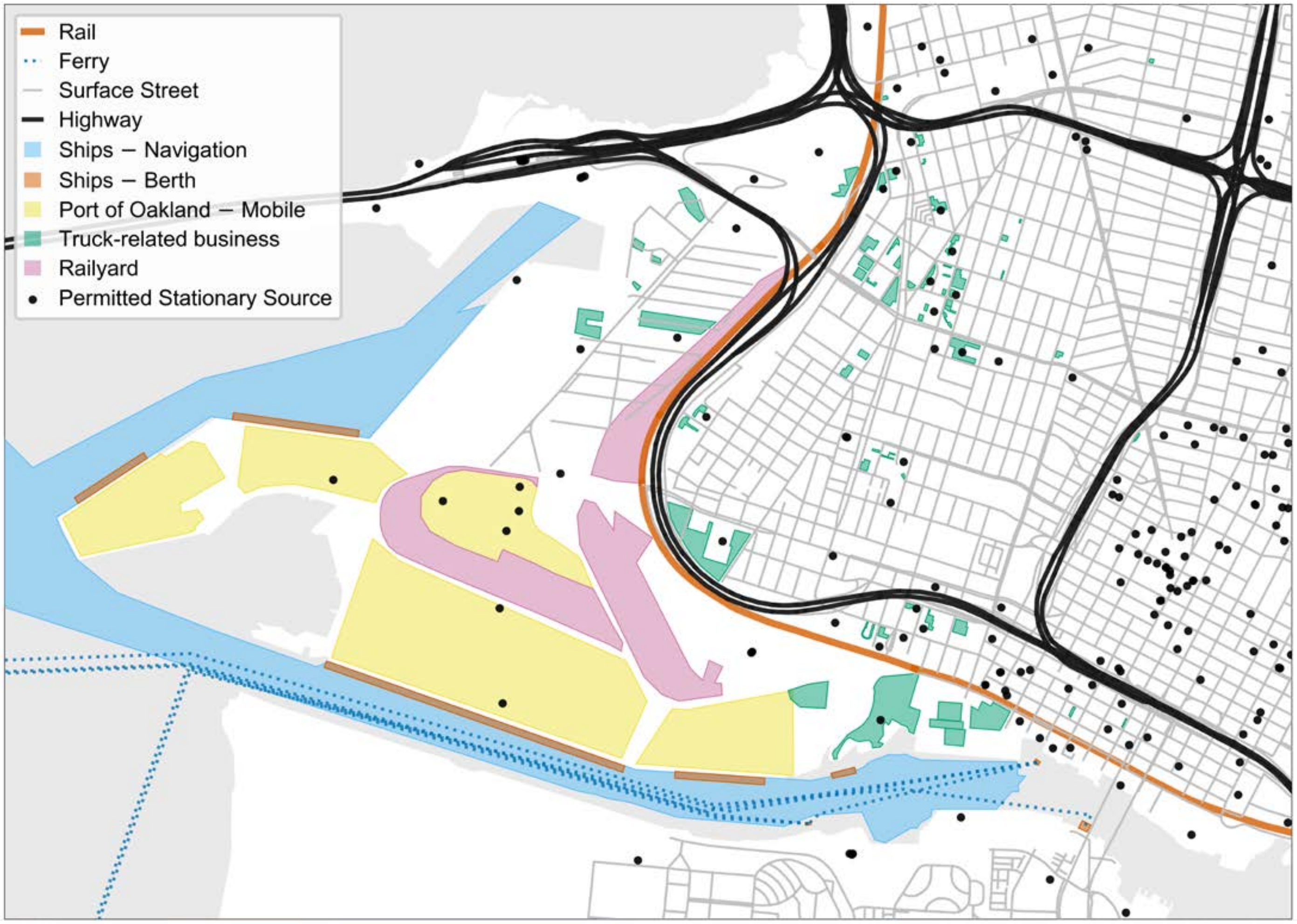


**Figure 2-2.** Composite of emissions source categories locations for the community-scale modeling in West Oakland. Ships – Navigation encompasses the areas of emissions from ocean-going vessels (maneuvering) and commercial harbor crafts (assist tugs, dredgers, and bunkering tugs and pumps) at the Port, as well as ships transiting to Schnitzer Steel; Ships – Berth includes berthing areas for ships at the Port, Schnitzer Steel, commuter ferries, and excursion vessels. Port of Oakland – Mobile encompasses the areas of emissions from Port Truck activity (idling and transiting) and cargo-handling equipment; Surface Street may include on- and off-ramps. Only permitted stationary sources that were modeled are included.

**Table 2-1.** Emission source categories in West Oakland and year of data used to create the 2017 base year emissions inventory. The reference or data sources of the activity data and/or emissions data are indicated. Emissions inventories developed using a bottom-up approach were used for further air dispersion modeling and analyses; emissions inventory developed using a top-down approach are included in the total emissions inventory, but not included in any subsequent modeling.

| Approach | Section | Source Category | Year | Reference/Data Source |
|---|---|---|---|---|
| Bottom-up | 2.2 | Permitted stationary sources | 2015–2018 | District (based on 2017 CEIDARS report) |
| | 2.3 | On-road mobile sources | 2017 | Citilabs, StreetLight, Caltrans Truck Volumes, Caltrans PeMS, EMFAC2017, CT-EMFAC2017, Bay Area Air Quality Management District (2009) |
| | 2.4 | Truck-related businesses | 2018 | Bay Area Air Quality Management District (2009), District survey (2018) |
| | 2.5 | Ocean-going vessels | 2017 | Ramboll (2018), Port of Oakland, CARB, California Air Resources Board (2019), District |
| | 2.6 | Commercial harbor crafts | 2017 | Ramboll (2018), Port of Oakland, CARB, Ramboll |
| | 2.7 | Cargo handling equipment | 2017 | Ramboll (2018), Port of Oakland |
| | 2.8 | Port Trucks at Terminals | 2017 | Ramboll (2018), District |
| | 2.9 | Locomotives | 2017–2018 | District (passenger), UP and BNSF (freight) |
| | 2.10 | Railyards | 2017 | Environ International Corporation (2008), UP |
| | 2.11 | Commuter ferries and excursion vessels | 2018 | CARB, WETA, District survey (2018) |
| Top-down | 2.1.4 | Other area sources | 2017 | CEPAM 2016 SIP Emissions Inventory, ABAG, SMOKE |
| | 2.1.4 | Non-road sources | 2017 | CEPAM 2016 SIP Emissions Inventory, ABAG, SMOKE, OFFROAD |

Maritime emissions developed for the West Oakland Action Plan were largely based on the *Port of Oakland 2017 Seaport Air Emissions Inventory* developed by Ramboll (2018), herein referred to as the "2017 Port Inventory." The District contracted Ramboll (with prior approval from the Port) to assist in developing further spatial and temporal allocations of emissions associated with Port activities. Most of the emissions inventory information for Port-related sources discussed herein are partially excerpted from Ramboll (2018), including information for: maneuvering from ocean-going vessels (OGVs) (**Section 2.5**), commercial harbor crafts (CHCs) (**Section 2.6**), cargo handling equipment (CHE) (**Section 2.7**), operational emissions from Port Trucks operating at terminals (**Section 2.8**), locomotives (**Section 2.9**), and railyards (**Section 2.10**).

While there are some privately owned terminals and non-maritime activity on Port property, emissions from these sources are not included in the Port source categories. For example, emissions from activities at Schnitzer Steel and from truck fleets operating on Port property were accounted for separately.

Finally, emissions sources and categories that were not included in the community-scale emissions inventory used for air pollution dispersion modeling include:

- residential wood burning (from fireplaces and wood stoves),
- commercial and residential cooking,
- construction activities,
- personal power boats,
- transport refrigeration units (TRUs),[11]
- lawn and home gardening equipment,
- portable combustion engines,
- small artisans or businesses that do not require District permits, and
- the Amtrak Oakland maintenance facility (located near 3rd Street/Adeline Street).

While emissions from these categories are potentially important sources of $PM_{2.5}$ and TACs on a community scale, they are either (a) difficult to analyze (e.g., for wood burning and cooking, the spatial and temporal distribution of emissions are poorly understood), or (b) deemed to be less important than similar sources that are included in the emissions inventory (e.g., emissions from lawn equipment, an off-road mobile source, are many times smaller than emissions from on-road mobile sources; emissions from personal power boats are many times smaller compared to those from ocean-going vessels). The emissions from some of these categories were estimated using top-down approaches (see **Table 2-3**), but were not further included in the air dispersion modeling analysis or risk assessment.

[11] In this analysis, for the community-scale bottom-up emissions inventory, it was assumed that none of the on-road mobile sources across all source categories (all vehicles on all road types, including Port Trucks and trucks operating at truck-related businesses) were TRUs; that is, no emissions from the refrigeration units were estimated for any portion of these fleets. However, emissions from TRUs were estimated in the top-down emissions inventory based on regional-scale data.

### 2.1.4 Approach

*(a) Bottom-up (emissions inventory, air dispersion modeling, and analysis)*

A bottom-up emissions inventory involves estimating emissions using (1) emission factors (mass of pollutant emitted per unit of activity), and (2) local activity information of the emission processes (e.g., number of events, duration of activity). Emission factors vary by source type and/or emissions process, and can depend on other factors, such as the source age, model year, control technology, load, fuel type, speed of travel, and ambient conditions, where applicable. Local activity information varies by source and by year (and by season and/or hour, depending on the source). In this analysis, activity data from 2017 (or nearest year available; **Table 2-1**) by source type was used, and then convolved with corresponding emission factors to estimate emissions. The methods used for each source category are described in **Section 2.2–2.11**.

*(b) Top-down (emissions inventory only)*

A top-down approach was used to develop an emissions inventory for emissions sources for which there was insufficient emissions information (quantity, physical characteristics, spatiotemporal resolution). Emissions from these categories are included in the emissions inventory, but not in subsequent dispersion modeling and risk analysis.

A top-down emissions inventory can be developed by using (1) a large-scale (e.g., county-wide) emissions inventory, and (2) spatial surrogates and/or temporal profiles, which are used to disaggregate total emissions to finer spatiotemporal scales. Top-down emissions inventories were developed for area and non-road sources (see **Table 2-3**) using CARB's regional-scale inventory for Alameda County, the California Emission Projection Analysis Model (CEPAM) 2016 State Implementation Plan (SIP) inventory[12] v1.04, and processing those emissions through SMOKE to generate gridded and speciated emissions data over the West Oakland Source Domain. Specifically:

(1) Gridding: emissions for Alameda County were allocated to model grid cells (**Figure 2-1**) using SMOKE using spatial surrogates (e.g., land use data, economic data) derived from geospatial data from the Association of Bay Area Governments (ABAG) and other data sources (Reid, 2008).

(2) Speciating: emissions of $PM_{2.5}$ and total organic gases (TOG) were speciated into individual chemical species, including TACs. SMOKE disaggregates TOG and $PM_{2.5}$ emissions into a series of model species that are used to represent atmospheric chemistry in photochemical models. Speciation profiles developed for the SAPRC-07 chemical mechanism were applied to TOG emissions from all sources, and profiles developed for the AERO6 aerosol module (AE6) were applied to $PM_{2.5}$ emissions from all sources. The SAPRC-07 mechanism treats some toxic species explicitly, including acetaldehyde, benzene, and formaldehyde. However, other TACs are lumped into model species that act as surrogates for multiple compounds with similar mass and reactivity; for the District's

[12] This inventory can be accessed online via https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php. The 2016 SIP inventory is based on a 2012 base year.

regional modeling, existing SAPRC07 speciation profiles for TOG were modified to treat additional air toxics explicitly (e.g., acrolein and 1,3-butadiene). Once the revised speciation profiles were generated, SMOKE was used to speciate criteria pollutant emissions estimates into individual TAC compounds.

Once the SMOKE processing was complete, emissions associated with grid cells in the West Oakland Source Domain were extracted from SMOKE outputs and summed to obtain the total Source Domain-wide emissions for the source categories.

Although emissions estimated using the top-down approach were not evaluated further in the air dispersion modeling and risk assessment, they help provide a comprehensive understanding of the total local emissions inventory in West Oakland. This component of the emissions inventory complements the air dispersion modeling and risk assessment results, and helps to address areas of uncertainty and future improvements for this analysis (see **Section 6**).

### 2.1.5 Emissions by Category

Based on the bottom-up emissions inventory, there were 85.91 tpy of $PM_{2.5}$ and 23.91 tpy of DPM emitted in 2017 in West Oakland (**Figure 2-3**). These values represent the total emissions from numerous source categories, as described in the remaining sections and in **Table 2-2**, and are used to perform the community-scale dispersion modeling (using AERMOD) and risk assessment (**Section 4**). The largest portion of $PM_{2.5}$ emissions in West Oakland arises from on-road mobile sources (~53.5%, including Port Trucks, operations at truck-related businesses, and road dust); the Port and permitted stationary sources contribute nearly equal amounts (~25.6% and ~20.8%, respectively). In contrast, most DPM emissions in West Oakland are from activity related to the Port (~66.4%).

As discussed in **Section 2.1.3**, there are several emission sources in West Oakland that could only be estimated using a top-down approach. These emissions sources were namely fuel combustion and commercial area sources, and non-road mobile sources (**Table 2-3**). Emissions from these sources were derived from regional-scale information, but were not included in the air dispersion modeling analysis or risk assessment. Of these emissions sources, only non-road mobile sources emit DPM.

The grand total emissions in West Oakland (**Figure 2-4**) can be estimated by summing the results from the bottom-up emissions inventory (**Table 2-2**) and the top-down emissions inventory (**Table 2-3**). Therefore, the grand total $PM_{2.5}$ emissions in West Oakland were estimated as 129.31 tpy, where the community-scale emissions accounts for 66.4% of these total emissions. Similarly, the grand total DPM emissions were 28.03 tpy, where 85.3% of total DPM emissions are accounted for in the community-scale analysis.

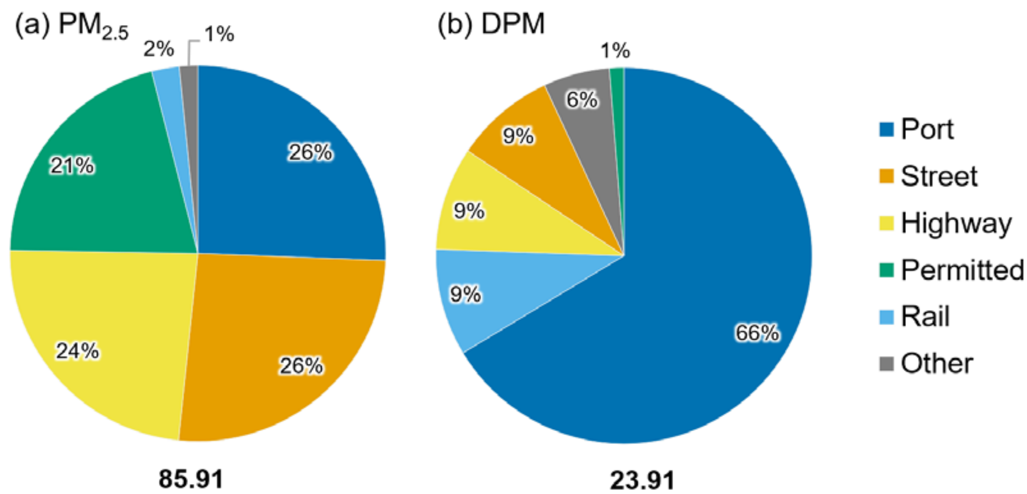


**Figure 2-3.** Emissions of (a) $PM_{2.5}$ and (b) DPM by source category included in the 2017 community-scale (bottom-up) West Oakland emissions inventory within the Source Domain. Emissions from Highway and Street are composed of emissions from all on-road mobile sources except Port Trucks, which are attributed to the Port category. The total emissions (tpy) of each pollutant is displayed below their respective pie chart. Source categories are further described in **Table 2-2**.

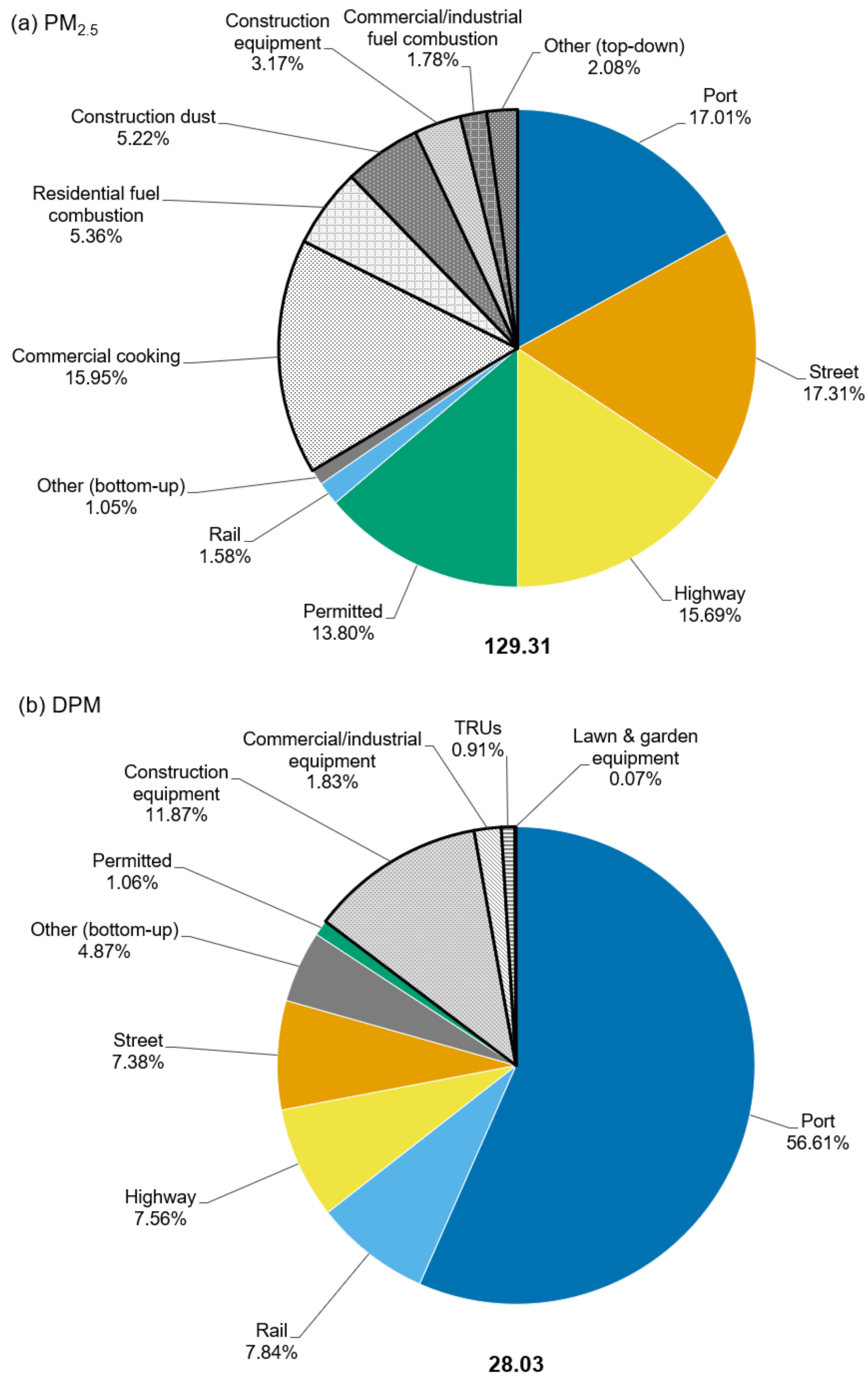


**Figure 2-4.** Total Emissions of (a) $PM_{2.5}$ and (b) DPM by source category in the West Oakland Source Domain. Emissions included in the community-scale emissions inventory (bottom-up) are colored, whereas and those omitted from further modeling (top-down) are greyscale. The total emissions (tpy) of each pollutant is displayed below their respective pie chart. Source categories for the community-scale emissions inventory are further described in **Table 2-2**. "Other (top-down)" emissions (panel (a) only) represents the total emissions from: commercial/industrial equipment, TRUs, lawn and garden equipment, industrial processes, and other area and non-road sources that are not otherwise indicated.

**Table 2-2.** Emissions by Source Category within the Source Domain. Cancer risk-weighted (CRW) emissions represent the total of DPM and other TAC emissions weighted by corresponding cancer risk (where applicable; see **Section 4.1.3**). Percentage (%) of emissions are reported as a total of the modeled inventory ("Total"). "Port Truck" emissions represent the total emissions, regardless of location (i.e., within the Port, on Highways and Surface Streets).

| Source Category | $PM_{2.5}$ | | DPM | | Cancer risk-weighted TACs | |
|---|---|---|---|---|---|---|
| | tpy | % of total | tpy | % of total | CRW tpy | % of total |
| **Highway** | **20.29** | **23.6** | **2.12** | **8.9** | **1,791** | **9.4** |
| Non-Trucks | 12.22 | 14.2 | 0.19 | 0.8 | 331 | 1.7 |
| LHDT | 0.41 | 0.5 | 0.09 | 0.4 | 69 | 0.4 |
| MHDT/HHDT | 2.48 | 2.9 | 1.84 | 7.7 | 1,392 | 7.3 |
| Road dust | 5.17 | 6.0 | - | - | - | - |
| **Surface Streets** | **22.38** | **26.1** | **2.07** | **8.6** | **1,692** | **8.9** |
| Non-Trucks | 4.82 | 5.6 | 0.09 | 0.4 | 183 | 1.0 |
| LHDT | 0.35 | 0.4 | 0.09 | 0.4 | 76 | 0.4 |
| MHDT/HHDT | 2.44 | 2.8 | 1.88 | 7.9 | 1,434 | 7.5 |
| Road dust | 14.77 | 17.2 | - | - | - | - |
| **Port** | **21.99** | **25.6** | **15.87** | **66.4** | **11,831** | **62.0** |
| OGV – maneuvering | 3.94 | 4.6 | 3.84 | 16.1 | 2,859 | 15.0 |
| OGV – berthing | 7.83 | 9.1 | 4.31 | 18.0 | 3,212 | 16.8 |
| Dredging | 1.12 | 1.3 | 1.16 | 4.9 | 864 | 4.5 |
| Assist Tugs | 3.82 | 4.4 | 3.94 | 16.5 | 2,932 | 15.4 |
| Bunkering (tugs, pumps) | 0.27 | 0.3 | 0.28 | 1.2 | 209 | 1.1 |
| CHE | 1.59 | 1.9 | 1.58 | 6.6 | 1,177 | 6.2 |
| Port Trucks | 0.93 | 1.1 | 0.50 | 2.1 | 372 | 2.0 |
| Road dust | 2.25 | 2.6 | - | - | - | - |
| Railyard – OGRE | 0.07 | 0.1 | 0.08 | 0.3 | 57 | 0.3 |
| Railyard – BNSF | 0.17 | 0.2 | 0.18 | 0.8 | 136 | 0.7 |
| **Rail** | **2.04** | **2.4** | **2.20** | **8.6** | **1,637** | **8.6** |
| Locomotives | 1.02 | 1.2 | 1.09 | 4.5 | 810 | 4.2 |
| Railyard – UP | 1.02 | 1.2 | 1.11 | 4.6 | 826 | 4.3 |
| **Permitted** | **17.84** | **20.8** | **0.30** | **1.2** | **1,101** | **5.8** |
| CA Waste (10th Street) | 0.46 | 0.5 | 0.00 | 0.0 | - | - |
| California Cereal | 0.58 | 0.7 | 0.00 | 0.0 | < 1 | < 0.1 |
| CASS | 0.72 | 0.8 | 0.00 | 0.0 | < 1 | < 0.1 |
| Dynegy | 1.96 | 2.3 | < 0.01 | < 0.1 | 1 | < 0.1 |
| EBMUD | 3.99 | 4.6 | 0.09 | 0.4 | 110 | 0.6 |
| Pinnacle Ag Services | 1.48 | 1.7 | 0.00 | 0.0 | - | - |
| Schnitzer Steel – stationary | 5.20 | 6.1 | 0.00 | 0.0 | 823 | 4.3 |
| Sierra Pacific | 0.91 | 1.1 | 0.00 | 0.0 | - | - |
| Other | 2.53 | 2.9 | 0.21 | 0.8 | 168 | 0.9 |
| **Other** | **1.36** | **1.6** | **1.36** | **5.7** | **1,016** | **5.3** |
| Ferry/Excursion vessels | 0.91 | 1.1 | 0.93 | 3.9 | 695 | 3.6 |
| Schnitzer Steel – OGV | 0.30 | 0.4 | 0.30 | 1.3 | 225 | 1.2 |
| Schnitzer Steel – trucks | 0.04 | < 0.1 | 0.01 | < 0.1 | 8 | < 0.1 |
| Truck-related businesses | 0.11 | 0.1 | 0.12 | 0.5 | 87 | 0.5 |
| **Total** | **85.91** | **100.0** | **23.91** | **100.0** | **19,054** | **100.0** |

**Table 2-3.** Total emissions by Source Category within the Source Domain based on regional-scale emissions inventory (not included in community-scale bottom-up emissions inventory). Cancer risk-weighted emissions represent the total of DPM and other TAC emissions weighted by their corresponding cancer risk (see **Section 4.1.3**). Percentage (%) of emissions are reported as a total of the inventory ("Total"). "Port Truck" emissions represent the total emissions, regardless of location (i.e., within the Port, on Highways and Surface Streets).

| **Source Category** | **$PM_{2.5}$** | | **DPM** | | **Cancer risk-weighted TACs** | |
|---|---|---|---|---|---|---|
| | **tpy** | **% of total** | **tpy** | **% of total** | **CRW tpy** | **% of total** |
| **Area** | **30.40** | **70.0** | **-** | **-** | **413** | **11.0** |
| Commercial cooking | 20.63 | 47.5 | - | - | 9 | 0.2 |
| Food and agriculture | - | - | - | - | 13 | 0.4 |
| Fuel combustion – residential | 6.93 | 16.0 | - | - | 18 | 0.5 |
| Fuel combustion – Commercial/industrial | 2.30 | 5.3 | - | - | 17 | 0.5 |
| Industrial processes | 0.03 | 0.1 | - | - | 176 | 4.7 |
| Solvent use | 0.00 | 0.0 | - | - | 125 | 3.3 |
| Consumer products | 0.00 | 0.0 | - | - | 41 | 1.1 |
| Other | 0.50 | 1.2 | - | - | 13 | 0.4 |
| **Non-road** | **13.00** | **30.0** | **4.12** | **100.0** | **3,358** | **89.0** |
| Construction – equipment | 4.10 | 9.5 | 3.33 | 80.8 | 2,501 | 66.3 |
| Construction – dust | 6.74 | 15.5 | - | - | - | - |
| Commercial/industrial equipment | 1.17 | 2.7 | 0.51 | 12.5 | 436 | 11.6 |
| Lawn and garden equipment | 0.12 | 0.3 | 0.02 | 0.5 | 79 | 2.1 |
| TRUs | 0.24 | 0.5 | 0.26 | 6.2 | 192 | 5.1 |
| Other | 0.63 | 1.4 | 0.00 | 0.0 | 151 | 4.0 |
| **Total** | **43.40** | **100.0** | **4.12** | **100.0** | **3,771** | **100.0** |

## 2.2 Permitted Stationary Sources

Stationary sources of air pollution are regulated and subject to permitted conditions established by the District. These include complex sources such as metal smelting, wastewater treatment plants, and smaller facilities, such as diesel generators, gasoline dispensing facilities (GDFs, or gas stations), and boilers. The District maintains a database of its permitted sources and their associated characteristics and emissions. These emissions are determined either through direct measurement (via source tests) or by engineering calculation (based on process throughput and industry emission factors). Emission values are updated annually or bi-annually, depending on their permit cycle. Emissions from all permitted facilities are reported annually to CARB under the California Emissions Inventory Development and Reporting System (CEIDARS)[13] and, subsequently, reported to the U.S. Environmental Protection Agency (EPA) to supplement the National Emissions Inventory (NEI) database.[14] The 2017 CEIDARS report was used as the basis to assemble emissions for permitted facilities located in West Oakland and surrounding areas (encompassing zip codes 94607, 94608, 94609, 94612, 94615, and 94501). The inventory was developed for $PM_{2.5}$ and TACs, including DPM.

Quality assurance (QA) was performed and updates were made to the report to include newly permitted facilities and removed facilities that closed after 2017. Another important improvement was the addition of GDFs to the point-source inventory. Historically, emissions from GDFs have been aggregated and reported as part of county-level area totals in CEIDARS. The emissions inventory for West Oakland includes 32 GDFs geolocated with actual or permitted throughputs, which were used to estimate their emissions individually.

The District made other updates to the emissions estimates in the 2017 CEIDARS report, mainly to ensure that the latest emissions factors, source test results, and methods used to estimate emissions were incorporated. In most of these cases, the individual facility's emissions were revised by specific facility source (e.g., Custom Alloy Scrap Sales [CASS], East Bay Municipal Utility District [EBMUD], and Schnitzer Steel; **Table 2-4**). Otherwise, source specifications and associated emissions from entire source categories were updated (**Table 2-4**).

Certain categories of permitted stationary sources were not included in the community-scale emissions inventory, such as portable engines, other portable equipment, and registered restaurants,[15] since their operations are intermittent and their emissions are generally not well characterized.[16] Dry cleaners were also excluded since pollutants currently emitted from these sources do not contribute to cancer risk.[17] Other permitted stationary sources were excluded from this analysis for one of the following reasons:

[13] CEIDARS data for individual stationary sources are available through CARB's Facility Search Tool website: https://ww3.arb.ca.gov/ei/disclaim.htm. Data online may not reflect changes made by the District (e.g., **Table 2-4**).
[14] https://www.epa.gov/air-emissions-inventories.
[15] One restaurant with charbroiling operations was included since emissions information was available.
[16] These emissions sources are permitted by the District, but emissions data are not collected. Portable engines and equipment change location over time, and therefore could not be geolocated. Emissions from these sources are included in the top-down emissions inventory instead.
[17] All dry cleaners in the Source Domain used petroleum-based solvents, and therefore did not have associated cancerous TAC emissions.

**Table 2-4.** Updates performed to permitted stationary sources in the 2017 CEIDARS report. The name of the facility or category of the source is provided, with the plant number (P), source ID, and information regarding updates to the emission factors (EF) and/or emissions.

| Name/Category | P | ID | Source Description | Updates |
|---|---|---|---|---|
| CASS | 146 | 1 | furnace | Emissions increased to reflect source test results. |
| | | 2 | furnace | Emissions were decreased by using updated EFs. |
| | | 7 | material handling | Emissions increased. |
| Schnitzer Steel | 208 | 6 | shredder | Emissions increased based on source test results (reported for Stack 15, identified as Source 6). |
| | | – | – | Fugitive emissions included. |
| EBMUD | 591 | 100 | wet treatment process | Emissions decreased based on influent testing. |
| | | 37 – 39 | standby generator | Emissions for DPM increased by using default EFs. |
| | | 52 | portable emergency electric generator | Source removed from the inventory since it is no longer in use. |
| | | – | – | Other carcinogenic pollutants associated with diesel fuel were excluded since DPM is a surrogate for all toxic compounds collectively emitted during diesel oil combustion. |
| Central Concrete | 1253 | 1 | aggregate piles | Emissions were decreased by using updated EFs. |
| | | 2 | cement silo | Emissions were decreased by using updated EFs. |
| | | 3 | conveyors | Emissions were decreased by using updated EFs. |
| | | 4 | cement batcher | Emissions were decreased by using updated EFs. |
| Dynergy | 11887 | 1 – 6 | gas turbine | Emissions were decreased by using updated EFs. |
| Sierra Pacific | 18268 | 1, 2 | aggregate handling | Emissions were decreased by using updated EFs. |
| | | 3 | silo | Emissions were decreased by using updated EFs. |
| | | 4 | truck loading | Emissions were decreased by using updated EFs. |
| | | 5 | conveyor | Emissions were decreased by using updated EFs. |
| standby generators and fire pumps | – | – | – | DPM was used as a surrogate to represent all carcinogenic compounds that may be emitted from combustion of diesel fuel. However, other toxic compounds were included in the analysis if the generators burned natural gas or digester gas. |

- There were no associated $PM_{2.5}$ emissions and/or TAC emissions available, or these emissions could not be estimated based on data available; and/or
- There were no $PM_{2.5}$ emissions and TAC emissions were non-cancerous.

While the permitted stationary source database originally contained 430 individual sources among 205 unique facilities, only 322 sources had associated emissions of $PM_{2.5}$ or cancerous TACs among 170 unique facilities. These 322 sources were modeled in this analysis (**Table 2-5**). The final list of facilities included in this analysis is provided in **Attachment 2**. Less than half (~42%) of these sources had known release heights (required for dispersion modeling; see **Section 3.1**), and only ~34% had complete dispersion modeling parameters.[18]

**Table 2-5.** Summary of data completeness for permitted stationary sources in West Oakland. The final inventory reflects the number of sources modeled in this analysis that had associated emissions of $PM_{2.5}$ and/or TACs that contribute to cancer risk.

| Inventory | Record type | Number of records |
|---|---|---|
| Original | Number of permitted stationary sources | 430 |
| | Number of unique facilities | 205 |
| Final | Number of permitted stationary sources | 322 |
| | Number of unique facilities | 170 |
| | Sources with known release heights | 134 |
| | Sources with complete dispersion modeling parameters | 110 |

The majority of permitted stationary sources in West Oakland are located on the eastern side of the modeling domain (**Figure 2-5**). GDFs are the most evenly spatially distributed. Back-up generators are clustered in the downtown Oakland area, as many multi-story buildings (such as hotels or offices) have emergency generators. Coffee roasters are mainly located in the industrial area south of I-880, whereas cement-related facilities are located in the northwest quadrant of the West Oakland community. Other sources are associated with industrial activities and tend to be located near main arterial roadways such as 7th Street, West Grand Avenue, and Peralta Street.

[18] A complete set of release parameters for point sources includes: stack height, stack diameter, gas exit temperature, and gas exit flow rate. A complete set of release parameters for volume sources includes: stack height, and initial lateral dispersion coefficient (which can be estimated from the stack diameter).

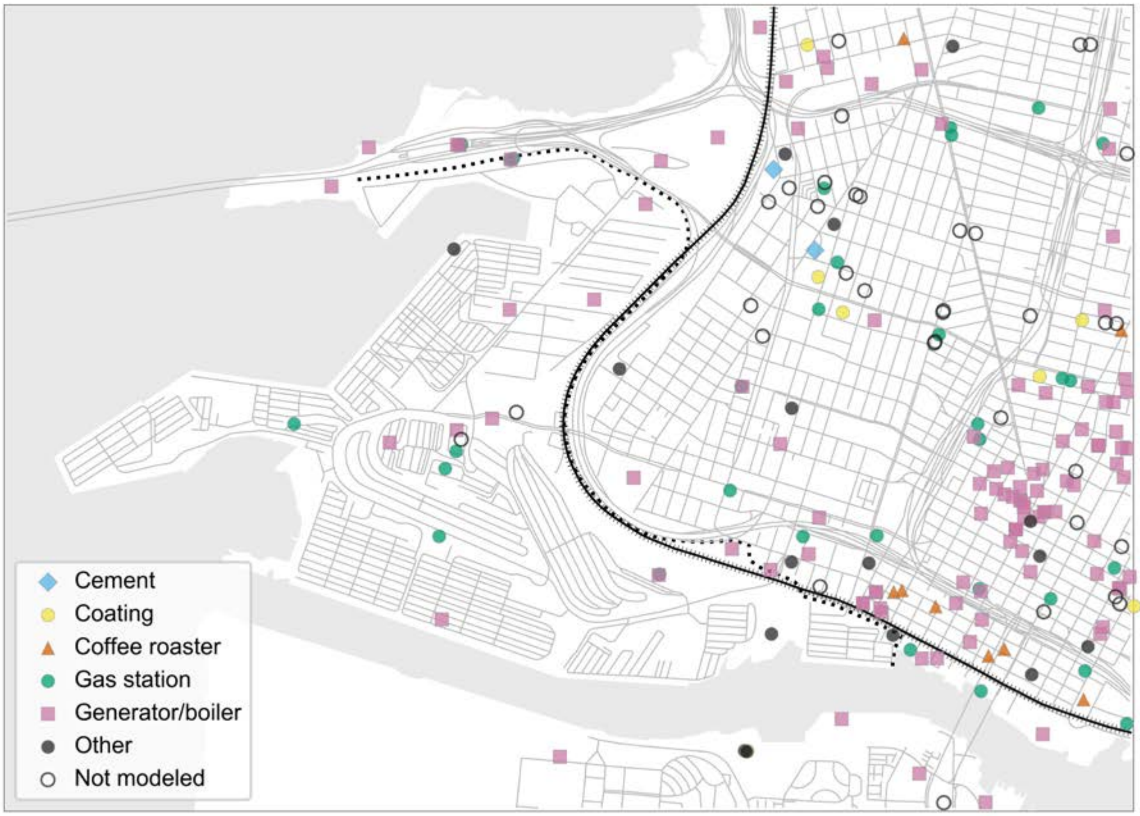


**Figure 2-5.** Location of permitted stationary sources in West Oakland. “Generator/boiler” indicates either a generator (primary or standby), boiler, generator and boiler, or generator and fire pump. “Other” sources include: charbroilers, cremators, electric shredders, furnaces, grain systems, microturbines, printing presses, recycling, sandblasting, smoke houses, soil vapor extraction, and turbines. Sources that were “Not modeled” were excluded because either $PM_{2.5}$ emissions were not available, or because the TACs that are emitted do not contribute to cancer risk.

## 2.3 On-Road Mobile Sources

The approach for developing an emissions inventory from on-road mobile sources depended on location: due to data availability, those from roadways within terminals at the Port were developed separately (by Ramboll (2018); see **Section 2.8**) from those within the rest of the Port area and West Oakland community. In this section, the process for developing a bottom-up emissions inventory for the remaining roadways is presented.

Emissions from vehicles travelling on roadways in urban environments tend to occur near *sensitive receptors*,[19] and have been shown to have a high intake fractions (ratio of inhaled to emitted pollutants; Marshall *et al.* 2005). For this analysis, a bottom-up emissions inventory of $PM_{2.5}$ and TAC pollutants was developed using annual average daily emission profiles for each roadway segment (or roadway "link"[20]) within the West Oakland Source Domain. Annual average daily emission profiles were developed by vehicle category and by day type: weekday (WD) (Monday–Friday) and weekend (WE) (Saturday–Sunday). Traffic varies significantly by day of week; typically, total daily traffic is higher on weekdays, with slower fleet average speeds, and peak traffic periods by day type may also vary due to commuting.

Pollutants are emitted from on-road mobile sources due to the following processes:

- *Operational* emissions result from the consumption and combustion of fuel or from wear of vehicle-related materials.[21] The emissions processes include:
  - Running exhaust, when pollutants are emitted from the tailpipe of the vehicle as the fuel is combusted;
  - Running loss, when fuel vapors escape from the fuel system during operation;
  - Tire wear, when PM is emitted as a result of a vehicle's tires wearing on the road surface; and
  - Brake wear, when PM is emitted as a result of wearing of brake discs as the vehicle's brakes are applied.

  In California, emission factors from these processes are typically estimated by using the EMission FACtors (EMFAC) model,[22] which is developed and maintained by CARB. In this analysis, operational on-road mobile source emission included the four processes listed above,[23] as defined in the latest version of EMFAC,[24] EMFAC2017 (v1.0.2) (California Air Resources Board 2017b).

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[19] Sensitive receptors are locations where occupants are more susceptible to adverse health effects of air pollution exposure, including schools, hospitals, daycare facilities, elderly housing, etc.

[20] A link is a section of roadway where either roadway attributes or travel activity are constant along the length of the section.

[21] In this analysis, no vehicles were treated as TRUs; that is, emissions from refrigeration units on trucks (Port Trucks or non-Port Trucks) were not included.

[22] Additional information on EMFAC and mobile source emissions estimates are available at https://ww3.arb.ca.gov/msei/msei.htm.

[23] Other emission processes from on-road mobile sources, such as from start exhaust, resting evaporative loss, and others (see California Air Resources Board 2017b), were not included in the bottom-up inventory; for Alameda County, these emissions are generally a small portion of the total emissions for $PM_{2.5}$ and DPM.

[24] EMFAC2017 is a trip-based mobile source emissions model. As such, running exhaust emission factors also account for idling events (and other processes, such as crankcase exhaust) during normal vehicle operation (California Air Resources Board 2015), such as a vehicle idling while queuing at an intersection for a limited amount of time. Therefore, idling exhaust emissions were not explicitly calculated for on-road mobile sources. Extended idling events of heavy-duty vehicles were accounted for separately (see **Section 2.4**).

- *Re-entrained road dust* emissions are particulate matter from resuspended road surface material (dust) that is entrained by vehicles traveling on roads. Currently, road dust emission factors are estimated following CARB's methodology for paved road dust (California Air Resources Board 2016), which is based on the EPA Air Pollution (AP) report *AP-42 Compilation of Air Pollutant Emissions Factors, Volume I* (or simply "AP-42") Chapter 13.2.1 Paved Roads (U.S. Environmental Protection Agency 2011). Entrained road dust on paved roadways can be significant source of $PM_{2.5}$, especially as the relative proportion of emissions from other vehicle processes decreases over time (Reid *et al.* 2016).

Bottom-up emissions inventories from on-road mobile sources can be calculated at different levels of aggregation. For example, emissions may be calculated by individual vehicle types (e.g., passenger car, motorcycles), or by vehicle categories (e.g., Non-Trucks, which includes passenger cars and motorcycles and other non-truck vehicles; **Table 2-6**). EMFAC2017 groups all vehicle classes into three categories: Non-Truck, Truck 1, and Truck 2.

**Table 2-6.** Emission source and vehicle categories from on-road mobile sources. Vehicle categories are generally based on gross vehicle weight rating (GVWR) and EMFAC2017 (see California Air Resources Board 2017a). Non-POAK-Truck 2 is abbreviated as NPT2.

| Emissions Category | Vehicle Category | Description/Vehicle Types |
|---|---|---|
| Operational | Non-Truck | Passenger cars, passenger trucks, medium-duty trucks (GVWR ≤ 8,500 lb), buses, motorcycles, motor homes, motor coaches. |
| | Truck 1 | Light-Heavy Duty Trucks (LHDT) (GVWR 8,501–14,000 lbs) |
| | POAK | Heavy-Heavy Duty Diesel Drayage Truck in Bay Area (GVWR > 33,000 lb) (referred to as "Port Trucks" or "drayage trucks" here). |
| | NPT2 | Medium-Heavy Duty Trucks (MHDT) (GVWR 14,001–33,000 lb) and Heavy-Heavy Duty Trucks (HHDT) (GVWR > 33,000 lb), excluding Port Trucks. |
| Road dust | All | Entrained road dust ($PM_{10}$ and $PM_{2.5}$) on paved roads. |

In this analysis, operational emissions were namely estimated by vehicle category (**Table 2-6**) based on the vehicle categorization EMFAC2017, as well as analysis needs (so that potential mitigation measures can be applied to specific source categories within the source apportionment). The EMFAC2017 default Non-Truck and Truck 1 results were used, but the default Truck 2 category was further divided into two categories: Port Trucks (POAK),[25] and the remaining EMFAC2017 Truck 2 vehicles (Non-POAK-Truck 2).[26] This was done because Port Trucks have historically been significant source of DPM in West Oakland (California Air Resources Board 2008a); however, POAK emission factors in EMFAC2017 suggest a much cleaner Port Truck fleet because of CARB's Drayage Truck Regulation (California Air Resources

[25] In this analysis, the terms "Port Trucks" and "Drayage Trucks" are interchangeable. Port Trucks refer to those vehicles whose engines are subject to CARB's Drayage Truck Regulation (California Air Resources Board 2011b), regardless of vehicle activity location (Port terminal, railyard, business; within terminals, or between terminals and other destinations), or activity type (short-hauling or otherwise).

[26] Default EMFAC2017 fleet information was used for each of these categories, which includes an inter-category fleet mix, and model year and vehicle age distributions.

Board 2011b). Finally, the total of all truck-related categories – Truck 1, POAK, and Non-POAK-Truck 2 – may be referred to collectively as "Trucks".

To develop a bottom-up link-level emissions inventory for on-road mobile sources, the data needed are (1) roadway attributes, (2) vehicle travel activity, and (3) corresponding emissions factors (by vehicle emissions process and category). In this analysis, the majority of the roadway attributes and travel activity data were purchased from Citilabs (Streetlytics platform).[27] A set of shapefiles containing the geographic location, travel activity (volume and speed), and roadways attributes of roadway segments in Alameda County was obtained for 2016 by hour of day for four seasons and four day types (Monday–Thursday, Friday, Saturday, and Sunday). To use this dataset to develop an emissions inventory and to support AERMOD dispersion modeling:

(1) The roadway network was clipped to the Source Domain; some roadway segments were shortened and their lengths recalculated, while other segments had to be manually extended to meet the edge of the domain (namely, the roadway segments representing the San Francisco-Oakland Bay Bridge).
(2) Roadway segments were excluded in Port terminal areas.
(3) Corresponding roadway segments that represented the total 2-way directional traffic were merged, so that the resulting line geometry represented the approximate centerline of the roadway.[28] As a result, there were 6,861 roadway segments in the West Oakland Source Domain.
(4) By performing (3), the number of lanes and hourly traffic volume in both directions were added, and the hourly traffic speeds were averaged (weighted by hourly volume).
(5) The data was then aggregated into two day types: WD, representing travel activity from Monday–Friday, and WE, representing travel activity from Saturday-Sunday. These data were averaged across all seasons to obtain an annual average diurnal profiles.

A description of the parameters from Citilabs and other data sources used to develop a vehicle-type (Non-Truck/Truck) and day-type (WD/WE) specific emissions inventory are described in the following sections.

### 2.3.1 Roadway Attributes

The geometry of each roadway link is used to perform AERMOD dispersion modeling, while the associated roadway attributes are used to estimate emissions from on-road mobile sources. The roadway attributes required include: roadway length, road type, and number of lanes. A description of these attributes and how they are used to support developing the emissions inventory and/or dispersion modeling are provided in **Table 2-7**.

The road type assigned to each roadway segment was mainly based on the roadway functional class provided by Citilabs (based on HERE), which is defined as "a hierarchical network [index] used to determine a logical and efficient route for a traveler."[29] These classes were matched to corresponding U.S. Federal Highway Administration (FHWA) Road Types, which are based on

[27] http://www.citilabs.com/.
[28] The District did not QA the location of the roadway segment centerlines.
[29] See http://marketing.citilabs.com/hubfs/Here_Attributes.pdf (accessed February 2019).

level of service and are used to determine roadway widths, and CARB Road Types, which are based on “anticipated usage, modes of usage, and silt loading potential” (California Air Resources Board 2016) and are used to determine roadway surface silt loading factors (**Table 2-8**). Because of the mismatch between roadway classification systems, freeway on- and off-ramps, which are assigned to multiple functional classes, can then be assigned to numerous CARB and FHWA road types; for simplicity, the District did not adjust these assignments.[30] Additionally, roadway segments were also assigned to road category (“Highway” and “Surface Street”; **Table 2-8**) which were created to align with available data and the source apportionment approach.

**Table 2-7.** Roadway attributes and associated data sources used for estimate emissions from on-road mobile sources.

| Parameter | Purpose | Reference/ Data Source |
|---|---|---|
| Roadway Length | Determine (a) geographic locations of roadways (used in AERMOD dispersion modeling; **Section 3.4.3**), and (b) calculate vehicle miles traveled (VMT) used in estimating emissions. | Citilabs (updated by the District) |
| Road Type | Determine (a) roadway width (used in AERMOD dispersion modeling; **Section 3.4.3**), and (b) silt loading (to calculate road dust emissions). | Citilabs, California Air Resources Board (2016) |
| Number of Lanes | Determine total width of roadway (used in AERMOD dispersion modeling; **Section 3.4.3**). | Citilabs (updated by the District) |

**Table 2-8.** Cross-reference of road type classification schemes used in this analysis. Functional Class were obtained from Citilabs and mapped to CARB Road Type (based on California Air Resources Board (2016), used to determine silt loading factors for estimating road dust emissions), FHWA Road Type (based on FHWA and American Association of State Highway and Transportation Officials (2018), used to determine roadway width), and Road Category (used in this analysis for source apportionment).

| Functional Class | CARB Road Type | FHWA Road Type | Road Category |
|---|---|---|---|
| 2 - Major Highways | Freeway | Freeway | Highway |
| 3 - Minor Highways | Major/Collector | Arterial | Surface Street |
| 4 - Minor Streets | Major/Collector | Arterial | Surface Street |
| 5 - Local Roads | Local | Local | Surface Street |

Finally, truck route type was assigned to each roadway segment based on information obtained from the City of Oakland:[31] (1) prohibited truck routes, (2) major truck routes, or (3) neither

[30] This results in a conservative estimate for road dust emissions; on- and off-ramps are then assigned to arterial and local roads, which typically have more dust (higher silt loading factors) than freeways.
[31] See City of Oakland Truck Routes and Prohibited Streets: https://www.oaklandca.gov/resources/truck-routes-and-prohibited-streets.

(**Figure 2-6**). These route designations were used to determine fleet mix information (see **Section 2.3.2(b)**).

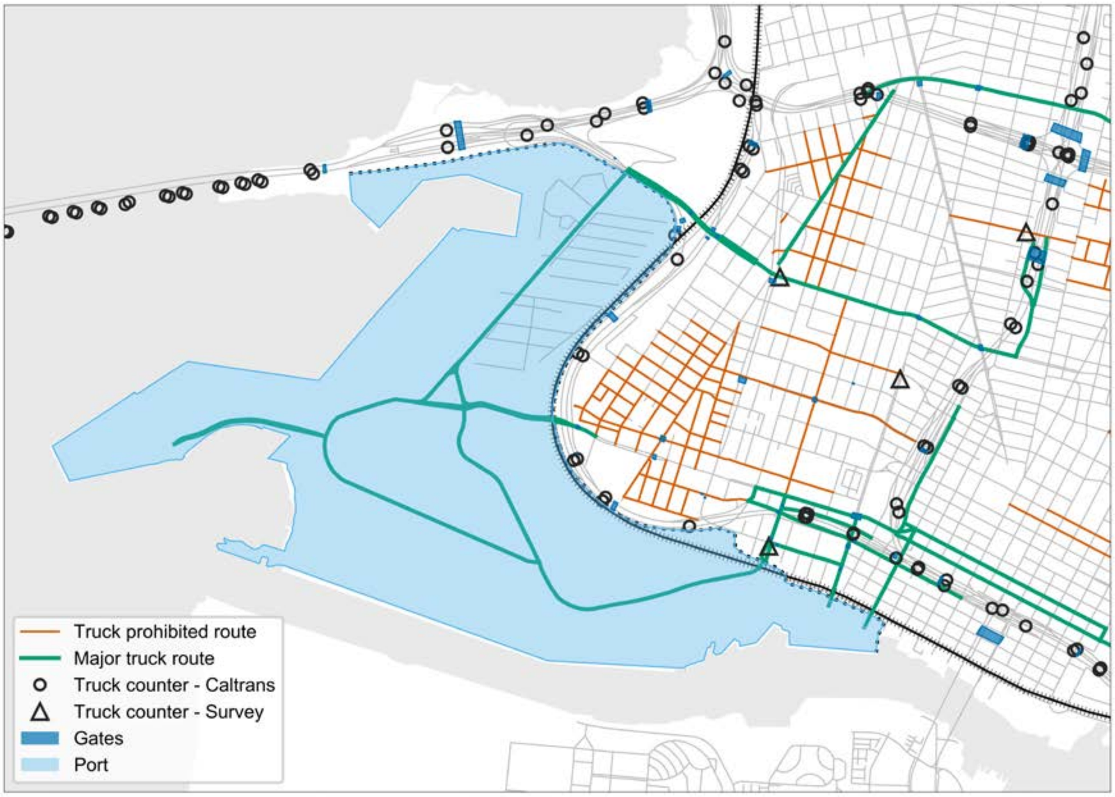


**Figure 2-6.** Roadway network and data sources used to develop the emissions inventory for on-road mobile sources. The roadways (solid lines, provided by Citilabs), traffic counters (open symbols), Port boundary (dashed line), and gates (blue polygons, used in the StreetLight InSight platform) are plotted. Caltrans truck counters may appear off of the Bay Bridge because the bridge was reconstructed (completed ~2013) and the location of the counters were not updated in PeMS. Only roadway segments modeled as volume sources in AERMOD are plotted (i.e., some roadways in the Port terminal areas are not displayed, since they were accounted for in the Port emissions inventory; see **Section 2.8**).

For the resulting 2-way merged roadway network, QA was performed on the number of lanes only for roadways where (a) there was one lane in either direction, and (b) the total 2-way AADT ≥ 5000.[32] The District updated the number of lanes of 274 roadway segments (4% of the roadway dataset). If the number of lanes for a segment was not a whole number (integer), the value was rounded down (e.g., 4.5 lanes was rounded to 4 lanes), as the fractional lane often corresponded to roadway sections designated for street parking.

[32] According to the District's current California Environmental Quality Act guidelines, a roadway with AADT < 10,000 is likely not a significant source. In this analysis, AADT ≥ 5,000 was used to determine which roadways should be reviewed, to be conservative (Bay Area Air Quality Management District 2017).

### 2.3.2 Travel Activity

Vehicle travel activity data characterizes the type of fleet and how that fleet travels on a roadway. Emissions are estimated based on these parameters, which include: volume, speed, fleet mix, and fleet average vehicle weight (**Table 2-9**). These parameters are further described below.

**Table 2-9.** Travel activity parameters and associated data sources used for estimate emissions from on-road mobile sources. Parameters can vary hourly and by roadway link.

| Parameter | Description | Purpose | Reference/ Data Source |
|---|---|---|---|
| Volume | Average total traffic fleet volume. | Calculate VMT and VHT, which are used to estimate emissions from all processes (operational and road dust). | Citilabs |
| Speed | Average total traffic fleet speed. | (a) Estimate running exhaust emissions (emission factors are speed-dependent), and (b) estimate VHT. | Citilabs |
| Fleet Mix | Composition of vehicle fleet (i.e., volume fraction for each vehicle category). | Apportion fleet-total VMT to each vehicle category. | StreetLight, Caltrans Truck Traffic Volumes, Caltrans PeMS, Bay Area Air Quality Management District (2009) |
| Fleet average vehicle weight | Volume-weighted average weight of vehicle in fleet | Estimate road dust emission factors. | CT-EMFAC2017 |

*(a) Volume and Speed*

For each link, traffic volume and speed can be used to calculate:

- Vehicle miles travelled (VMT): the mileage of all vehicles traveling on a link over a specific period (e.g., hourly, daily). That is, VMT is the product of volume (unitless) and link length (mi). VMT is used to estimate emissions that are based on gram-per-mile (g/mi) emission factors (running exhaust, tire wear, brake wear, road dust).
- Vehicle hours traveled (VHT): the travel time of all vehicles traveling on a link over a specific period (e.g., hourly, daily). VHT is estimated by dividing VMT (mi) by speed (mph). VHT is used to estimate emissions due to running loss.

Hourly total fleet volume and speed data by roadway link and day type were obtained from Citilabs. Due to availability, this data was based on 2016 travel activity; to create a 2017 base year activity data set, the District then adjusted the total volumes (and therefore VMT and VHT) by a growth factor (0.6%) derived from the Alameda County VMT information in EMFAC2017. For each roadway link, hourly VMT and VHT were calculated, and VMT was then allocated to vehicle types (**Table 2-6**) by using fleet mix information (see below).

*(b) Fleet Mix*

The annual average fleet mix by WD and WE were developed in two steps: (1) by deriving volume-based fleet mix fractions of Non-Truck, Truck 1 and Truck 2, and then (2) by splitting the Truck 2 fraction into POAK and Non-POAK-Truck 2. Due to data availability, fleet mix information for step (1) was developed by road category, as follows:

- For Highways: the fractions of Non-Truck, Truck 1 and Truck 2 were first derived from the 2016 Truck Traffic Volumes (Truck AADT) from the California Department of Transportation (Caltrans).[33] The dataset contains traffic counts by axles at specific locations on freeways. Counts were then be allocated to Non-Truck, Truck 1, and Truck 2. However, given the limited spatial coverage of the counters (e.g., there are no counters on I-880), a second dataset was compiled to further develop fleet mix information, based on Caltrans Performance Measurement System (PeMS)[34] counters. PeMS data contains total traffic flow and truck flow at specific locations on freeways. Data was obtained for 2016 and used to derive total truck fractions[35] along remaining highway roadway segments. As PeMS truck flow represents the total traffic flow of all Trucks, the truck fraction from PeMS was split into fractions of Truck 1 and Truck 2 based on VMT from EMFAC2017 (for 2017 Alameda County) by truck category. The resulting truck fractions were assigned to highway links based on their spatial proximity to Caltrans Truck Traffic counters or Caltrans PeMS counters (**Figure 2-6**).

- For Surface Streets: the fractions of Non-Truck, Truck 1 and Truck 2 were derived based on traffic axle counts at four auto-counters located on surface streets from the 2009 West Oakland Truck Survey (Bay Area Air Quality Management District 2009; **Figure 2-6**, **Table 2-10**). The fractions were assigned to surface street links based on their spatial proximity to the counters. If a surface street link was a major or prohibited truck route, then the nearest counter of the same route type was used; this prevented assigning higher truck fractions to surface streets that were truck-prohibited routes. For roadway links within Port area, fleet mix fractions were derived from the counter at the Port access point (3rd Street/Adeline Street) only.

**Table 2-10.** Description of location of automatic traffic counters from the 2009 West Oakland Truck Survey (Bay Area Air Quality Management District 2009).

| Automatic counter location | Total traffic level | Route description |
|---:|:---:|---|
| 3rd Street/Adeline Street | High | Major truck route (3rd Street) |
| West Grand Avenue/Mandela Parkway | High | Major truck route (West Grand Avenue) |
| 18th Street/Market Street | Moderate | Truck-prohibited route (18th Street) |
| 30th Street/Martin Luther King Drive | Low | Truck-prohibited route (30th Street) |

[33] Available from http://www.dot.ca.gov/hq/tsip/gis/datalibrary/Metadata/TruckAADT.html (downloaded February 2019).
[34] http://pems.dot.ca.gov/.
[35] All truck flow (volume) data in the PeMS data used in this analysis was marked as “imputed.” This means that the data are estimated from other available parameters from the traffic counter and/or other surrounding traffic counters in the PeMS network (see http://pems.dot.ca.gov/?dnode=Help&content=help_calc#truck).

Generally, the fleet mix by roadway link resulted in a higher proportion of Trucks on major Truck routes and some major arterials in West Oakland, and a lower proportion of Trucks on truck-prohibited routes and local roads (**Figure 2-7**). Notably, using this procedure resulted in a high Truck fraction in near the Port entrance at 3rd Street/Adeline Street and in the surrounding neighborhood, especially on weekdays.

In step (2), the fleet fraction of Truck 2 was split into POAK and Non-POAK-Truck 2 categories. At the time of this analysis, no traffic counts of Port Trucks from traffic measurements or travel models were readily available. Instead, the POAK fraction of Truck 2 was derived from origin-destination (O-D) analyses using the StreetLight InSight platform.[36] The platform simulates trips from Truck 2 vehicles (commercial vehicles) between origin and destination zones based on data from GPS navigation systems installed on the vehicles. A zone can be any size, so long as the geographic extents intersect a roadway. When a zone is drawn as a narrow polygon perpendicular to a roadway, it is referred to as a "gate." An O-D analysis generates a traffic "index" which quantifies the number of trips between an origin and a destination zone, as well as all trips in each zone independent of trip start or end locations.

In this analysis, it was assumed that all trips originating or ending at the Port were from Port Trucks, which are subject to CARB's Drayage Truck Regulation[37] (i.e., they are POAK vehicles). The entire Port area was designated as a zone, in addition to 49 gates, which were located on highways and surface streets to account for different road types and traffic conditions (including 21 on freeways, 4 on on-/off-ramps, and 24 on surface streets; **Figure 2-6**). The O-D analyses were conducted for each Port and gate pair. The traffic index between the Port and gate was considered as surrogate of POAK volume, while the traffic index of all trips at gate was considered as surrogate of total Truck 2 volume. Therefore, the fraction of POAK within the Truck 2 category was equal to the POAK traffic index divided by the Truck 2 traffic index. This fraction was assigned to each roadway link based on the spatial proximity of the link to a gate, and then multiplied by the Truck 2 fraction (step (1)) to estimate the fraction of POAK in the entire vehicle fleet. The fraction of Non-POAK-Truck 2 was calculated as the remaining fraction of Truck 2 vehicles. From this, it was estimated that > 75% of the Truck 2 fleet on roadways near or in the Port was composed of POAK vehicles (**Figure 2-8**).

[36] https://www.streetlightdata.com/.

[37] CARB adopted the Drayage Truck Regulation in 2011 (approved in 2007, changes approved and adopted in 2010; California Air Resources Board 2011b), which requires all Port Trucks to meet or exceed emissions standards for 2007 model year engines. The implementation of the rule has effectively reduced emissions from Port Trucks (e.g., Harley *et al.* 2014).

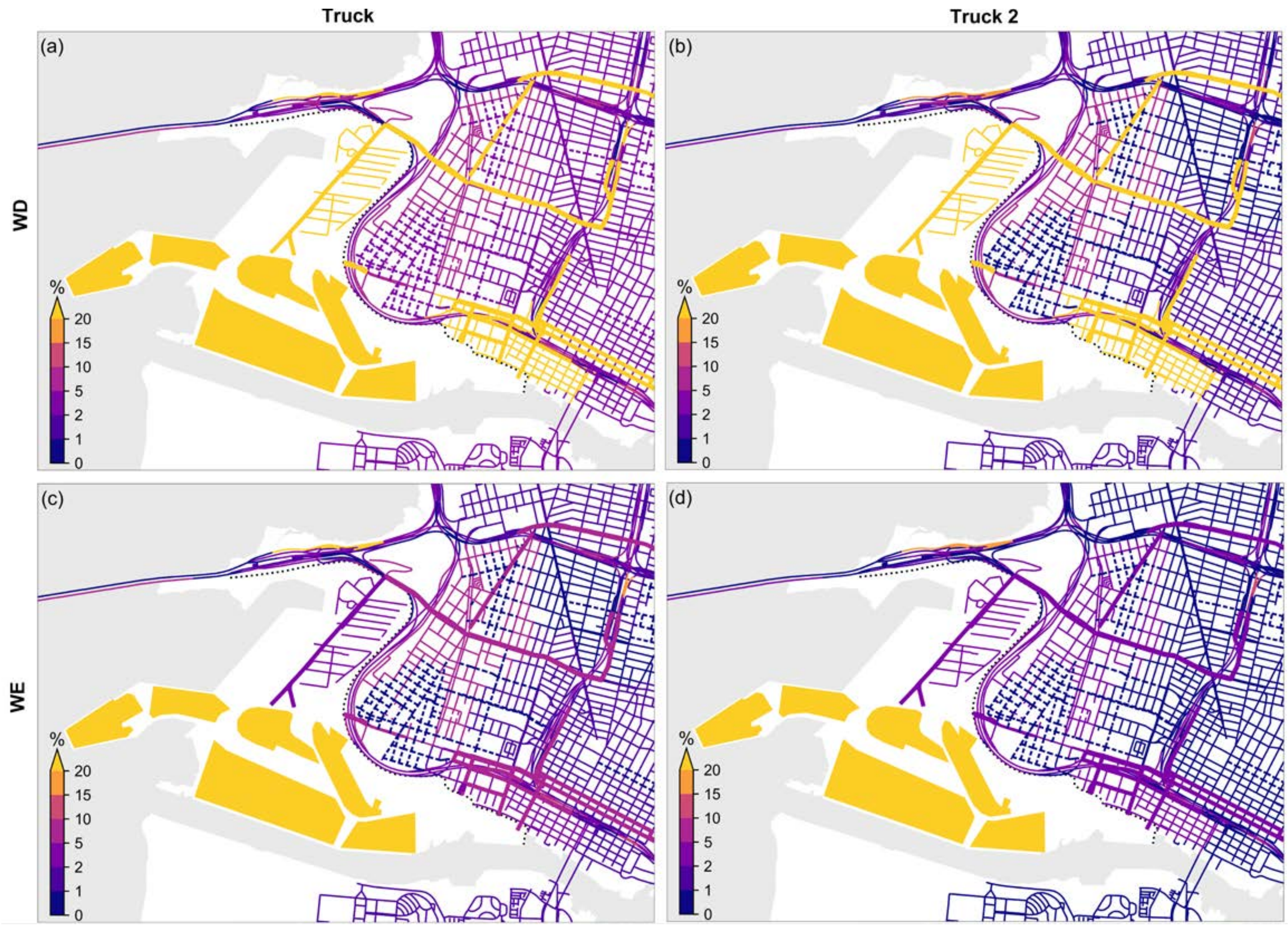


**Figure 2-7.** Total daily average fleet mix by roadway link in West Oakland for total (a, c) Trucks and (b, d) Truck 2 vehicles by day type (WD, WE). Fleet mix (%) is displayed by roadway (solid line), major truck route (thick solid line), and truck-prohibited route (dashed line). Total fleet volume varies by roadway link. Only roadway segments modeled as volume sources in AERMOD are plotted (*c.f.* **Figure 2-1**); emissions from on-road mobile sources operating within the Port are plotted as polygons.


**Figure 2-8.** As in **Figure 2-7**, but for total daily average POAK percentage of Truck 2 fleet on weekdays.

### *(c) Fleet Average Vehicle Weight*

For each link, average vehicle weight of the vehicle fleet is required to estimate emission factors for road dust. The fleet average vehicle weight is calculated as follows, where subscripts denote vehicle aggregation levels (vehicle type, VT, or vehicle category, VC, where $x \epsilon \{VT, VC\}$):

$$F_{VT} = \frac{VMT_{VT}}{VMT_{VC}}$$

$$F_{VC} = \frac{VMT_{VC}}{VMT_{fleet}}$$

$$W_{VC} = \sum\nolimits_{VT} W_{VT} \cdot F_{VT}$$

$$W_{fleet} = \sum\nolimits_{VC} W_{VC} \cdot F_{VC}$$

where

$F_x$ = VMT-based weighting factor for the vehicle type or category (unitless)
$VMT_x$ = VMT of all vehicles at vehicle aggregation level $x$ (mi)
$W_x$ = weight of vehicle at vehicle aggregation level $x$ (tons)

Therefore, the fleet average vehicle weight is simply the weighted-sum of all vehicle weights. Vehicle weights were taken from the Caltrans-EMFAC2017 (CT-EMFAC2017) tool[38] (California Department of Transportation 2019; using the `Vehicle` table in the underlying CT-EMFAC2017 database).

### 2.3.3 Emission Factors

Emission factors by emission process were developed for $PM_{2.5}$ and TACs by vehicle category.

*(a) Operational Emission Factors*

Emission factors from on-road mobile sources are typically estimated using the EMFAC2017, using default fleet mix within vehicle categories. As EMFAC2017 does not generate emission factors for TACs, the District leveraged the CT-EMFAC2017, which generates emission factors for $PM_{2.5}$ and mobile source air toxics (MSATs).[39] CT-EMFAC2017 is based on emission factors and activity data from EMFAC2017, while emission factors for MSATs are based on EMFAC2017 data and chemical speciation profiles from CARB and EPA.

CT-EMFAC2017 can generate emission factors for Non-Truck, Truck 1, and Truck 2 categories. Annual average emission factors were obtained for 2017 Alameda County. The emission factors for POAK and Non-POAK-Truck 2 categories were then derived in the following manner:

- For POAK: $PM_{2.5}$ emission factors were obtained directly from CARB's EMFAC2017 web database.[40] A chemical speciation profile for HHDV vehicles from CARB[41] was applied to total organic gases (TOG) emission factors from the EMFAC2017 web database to derive emission factors for each TAC pollutant.

- For Non-POAK-Truck 2: The emission factor of all Truck 2 vehicles can be expressed as the weighted sum of the emission factors from POAK and Non-POAK-Truck 2:

$$EF_{T2} = (F_{POAK} \cdot EF_{POAK}) + (F_{NPT2} \cdot EF_{NPT2})$$

  where $EF_x$ are emission factors for a given pollutant, and $F_x$ are the fleet mix fractions within the Truck 2 category. Then, $PM_{2.5}$ and TAC emission factors can be back-calculated for POAK emission factors (from above), Truck 2 emission factors (from CT-EMFAC2017), and VMT-based vehicle category weighting factors (from the CT-EMFAC2017 database) as follows:

$$F_{POAK} = 1 - F_{NPT2}$$

[38] http://www.dot.ca.gov/env/air/ctemfac-license.html
[39] MSATs in CT-EMFAC2017 include the nine priority pollutants identified by the FHWA within the National Environmental Policy Act (NEPA): 1,3-butadiene, acetaldehyde, acrolein, benzene, DPM, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter (POM) (Biondi, 2016). In this analysis, the emissions of these TACs were estimated except for POM (which is a group of compounds and therefore does not have a single associated toxicity value).
[40] https://www.arb.ca.gov/emfac/2017/.
[41] https://www.arb.ca.gov/ei/speciate/speciate.htm.

$$F_{NPT2} = \frac{VMT_{NPT2}}{VMT_{T2}}$$

$$EF_{NPT2} = \frac{1}{F_{NPT2}} \left[EF_{T2} - (EF_{POAK} \cdot F_{POAK})\right]$$

This back-calculation approach can be applied to derive emission factors from all emission processes, including emission factors for running loss; while the associated activity is VHT, the VHT-based weighting factor will be equivalent the VMT-based weighting factor (since the travel data used from Citilabs does not distinguish speed by vehicle category).

*(b) Road Dust Emission Factors*

In this analysis, road dust emission factors were estimated for each roadway link following California Air Resources Board (2016), reproduced below:

$$EF_{fleet} = k \cdot sL^{0.91} \cdot W_{fleet}{}^{1.02} \cdot \left(1 - \frac{P}{4N}\right)$$

where

$EF_{RD}$ = road dust emission factor (g/mi)
$k$ = particle size multiplier (0.00033 lb/VMT for $PM_{2.5}$)
$sL$ = road surface silt loading factor, based on CARB road type (**Table 2-11**) (g/m$^2$)
$W_{fleet}$ = fleet average vehicle weight (ton) (**Section 2.3.2(c)**)
$P$ = number of "wet" (precipitation ≥ 0.01 in) days in averaging period (days) ($P = 41$ days for Alameda County)
$N$ = total number of days in averaging period (days) ($N = 365$ days for annual analysis)

**Table 2-11.** Road surface silt loading factor ($sL$) by road type used in CARB method to estimate emission factors from road dust emissions. Values taken from California Air Resources Board (2016).

| CARB Road Type | $sL$ (g/m$^2$) |
|---:|---|
| Freeway | 0.015 |
| Major/Collector | 0.032 |
| Local | 0.320 |

### 2.3.4 Emissions

For operational emissions from on-road mobile sources, annual average daily emissions were estimated by roadway link by vehicle category (Non-Truck, Truck 1, Non-POAK-Truck 2, POAK), and day type (WD, WE), for each emissions process:

- For running exhaust, tire wear, and brake wear:

$$E_{VC} = \sum_{h=1}^{24} VMT(h)_{VC} \cdot EF(s(h))_{VC}$$

where emissions ($E$, in g) are summed over all hours ($h$) of the day (and VMT is a function of hour of day, and for running exhaust, the emission factor is a function of the speed by hour of day).

- For running loss:

$$E_{VC} = \sum_{h=1}^{24} VHT(h)_{VC} \cdot EF_{VC}$$

For road dust emissions, the total fleet annual average daily $PM_{2.5}$ emissions were estimated by roadway link by day type (WD, WE):

$$E_{fleet} = \sum_{h=1}^{24} VMT(h)_{fleet} \cdot EF_{fleet}$$

For each link, the emissions from all processes were summed. The result is an annual average daily emissions inventory by pollutant, by day type, and by vehicle category. The emissions were then converted to emission rates (g/s) with corresponding diurnal activity profiles (see **Section 3.4.3**). The total emissions by vehicle category are reported in **Table 2-2**.

## 2.4 Truck-Related Businesses

Numerous "truck-related businesses" are located in West Oakland. These businesses offer Port services, such as truck scales and delivery, or operate a fleet of trucks to support their own business activities. Emissions from idling trucks within the business premises were estimated and included in the emissions inventory; operational and road dust emissions from these trucks are already accounted for as part of on-road mobile source emissions inventory (**Section 2.3**). If the business had TRUs in their fleet, emissions estimates from the refrigeration units on the trucks were not included.

### 2.4.1 Surveyed Businesses

The District worked with Environmental Defense Fund (EDF) and the Oakland Planning Department to develop a comprehensive list of businesses that may operate a fleet of trucks in West Oakland. The District expanded the initial business list from the 2009 West Oakland Truck Survey (Bay Area Air Quality Management District 2009) to include businesses that were selfregistered on the West Oakland Works website[42] and from other field studies performed by EDF. To determine the current level of truck activity at each business, the District sent surveys to the businesses to determine the average number of truck visits per day and the number of loading docks. The District received responses from 52 of 91 businesses surveyed.[43] Responses from the 2009 West Oakland Truck Survey were used for businesses where the District did not receive a response. When no information was available, a default of either 5 or 10 trucks per day was used, based on the survey response received from similar business types. Businesses were then removed from the emissions inventory if:

- Emissions from trucks associated with a business were already accounted for under another source category (i.e., trucks operating at terminals or railyards);
- There were ≤ 3 trucks per day at the business; or
- The business did not have an active truck fleet (e.g., truck brokers, marketing companies).

See **Attachment 3** for a list of truck-related businesses and truck fleet sizes.[44]

Because businesses were not asked to provide truck fleet mix information in the surveys, the District estimated a default truck fleet based on the results from the 2009 West Oakland Truck Survey (**Table 2-12**), which includes heavy heavy-duty trucks (HHDT), medium heavy-duty trucks (MHDT), light heavy-duty trucks (LHDT), and Port Trucks (T7 Port of Oakland drayage trucks; T7 POAK). This default was applied to all businesses except for those where the fleet was clearly not representative of the business operation type; for example, all vehicles were assumed to be buses at the Greyhound Bus Terminal, and all vehicles were assumed to be MHDVs at shredding facilities. Fleet mix type by business are also reported in **Attachment 3**.

**Table 2-12.** Default fleet mix used for truck-related businesses, as derived from the 2009 West Oakland Truck Survey (Bay Area Air Quality Management District 2009).

| Truck category | Percentage of fleet (%) |
|---:|---|
| HHDT | 26.5 |
| MHDT | 13.5 |
| LHDT | 10.0 |
| T7 POAK | 50.0 |

CARB's commercial motor vehicle idling regulation states that all heavy-duty vehicles in California with GVRW ≥ 10,000 lb are prohibited from idling longer than five minutes (California Air Resources Board 2004). However, the regulation allows for longer idling times due to traffic congestion, inspection or service, operating a take-off device, adverse weather conditions, mechanical failure, passenger loading, queuing, or if the engine meets the optional clean idle certification standard. To be conservative, the District assumed that there was 15 min of idling per truck trip.

[42] http://www.westoaklandworks.com/our-directory/.
[43] District staff visited seven of these businesses in person.
[44] For most truck-related businesses, truck fleet size was used as a surrogate for truck trips.

Emission factors for diesel-fueled truck categories[45] were obtained from EMFAC2017 using a 2017 base year for Alameda County. The emissions were then estimated from each business using the following equation:

$$E_i = N \cdot I \cdot EF_i$$

where

$E_i$ = emissions of pollutant $i$ (g)
$EF_i$ = emission factor of pollutant $i$ (g/h)
$N$ = number of vehicles
$I$ = idling time (h) ($I = 0.25$ h)

To calculate the annual emissions, the District assumed that truck-related businesses operated 6 days per week (312 days per year).

### 2.4.2 Schnitzer Steel

A separate emission inventory for trucking operations was developed for Schnitzer Steel based on its permitted operations. Products are transported by trucks to bulk carriers which dock at the Schnitzer Steel deep-water terminal.

The District currently limits the number of trucks that can operate at Schnitzer Steel.[46] There are currently no restrictions on the type of trucks that can operate at Schnitzer Steel; therefore, for this assessment, the District assumed that all trucks were diesel fuel MHDTs and HHDTs (modeled as either Non-POAK-Truck 2 or heavy-heavy duty diesel single unit truck, T7 Single[47]). Due data availability, the vehicle category associated with the emission factors used varied depending on the emission process (**Table 2-13**).

Unlike for the other truck-related businesses in the West Oakland emissions inventory, because of the size and characteristics of the property, emissions from trucks operating at Schnitzer Steel included driving-related emissions. Emissions due to running exhaust, idle exhaust, and tire wear, brake wear and road dust (for PM) were calculated for Schnitzer Steel using the following assumptions: (1) each truck idled for 15 min on the property (to be conservative), (2) each truck drove 800 m on the property (two-times the approximate length of the property, from the entrance to near the ship berth), (3) trucks drove at 10 mph on the property (consistent with the average truck speed of trucks driving within terminals at the Port; Ramboll 2018), (4) trucks drove on unpaved roads, which were modeled as Local Roads for the purposes of calculating re-entrained road dust (**Table 2-11**). Emissions were calculated as in **Section 2.3.4**, and are summarized in **Table 2-13**.

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[45] From EMFAC2017, emission factors for LHDT are based on that of LHDT1 (which are highest among all LHDTs), and emission factors for HHDTs are based on the composite of emission factors for all T7 vehicles except T7 POAK (Port Trucks).
[46] Schnitzer Steel's current permit is for 63,875 truck trips per year.
[47] A T7 Single vehicle usually has the highest emission factors of all T7 vehicles in EMFAC2017; this vehicle type was used to provide a conservative estimate of emissions.

**Table 2-13.** Emission estimates from trucks operating at Schnitzer Steel in 2017 by emission process. The Fleet indicates the EMFAC2017-based fleet from which the emission factor was derived. A hyphen (–) indicates that emissions from the emission process are not applicable.

| | | Emissions (tpy) | |
|---|---|---|---|
| **Process** | **Fleet** | **$PM_{2.5}$** | **DPM** |
| Running exhaust | Non-POAK-Truck 2 | 0.0073 | 0.0076 |
| Idle exhaust | T7 Single | 0.0034 | 0.0036 |
| Tire wear | Non-POAK-Truck 2 | 0.0002 | – |
| Brake wear | Non-POAK-Truck 2 | 0.0010 | – |
| Road dust | Non-POAK-Truck 2 | 0.0267 | – |
| **Total** | | **0.0386** | **0.0112** |

## 2.5 Ocean-Going Vessels

Emissions from OGVs were estimated for active terminals at the Port and the privately-owned terminal operated by Schnitzer Steel. Emissions from OGVs include emissions from transiting, maneuvering, and berthing (hoteling). OGVs use propulsion engines for transiting, auxiliary engines for on-board electrical power, and small boilers to meet steam and hot water demands.

### 2.5.1 Port of Oakland

OGVs use propulsion engines for transiting, auxiliary engines for on-board electrical power, and small boilers to meet steam and hot water demands. Pollutants are emitted based on the operating mode of each OGV. Common modes include open ocean cruising, cruising at reduced speed (in the reduced speed zone [RSZ]) in the Bay, maneuvering (lower speed operation near berths), and hoteling (at berth). RSZ mode occurs after the bar pilot takes command of the vessel at the sea buoy until the vessel slows to a maneuvering speed directly in front of the Port. Emissions associated with cruising from the open ocean and most of the RSZ emissions were excluded in this analysis, since these emissions are outside the Source Domain. Therefore, for this analysis, the District included emission from (a) low speed vessel maneuvering south of the Bay Bridge within the West Oakland Source Domain, and (b) berthing at the Port. The details of how emissions were estimated for both of these operating modes are described below.

*(a) Maneuvering*

Emissions due to OGV maneuvering were calculated based on Ramboll (2018) to estimate emissions due navigating within the Source Domain.

In 2017, OGVs calling at the Port were exclusively container ships, including some with the capability to handle roll-on/roll-off cargo. All ship calls in 2017 were exclusive to the Port and did not include visits to other ports. An estimated 1,596 vessel voyages[48] to the Port were reported in the 2017 Port inventory. Many vessels follow regular route and schedules; 66% of the total calls were from vessels visiting 4 to 10 times in 2017, while 15% of total calls were from vessels visiting 11 or more times. Most of the vessels are relatively new; 85% were built since 2000, and the call-weighted median age of vessels was 9 years old.

Vessel call data were provided by the Marine Exchange of San Francisco Bay Region (SFMX). This dataset included the vessel identification number, Port berth, and date and time of the beginning and end of each movement, from which the time at berth (time between 'first line on' and 'last line off') and at anchor was inferred. The vessel identification numbers were cross-referenced with data obtained from the 2018 IHS Fairplay database,[49] which contains vessel characteristics such as vessel build date (which was used to estimate the emissions control regulations for the engine, which in turn determines the emission factor), cruise speed, engine type, and installed power. These parameters affect estimates of engine load for each vessel call. Actual vessel speed profiles (travel time by speed bin) were obtained from the Automatic Identification System (AIS),[50] provided by SFMX.

Emissions were determined for each transport mode based on the engine rated power (the maximum power that the engine can produce), typical load factor (the fraction of the actual to the rated power that the engine operates for a given mode), and time elapsed at that load. Emissions per vessel were calculated from propulsion engines, auxiliary engines, and boilers using the emissions factors and methods from CARB (California Air Resources Board 2011c, as amended by California Air Resources Board (2014b) and CARB's Marine Emissions Model v2.3L [California Air Resources Board 2014a]) as follows:

$$E_i = EF_i \cdot e \cdot LF \cdot T_O$$

where

$E_i$ = emissions of pollutant $i$ (g)
$EF_i$ = emission factor of pollutant $i$ (by engine type, operating mode, and fuel type) [g/(kW h)]
$e$ = rated power (maximum power the engine can produce) (kW)
$LF$ = load factor (unitless)
$T_O$ = operating time in mode (h)

Data from the 2018 IHS Fairplay database indicate that the most common propulsion engines used on vessels calling at the Port in 2017 were slow speed engines (2-stroke engines, typically lower than 200 rpm) followed by steam engines powered by boilers for the remaining ships. Emission rates assuming 0.1% fuel sulfur content were used based on CARB fuel regulation except for steamships for which 2.7% sulfur content was used. Emissions factors for DPM (based on emission factors for $PM_{10}$) and $PM_{2.5}$ used for each OGV engine type are presented in **Table 2-14**.

[48] Vessel voyages account for inbound/outbound trips, whereas calls to the Port represent the number of berthing events (there can be multiple calls per voyage, e.g., when a vessel moves between berths at the Port).
[49] Ramboll (2018) extracted data from IHS Fairplay (Bespoke Maritime Data Services, Ship Data) on February 15, 2018.
[50] AIS data were available from June through December 2017. These data were used to calculate speed distributions. It is assumed that data during this period are representative of OGV transiting behavior over the whole year.

**Table 2-14.** OGV DPM and $PM_{2.5}$ emission factors by engine and fuel type. From Ramboll (2018), based on California Air Resources Board (2014a).

| Engine Type | Fuel Type | Emission Factor [g/(kW h)] | |
|---|---|---|---|
| | | DPM | $PM_{2.5}$ |
| Slow speed | Marine distillate (0.1% sulfur) | 0.250 | 0.230 |
| Steam | Marine distillate (2.7% sulfur) | 0.800 | 0.780 |
| Auxiliary | Marine distillate (0.1% sulfur) | 0.250 | 0.230 |
| Auxiliary boiler | Marine distillate (0.1% sulfur) | 0.133 | 0.130 |

Load factor for the propulsion power were determined using Stokes Law:

$$LF = (s/s_{\max})^3$$

where

$LF$ = load factor (unitless)
$s$ = vessel speed
$s_{\max}$ = vessel maximum speed

The speed and maximum speed of the vessel must be expressed in the same units. A load factor of 100% corresponds to the vessel operating at its maximum speed. When the vessel is cruising, the vessel cruise speed is assumed to be equal to its design speed, which is 93.7% of its maximum speed. Using the equation above, this results in a load factor of 0.823. The load factor varies depending on the vessel's speed during other modes. Adjustment factors were also applied to obtain emission factors applicable to operation at low loads where the engine does not operate as efficiently.[51]

Emissions from maneuvering were estimated for the area inside the Source Domain only. Vessels were assumed to be in maneuvering mode while moving between the Bay Bridge and the Port berths. This mode consists of short low speed transits, turns at the berth or in the turning basins, and a start and stop of the propulsion engine at the berth with tug assist. Maneuvering time is shorter for the Outer Harbor terminal calls (Berths 24 through 37) than the Inner Harbor terminal calls (Berths 55 through 68) because of the shorter distance from the Bay Bridge and proximity of the Outer Harbor turning basin to the Outer Harbor berths. Larger ships also require more time to turn. The time from the beginning to the end of the maneuvering mode was obtained from SFMX; 0.25 h were added to account for propulsion engine start up and shut down. The 0.75 h per shift (when a vessel moves between berths or from berth to anchorage) was also included in the emission estimates. Emissions associated with occasional vessel shifts between berths or between anchorage and berth were included in the maneuvering total for purposes of spatial allocation.

Vessel auxiliary power is used during both maneuvering and berthing operations. Vessel auxiliary power was derived from auxiliary generator capacity taken from the 2018 IHS Fairplay database or estimated from a comparable ship (by size and owner) if data were not available. The auxiliary

[51] This is consistent with the approach used in the 2014 Port of Los Angeles Inventory (Ramboll 2018).

engine load factor for maneuvering was assumed to be 50% (California Air Resources Board 2011c).

Emissions from OGV maneuvering (within the Source Domain) to each terminal are summarized in **Table 2-15**. Propulsion steam and auxiliary boiler PM emissions are not included in the DPM total because they are not generated by diesel engines.

**Table 2-15.** $PM_{2.5}$ and DPM emissions from OGV maneuvering and berthing by terminal. The District only included emissions within the Source Domain (the emissions presented in this table are lower than those reported in the 2017 Port Inventory).

| Terminal | Maneuvering (tpy) | | Berthing (tpy) | |
|---|---|---|---|---|
| | **$PM_{2.5}$** | **DPM** | **$PM_{2.5}$** | **DPM** |
| TraPac | 0.657 | 0.640 | 1.305 | 0.719 |
| Nutter | 0.376 | 0.366 | 0.746 | 0.411 |
| OICT | 2.649 | 2.578 | 5.260 | 2.897 |
| Matson | 0.262 | 0.255 | 0.520 | 0.286 |
| **Total** | **3.945** | **0.110** | **7.830** | **4.313** |

*(b) Berthing*

During berthing, main engines are turned off while the auxiliary engines are running. Emission estimates due to berthing were provided directly by CARB (personal communication, 12 July, 2019).[52] These emissions estimates include both emissions from the auxiliary engine and boiler operations (**Table 2-15**).

### 2.5.2 Schnitzer Steel

Schnitzer Steel receives only bulk carriers calling for scrap steel. Emissions from vessel voyages associated with calls at Schnitzer Steel are not included in the Port's maritime inventory because the Schnitzer facility is not owned or controlled by the Port of Oakland. Similar to the emissions inventory developed for the Port (Ramboll 2018), emissions from OGVs operating from Schnitzer Steel were estimated based on the rated power and load factor of each vessel, duration of each trip, and the pollutant-specific emission factors during transiting, maneuvering, and hoteling. Emissions from container ship assist tugs (harbor craft) used to assist cargo vessels movements upon arrival and departure from the terminal were included in the OGV emissions. The District current limits the number of ship calls to Schnitzer Steel on an annual basis.[53] No temporal variations were estimated for OGV trips.

Due to confidentiality agreement, the District cannot release specific parameter information used to derive the OGV emissions for Schnitzer Steel. Emission factors for the main and auxiliary engines were taken from California Air Resources Board (2011c). Emission factors for auxiliary

[52] These emissions are consistent with the current draft OGV at-berth inventory (California Air Resources Board 2019; the final version will be publicly posted 60 days before the CARB Board hearing for the At-Berth Regulation Amendment).

[53] Schnitzer Steel's current permit is for 26 ship calls per year.

boiler operations were taken from the Port of Los Angeles Inventory of Air Emissions for 2017 (Starcrest Consulting Group, LCC 2018). Emission factors for harbor craft emission factors were taken from California Air Resources Board (2012b). Based on CARB fuel regulations, emission factors were based on fuel with 0.1% fuel sulfur content. Estimates of emissions were limited to the Source Domain; transport outside of the domain were not estimated or modeled. The total emissions are summarized in **Table 2-16**.

**Table 2-16.** $PM_{2.5}$ and DPM emissions from OGVs and assist tugs operating at Schnitzer Steel.

| Activity | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---:|---|---|
| Transiting | 0.060 | 0.060 |
| Maneuvering | 0.087 | 0.087 |
| Berthing | 0.155 | 0.155 |
| **Total** | **0.302** | **0.302** |

## 2.6 Commercial Harbor Crafts

CHCs are regularly used at the Port to support: (1) operation and maintenance dredging in the channels and at berths, (2) disposal of dredged material, (3) assist container ships (assist tugs), and (4) tug trips and fuel pumping from fuel barges towed from Richmond to refuel ships' bunkers at the Port. Most CHCs at the Port are tugs; otherwise, there are a few small work boats that assist dredging operations, and dredgers.

### 2.6.1 Operation and Maintenance Dredging and Disposal

Operation and maintenance (O&M) dredging is conducted annually at the Port to maintain the depth of channels and berths and to ensure safe navigation. Materials that are deposited into the Bay by stream and urban runoff are removed, and shallow areas are eliminated by redistributing the bottom sediments from shoaling. Dredging is conducted using diesel-powered derrick barge (clamshell) dredgers, accompanied by tender tugs and work boats. Dredged material is transferred to scows (barges), which are then towed to a disposal site by a diesel-powered tug. After the barge is emptied, the tug returns with the empty barge to pick up a new load.

Recent channel dredging was conducted from August 2017 into February 2018, while berth dredging was conducted in August, October, and the first two weeks of November 2017. During this period, 89,000 cubic yards of material from the Port's berth and 559,000 cubic yards of material from the channel were removed and disposed of at the San Francisco Deep Ocean Disposal Site, located 49 nmi west of the Golden Gate Bridge. These activities were treated as two separate activities in the 2017 Port Inventory: (1) O&M dredging, which includes operation of the clamshell dredge and associated support vessels, and (2) disposal, when dredge materials are transported from the dredging area to disposal sites. Only disposal was inside the Source Domain was included in this analysis (which includes only ~2.3 nmi of transit distance, or ~9.4% of total transiting emissions).

Emissions from dredging equipment was estimated as follows:

$$E_i = EF_i \cdot e \cdot LF \cdot T_O$$

where

$E_i$ = emissions of pollutant $i$ (g)
$EF_i$ = emission factor of equipment of pollutant $i$ [g/(bhp h)]
$e$ = engine brake horsepower rating (bhp)
$LF$ = time-weighted engine load factor (fraction of full load) based on different operating modes during a round trip (unitless)
$T_O$ = operating hours of equipment (h)

The dredging contractor provided a list of dredging equipment, engine characteristics, and hours of operation. In 2017, dredging operations were performed using a clamshell dredge on a dredge barge (using a main and auxiliary diesel engine), and dredge tenders and work boats (each with two main propulsion diesel engines, and up to two auxiliary engines). Specific information on engine model, power, load factor, emissions factors, and hours of operation are provided in the 2017 Port Inventory. Vessel emission factors, deterioration factors, fuel correction factors, and load factors from CARB's Commercial Harbor Craft Emission Inventory tool (California Air Resources Board 2011a) were used to estimate emissions for all engines used on the dredging and support vessels. Emission factors for the dredgers were derived from CARB's OFFROAD model,[54] which are based on the model year and age of equipment (in 2017). Emission factors for diesel engines on tugs and tenders were estimated based on load factors, zero-hour emission factors, and deterioration factors available in California Air Resources Board (2011a). The resulting emissions are presented in **Table 2-17**.

**Table 2-17.** Emissions of $PM_{2.5}$ and DPM from O&M dredging and disposal of dredge material. The District only included emissions within the Source Domain (the emissions presented in this table are lower than those reported in the 2017 Port Inventory).

| Activity | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|
| O&M Dredging | 1.078 | 1.111 |
| Dredge disposal | 0.043 | 0.044 |
| **Total** | **1.121** | **1.155** |

### 2.6.2 Assist Tugs

Tugs are used to assist cargo vessel movements upon arrival, berthing, and departure from the Port, and tow or push a wide variety of barges and other equipment. Assist tugs ensure safe navigation within the Bay, especially when vessels are reversing direction near berths in the Inner and Outer Harbor. Tugs are matched to vessels to ensure they are equipped to handle the vessel based on their size and power level, among other criteria. On average, two tugs are used for each cargo vessel that are inbound or outbound between berths at the Port and the Federal Channel near

[54] See https://ww3.arb.ca.gov/msei/ordiesel.htm for more information.

the Bay Bridge, though up to five tugs are required to assist larger vessels. Emissions from assist tugs were estimated for when they were (1) assisting vessel operation, and (2) transiting to and from berthing bases to conduct the assists.

Tugs assigned to ships calling at the Port are operated by five companies: AMNAV, Foss Maritime, Starlight Marine (part of Harley Marine Services), Crowley, and BayDelta. Vessel call data specific to the Port was provided by SFMX. The activity of each company in 2017, based on the number of calls to the Port, are reported in **Table 2-18**. Although these tugs are used elsewhere in the Bay, emissions were only estimated for activity during transiting and assisting ship calls at the Port.

**Table 2-18.** Activity (percentage of total calls) of assist tugs calling to the Port by operator. The base indicates where the company bases their operations (at/near). Based on calls to the Port in 2017.

| Operator | % calls | Base |
|---:|:---:|---|
| AMNAV | 78 | Berth 9, Port of Oakland |
| Starlight Marine | | Alameda side of Inner Harbor Turning Basin |
| Foss Maritime | 7 | Richmond |
| Crowley | 8 | Bay Bridge, San Francisco |
| BayDelta | 8 | Bay Bridge, San Francisco |

Assist tugs emissions were estimated based on the methods presented in California Air Resources Board (2011a). The equation used to estimate emissions from each assist tug class was as follows:

$$E_i = AEF_i \cdot e \cdot LF \cdot T_O$$

where

$E_i$ = emissions of pollutant $i$ (g)
$AEF_i$ = adjusted emission factor of pollutant $i$ for main or auxiliary engine (adjusted for model year, deterioration rate, and fuel, averaged by tug class) [g/(bhp h)]
$e$ = engine brake horsepower rating, as a weighted average between main propulsion and/or auxiliary engine brake horsepower rating of engines in the tug class (bhp)
$LF$ = time-weighted engine load factor (fraction of full load) for the maneuvering phase for the main engine and/or auxiliary engine (unitless)
$T_O$ = operating hours by tug class (based on number of vessel calls, average maneuvering time per call, average number of tugs assigned to each assist by inbound/outbound direction) (h)

The characteristics of tugs by company that were in operation in 2017 were obtained, including: engine model year, main engine power and tier regulation, and auxiliary power. The total assists by company were evenly distributed among individual tugs. Maneuvering time was estimated for each call based on the Port berth location and the vessel length. Time transiting to and from assists for each tug was estimated using the distances from each operator's base (**Table 2-18**) to various assist destinations, assuming the transit trips were made at an average speed of ~ 9.2 mph (8 kt). For each trip, emissions were calculated for inbound vessels assuming 2.20 tugs, and for outbound trips using 2.08 tugs. Time for each assist including maneuvering ships inbound and outbound from the Port and transiting to and from maneuvering assists.

Zero-hour emission factors, engine emissions deterioration factors, and fuel correction factors for both main propulsion and auxiliary engines were based on California Air Resources Board (2011a). An additional adjustment factor to account for engine deterioration between 2015-2017 was also included (Chris Lindhjem, Ramboll, personal communications, 9 August, 2019). The engine load factor for main engines and auxiliary engines was 0.31 and 0.43, respectively. The total emissions from assist tugs are presented in **Table 2-19**.

**Table 2-19.** $PM_{2.5}$ and DPM emissions from assist tugs.

| Operator | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|
| AMNAV<br>BayDelta<br>Crowley<br>Foss Maritime | 2.96 | 3.05 |
| Starlight Marine | 0.86 | 0.88 |
| **Total** | **3.82** | **3.94** |

### 2.6.3 Bunkering Barges

Bunkering is when ships are supplied with fuel. At the Port, tugs tow fuel barges from Richmond to refuel ships at berth. The bunkering barge was towed from and returned to the Richmond long wharf, approximately 10 nmi from the Port; only the portion of the bunkering trip from the Port to Richmond within the Source Domain (a distance of ~1.8 nmi) was used to estimate the emissions. Foss Maritime provided the date and fuel costs for bunkering events in 2017, which was used to develop the emissions inventory for this activity.

Bunkering emissions were estimated using the same approach as that described for dredging (**Section 2.6.1**) since each operation involves a barge and an accompanying tug. The tug load and time-in-mode for movement of the bunkering barge were used to estimate the emissions during the transit trip. Emissions from the tug used to tow the fuel barge between Richmond and the Port were estimated following the method used to estimate emissions from assist tugs (**Section 2.6.2**). Emissions from the barge-mounted diesel-powered pumps were estimated using the emission rate for pumps in CARB's OFFROAD model.

A total of 314 bunkering events occurred in 2017 across 219 unique dates. This means that, for the 95 events that occurred on the same day as another event, there was likely no return trip to Richmond between events. Therefore, only 219 round trips to Richmond from the Port were accounted for in the emissions analysis.

Assuming the one-way trip from Richmond to the Port takes 2.5 h, the total operating hours for towing barges for bunkering was 1,095 h. Time to refuel ships took up to 8 h. Taking the travel time and time required to refuel, the average bunkering event was assumed to take 4 h for pumping (1,256 h of pumping for all 314 bunkering events). Pumping was performed by two 500 hp model year 2003 diesel barge pumps using non-road Tier 2 engines. The propulsion and auxiliary engine model year and power for the two tugs used to tow the bunkering barges are presented in the 2017 Port Inventory.

Total emissions for the bunkering operation to tow boats and barge pumps are shown in **Table 2-20**.

**Table 2-20.** $PM_{2.5}$ and DPM emissions from operating bunkering barges and pumps by terminal operator.

| Terminal | Bunkering Barges (tpy) | | Bunkering Pumps (tpy) | |
|---|---|---|---|---|
| | **$PM_{2.5}$** | **DPM** | **$PM_{2.5}$** | **DPM** |
| TraPac | 0.032 | 0.033 | 0.013 | 0.014 |
| Nutter | 0.018 | 0.019 | 0.007 | 0.008 |
| OICT | 0.130 | 0.134 | 0.051 | 0.055 |
| Matson | 0.013 | 0.013 | 0.005 | 0.005 |
| **Total** | **0.199** | **0.193** | **0.075** | **0.082** |

## 2.7 Cargo Handling Equipment

CHE is primarily used to transfer freight between modes of transportation, such as between marine vessels and trucks or between trains and trucks. At the Port, CHE are used almost exclusively to move shipping containers. As such, the types of CHE at the Port are limited to yard tractors, rubber-tired gantry (RTG) cranes, top or side handlers (picks), and forklifts. Other types general purpose off-road equipment, such as sweepers, bulldozers, backhoes, excavators, and other off-road equipment, were not included as part of the CHE category since they are used at the Port for facility maintenance and construction. A more detailed explanation of emissions estimates can be found in the 2017 Port Inventory report.

Annual 2017 emissions for each piece of CHE equipment were estimated at each Port terminal based on the equipment type, engine characteristics (model year, rated power, after-treatment retrofit control device), and equipment operation (hours of operation, fuel consumption rate). Equipment population and operation estimates were derived from surveys of on-dock terminal, off-dock terminal, and railyard activity conducted by the Port in late 2017 and early 2018.

The types of equipment were used to categorize CHE consistent with CARB guidance (California Air Resources Board 2011d) include cranes (including rubber-tired gantry cranes), forklifts, container handling equipment (top or side handlers), and yard trucks (or yard tractors). Annual emissions from CHE were calculated using the following equation:

$$E_i = [EF_i + (dr \cdot T_C)] \cdot e \cdot FCF \cdot LF \cdot CF \cdot T_O \cdot N$$

where

$E_i$ = emissions of pollutant $i$ (g)
$EF_i$ = zero-hour emission factor of equipment [g/(bhp h)]

$dr$ = deterioration rate or increase in zero-hour emissions as the equipment is used [g/(bhp h)/h]
$T_C$ = cumulative hours of equipment use (h)
$e$ = engine brake horsepower rating (bhp)
$FCF$ = fuel correction factor (percent reduction) used to adjust the base emission factor to account for use of California diesel fuel (unitless)
$LF$ = weighted load factor (average load expressed as a percent of rated power) (unitless)
$CF$ = control factor (percent reduction) associated with use of emission control technologies (unitless)
$T_O$ = annual operating hours of the equipment (h)
$N$ = number of pieces of the equipment

The Port sent confidential surveys regarding equipment make and model to all tenants on-dock and off-dock of the BNSF railyard. When information was missing from the survey, default values were assumed based on similar make and model of equipment, along with a default number of hours of operation.

For diesel-powdered CHE, zero-hour emission factors, deterioration rates, fuel correction factors, and emission control factors were obtained from CARB's 2011 Cargo Handling Equipment Inventory (CHEI) model (California Air Resources Board 2012a). Because the current version of the CHEI model does not support emission estimates for non-diesel equipment, emission factors for gasoline and propane powered equipment were obtained from CARB's 2011 CHE Calculator (California Air Resources Board 2011d), following the methodology described in the 2005 original rulemaking for CHE operating at ports and intermodal railyards (California Air Resources Board 2005a).

Of the 386 total pieces of CHE, 345 were diesel-powered, 39 were gasoline-powered, and 2 were liquid petroleum gas-powered (**Table 2-21**). A summary of the average horsepower, annual operating hours by equipment and power range can be found in the 2017 Port Inventory.

**Table 2-21.** CHE equipment types used at the Port, based on survey results.

| Equipment | Equipment Population | % Total |
|---|---|---|
| Container handling equipment (top picks and side picks) | 123 | 32 |
| Forklift | 14 | 4 |
| RTG Crane | 24 | 6 |
| Yard Tractor | 105 | 27 |
| Yard Tractor (on-road) | 120 | 31 |
| **Total** | **386** | **100** |

Emissions were split between on-dock and off-dock operations, based on the mix of equipment types used at the marine terminals as compared to the BNSF railyard. Approximately 83% of DPM and $PM_{2.5}$ emissions were associated with the marine terminals, while the remaining 17% were from the BNSF railyard[55] (Till Stoeckenius, Ramboll, personal communication, 22 January, 2019). CHE emissions were further assigned to each terminal based on the proportion of ship calls made to each terminal in 2017 (**Table 2-18**). Emissions from CHE by terminal and yard and the hours of operations are summarized in **Table 2-22** and **Table 2-23**, respectively. All $PM_{10}$ from diesel engines were assumed to be DPM, and $PM_{2.5}$ emissions were calculated as a fraction of $PM_{10}$ based on the fuel type-specific factors provided in California Air Resources Board (2013).

**Table 2-22.** $PM_{2.5}$ and DPM emissions from CHE by location (terminal or railyard).

| Location | Emissions (tpy) | |
|---|---|---|
| | **$PM_{2.5}$** | **DPM** |
| TraPac Terminal | 0.220 | 0.218 |
| Nutter Terminal | 0.126 | 0.124 |
| OICT Terminal | 0.886 | 0.878 |
| Matson Terminal | 0.088 | 0.087 |
| BNSF Railyard | 0.270 | 0.273 |
| **Total** | **1.590** | **1.580** |

**Table 2-23.** Terminal operating hours used to develop temporal activity profiles for CHE. Information as of January 25, 2019.

| Location | Day of week | | | |
|---|---|---|---|---|
| | **Monday - Thursday** | **Friday** | **Saturday** | **Sunday** |
| TraPac Terminal | 07:00 – 12:00<br>13:00 – 16:30<br>18:00 – 02:00 | 07:00 – 12:00<br>13:00 – 16:30 | None | None |
| Nutter Terminal | 07:00 – 16:15 | 07:00 – 16:15 | None | None |
| OICT Terminal | 00:00 – 03:00<br>07:00 – 00:00 | 07:00 – 18:00 | None | None |
| Matson Terminal | 08:00 – 11:45<br>13:00 – 16:45 | 08:00 – 11:45<br>13:00 – 16:45 | None | None |
| BNSF Railyard | 06:00 – 18:00 | 06:00 – 18:00 | 07:00 – 16:00 | None |

55 CHE emissions at BNSF include emissions during transload to the railyard (i.e., it includes emissions that are not necessarily physically located within the railyard, but are due to the operations of the railyard).

## 2.8 Port Trucks at Terminals

Port Trucks, or "drayage trucks," transport containers between marine terminals, freeway interchanges, and nearby railyards. Port Trucks travel along truck routes between marine terminals, three nearby freeway interchanges, and two railyards (UP and BNSF). Trucks can only arrive or depart from the Port area via three freeway access points: Maritime Street/West Grand Street, 7th Street, and Adeline Street (via the Adeline Street and Market Street on/off-ramps to I-880).

To calculate total emissions from Port Trucks operating at terminals, vehicle operating modes were separated into four categories: (1) idling inside marine terminals, (2) idling at gate queues, (3) driving within marine terminals, and (4) driving on surface streets between terminals and freeways interchanges or railyards. For each of these modes, the average time and travel speed determine the emissions for each trip. Emissions per trip were calculated by multiplying the appropriate emission factor (idling or by speed bin) by the activity level indicator (idling time or travel distance). For running exhaust, emissions are calculated as:

$$E_i = N \cdot L \cdot EF_i$$

where

| | | |
|---|---|---|
| $E_i$ | = | emissions of pollutant $i$ (g) |
| $EF$ | = | emission factor of pollutant $i$ (g/mi) |
| $N$ | = | number of vehicles (unitless) |
| $L$ | = | travel distance (mi) |

For idling exhaust, emissions were calculated in the same manner as presented in **Section 2.4**.

Details regarding the method used to estimate each of the emissions parameters are provided in the 2017 Port Inventory. The 2017 truck trip counts at the marine terminals were derived from gate counts (as provided by the Port or the terminal operators) and container lift counts (i.e., the number of containers moved on or off a ship). In the railyards, the reported number of lifts was doubled to estimate the sum of inbound and outbound truck trips. However, trucks may move a container in and out on a single terminal entry or reposition an empty chassis so that the gate counts do not exactly match the number of container lifts. The counts do not include trips to truck parking areas in the Port (such as the former Ports America Outer Harbor terminal and Howard Terminal) since the trucks were already counted when they entered at one of the three access points.

VMT within marine and rail terminals is limited to driving between the terminal gates and container storage areas. Previous surveys of terminal operators conducted by the Port was used to estimate 2017 activity including truck speed, travel distance, and idling time (**Table 2-24**).

**Table 2-24.** Average activity level for Port Trucks at terminals. Values are estimated from surveys conducted in 2005 and 2012 and terminal trip activity in 2017.

| Mode | Average value |
|---:|:---:|
| Idling at gate (h) | 0.14 |
| Idling in terminal (h) | 0.34 |
| Distance traveled (mi) | 2.54 |
| Speed (mph) | 13.5 |

Emission factors for truck running exhaust, extended idling, tire wear, and brake ware were taken from EMFAC2017. Emission factors from on-road trucks depend on the age distribution of the trucks and site conditions such as temperature, humidity, fuel sulfur, and average speeds. Port Truck hours of operation were assumed to be the same as those for CHE (**Table 2-23**).

In 2017, all Port Trucks used diesel fuel; $PM_{10}$ running exhaust emissions are therefore DPM emissions, but total $PM_{10}$ and total $PM_{2.5}$ also include (non-diesel) PM from brake wear, tire wear, re-entrained road dust. DPM emissions by terminal were back-calculated from total DPM emissions associated with Port Truck trips and the fraction of activity based on ship calls by terminal. Total $PM_{2.5}$ emissions in the 2017 Port Inventory do not include road dust emissions; to estimate these emissions, the District first separated idling exhaust emissions from "driving emissions" (running exhaust, tire wear, brake wear) based on the fraction of emissions by activity by terminal (provided by Till Stoeckenius, Ramboll, personal communication, 12 June, 2019). Using emission inventories developed for Port Trucks on roadways within the Port area (**Section 2.3**), an average ratio of 4.76 (across all roadways links) of road dust emissions to "driving emissions" was obtained. This ratio was then applied to the "driving emissions" within the Port terminals to obtain $PM_{2.5}$ road dust emissions.

The spatial allocation of Port Truck emissions was based on the percentage of emissions between marine terminals and the railyards (**Table 2-25**). Port Truck emissions were further assigned to each terminal based on the proportion of ship calls made to each terminal in 2017 (**Table 2-18**). Consistent with the 2017 Port Inventory, it was assumed that two-thirds of Port Truck travelling to railyards went to the UP railyard, while the remaining one-third went to the BNSF railyard. The emissions by terminal are reported in **Table 2-26**.

**Table 2-25.** Emissions allocated by Port Truck terminal type trip destination. Information provided by Ramboll (Till Stoeckenius, Ramboll, personal communication, 25 February, 2019).

| Terminal type | Emissions (%) | |
|---:|:---:|:---:|
| | $PM_{2.5}$ | DPM |
| Marine | 87 | 88 |
| Railyard | 13 | 12 |

**Table 2-26.** $PM_{2.5}$ and DPM emissions from Port Trucks operating at Port terminals. $PM_{2.5}$ emissions include all operational and road dust emissions. Total values are consistent with Ramboll (2018), with the exception of added $PM_{2.5}$ road dust emissions.

| Terminal type | Location | Emissions (tpy) | |
|---|---|---|---|
| | | $PM_{2.5}$ | DPM |
| Marine | TraPac | 0.398 | 0.038 |
| | Nutter | 0.227 | 0.022 |
| | OICT | 1.602 | 0.154 |
| | Matson | 0.158 | 0.015 |
| Railyard | BNSF | 0.115 | 0.011 |
| | UP | 0.230 | 0.021 |
| | **Total** | **2.730** | **0.261** |

## 2.9 Locomotives (Rail Lines)

The geographical locations of rail lines in the Bay Area was available in a shapefile from the Topographically Integrated Geographic Encoding and Referencing (TIGER) Line spatial database.[56] When the shapefile was transposed onto recent satellite imagery (as viewed in Google Earth), the locations of the lines did not align with visible rail lines; in some cases, they were misaligned up to ~90 m. The rail lines in the shapefile were then manually re-aligned to match the satellite imagery.

In the shapefile, each rail line is made up of many smaller segments that span short distances (0.81–3.8 mi) along each track. In the Bay Area, passenger and freight services may run along a single track (i.e., the track is shared by both services), or along parallel tracks. To determine the cumulative impacts from all rail services on West Oakland, emissions from parallel tracks were consolidated onto a single track (see **Figure 3-15**). In addition, emissions from locomotives that perform switching operations (referred to as “switchers”, which move individual or a small number of rail cars to assemble trains) were evenly distributed along the length of the subdivision line.

In total, emissions were estimated on six rail segments within West Oakland Source Domain. Emissions along each segment represent the combined emissions from all services, though in the following sections (**Section 2.9.1** and **Section 2.9.2**), emission estimates are presented by service.

Because of the limited data available, the District was not able to include emissions from rail sidings. Emissions from railyard activity were evaluated separately (see **Section 2.10**).

### 2.9.1 Freight Haul Lines

Only rail lines within the Source Domain were included in this analysis (**Table 2-27**). There are two freight rail carriers in the Bay Area: BNSF, and UP. Both freight lines transport goods to and

[56] https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-line-file.html.

from the Bay Area to San Joaquin Valley (east), Sacramento (north), and down the Peninsula (south).

**Table 2-27.** Freight subdivision lines in Alameda County.

| Subdivision | Start Location | End Location |
|---:|---|---|
| Martinez | 10th Street, Oakland | Alameda County Line |
| Niles | 10th Street, Oakland | Newark |

BNSF and UP provided the District with the average diesel fuel consumption and miles traveled in 2017 along each county subdivision line in the Bay Area, and EPA fuel-based emission factors (g/gal) for converting fuel consumption to emissions. The railroad companies provided combined fuel consumptions along rail lines that are shared by both carriers. Emissions from switchers were included in the fuel-based emissions estimates and distributed uniformly across specific subdivision lines. The total emissions from freight haul lines was 0.454 tpy of DPM and 0.426 tpy of $PM_{2.5}$ (assuming a size fraction of 0.94).

### 2.9.2 Passenger Rail Lines

There are several intercity passenger rail lines within the Source Domain, which are serviced by Amtrak along the Capital Corridor, California Zephyr, Coastal Starlight, and San Joaquin passenger lines. Emissions by link were estimated based on latest available schedule for 2017 or 2018 (where available). For each link, emissions were estimated as the sum of emissions associated with exhaust from the locomotive, and idling emissions while loading passengers at stations.

To estimate the emissions, the number of locomotives per day that run along each link, as well as the activity along each line, are required. The activity along each Amtrak route is a function of the estimated average speed of the train and the frequency of the stops. To determine the number of stops, the District used the latest posted timetable and schedule by Amtrak.[57] The timetables provide the number of train stops at each station, and the times and frequency of the train stops. These were used to determine the following:

- The daily number of trains was calculated as the number of weekday and weekend trains weighted by 5/7 and 2/7, respectively.
- The idling times varied from 2 – 10 min at certain stations to accommodate timed connections to other public transportation; the average idling time at a station (to pick up and drop off passengers) was approximately 90 s at most stations. Trains can also spend up to 20 min idling to power on (power down) the engine at the beginning (end) of a run.

Based on the timetable, the number of daily trips along each route is presented in **Table 2-28**. The level of service and number of trains was assumed to remain constant.

[57] In most cases, the most recent timetable was posted in 2017 or 2018. Timetables were obtained from http://www.amtrak.com/train-schedules-timetables (accessed January 2019).

**Table 2-28.** Amtrak activity by route.

| Routes | Destinations | Weekday trains per day | Weekend trains per day |
|---|---|---|---|
| Capital Corridor | Fairfield – Oakland | 30 | 22 |
| | Oakland – Coliseum | 18 | 15 |
| | Coliseum – San Jose | 14 | 14 |
| California Zephyr | Emeryville – Fairfield | 2 | 2 |
| Coastal Starlight | Gilroy – Fairfield | 2 | 2 |
| San Joaquin | Antioch – Oakland | 5 | 0 |

Locomotives operate under a series of load modes (notches) that, combined with idling, determine the operating mode and the corresponding emission factors. The throttle notch is based on the load expected at each station, as well as the average speed. Emission factors and speeds that were used for each passenger line are presented in **Table 2-29**. The average speed was estimated using the distance traveled by the train on a route (or a portion thereof) divided by the elapsed travel time (based on the scheduled departure and arrival times) of the train between stations. An average throttle notch of three was used for the Capital Corridor because of the frequent stops, while for all remaining routes (which have fewer stops), a throttle notch of four was used.

**Table 2-29.** DPM emission factor (EF) and average speeds by Amtrak service/route.

| Train service | Mode/ Throttle notch | EF (g/h) | Average speed (mph) |
|---|---|---|---|
| All passenger service | Idling | 47.9 | 0.0 |
| Capitol Corridor | 3 | 210.9 | 35.0 |
| California Zephyr | 4 | 226.4 | 36.8 |
| Coastal Starlight | 4 | 226.4 | 40.0 |
| San Joaquin | 4 | 226.4 | 44.4 |

DPM emission factors were derived from the Port of Oakland 2005 Seaport Air Emissions Inventory (Environ International Corporation 2008), adjusted for fuel sulfur content of 15 ppm by weight in compliance with CARB's Marine and Locomotive Diesel Fuel regulation (adopted November 2004; California Environmental Protection Agency 2014). All passenger rail services were assumed to have a fleet mix based on GP4x and Dash 9 locomotives with respective certification levels being pre-controlled and achieving Tier 1 emissions.

Emissions were estimated for locomotives based on idling at stations or turnarounds and running exhaust between stations. Daily running exhaust emissions of DPM on each link were estimated as:

$$E_{DPM} = \frac{1}{s}\left(EF_{DPM} \cdot N \cdot L\right)$$

where

$E_{DPM}$ = emissions of DPM per rail link per day (g)
$s$ = average speed (mph) (**Table 2-29**)
$EF_{DPM}$ = emission factor by rail link (g/h) (**Table 2-29**)
$N$ = number of locomotives that travel on the rail link per day (unitless)
$L$ = length of rail link (mi)

Running exhaust emissions were assumed to occur along each link except within 1,000 ft (0.189 mi) of a station. To be conservative, idling emission factors were used to estimate emissions within 500 ft before and after a station (equivalent to 1,000 ft). Idling emissions were used exclusively if the link was less than 0.189 mi and a station was situated on the link. Idling emissions were estimated by multiplying the emission factor by the number of stops on each link and the length of time of each stop, which varied by rail service and link:

$$E_{DPM} = EF_{DPM} \sum_{i} N_i \cdot T_i$$

where

$E_{DPM}$ = emissions of DPM per rail link per day (g)
$EF_{DPM}$ = emission factor for DPM by rail link (g/h) (**Table 2-29**)
$N$ = number of locomotives that travel on the rail link $i$ per day
$T$ = idling time for each stop or turnaround on rail link $i$ per day (h)

Even though activity levels varied per hour for each train route, the diurnal profile (fraction of total daily emissions that are produced per hour) for emissions from passenger rail were assumed to be evenly distributed over a 24 h period. The total emissions from passenger rail lines was 0.634 tpy of DPM and 0.596 tpy of $PM_{2.5}$ (assuming a size fraction of 0.94).

## 2.10 Railyards

There are three railyards in the West Oakland Source Domain. The Port has two railyards on its property: Oakland International Gateway railyard, which is leased by the BNSF railway, and Outer Harbor Intermodal Terminal, which is operated by the OGRE. BNSF is a Class I interstate railroad, while OGRE is a small regional Class III railroad serving portions of the former Oakland Army Base. The Union Pacific (UP) railyard is also located within the Port area, but it is privately owned and operated. It serves as an intermodal yard for freight movements through the Port as well as a yard for handling domestic non-Port freight.

### 2.10.1 BNSF

The BNSF railyard is a near-dock transfer point that handles Port cargo containers. Locomotives are used for line-haul operations (movement of long-haul trains into and out of California) and switching operations (switchers). Line-haul locomotives move into and out of the railyard and idle after arrival and prior to departure. Switching engines operate in the railyard, with idling periods interspersed throughout the day. Locomotives and trains enter the Port area from the north via the UP main line and leave in the same direction via tracks going north through Richmond, and then onto BNSF lines leading out of the Bay Area.

To characterize emissions from switchers, BNSF provided the Port with a sample of engines used in 2017. Switchers assigned to BNSF rotate in and out of service, but a GP25 or GP60 model were typically used (**Table 2-30**).

**Table 2-30.** Locomotive engine characteristics at the BNSF railyard.

| Model | Certification Tier | hp | Number of Engines | Engine Surrogate |
|---|---|---|---|---|
| GP25 | Precontrolled | 2500 | 1 | Average of GP-3x (2000 hp) and GP-4x (3000 hp) |
| GP60 | Precontrolled | 3600 – 3800 | 2 | GP60 (3600 hp) |

Locomotives and switchers operate using a series of load/power modes called "notches." The operating profile for a locomotive is defined by the notch settings and idling periods. Following CARB's guidance on rail yard emission modeling (California Air Resources Board 2006), emissions were estimated using emission rates per engine model and per mode, with average activity (time in mode) profiles for each visit multiplied by the number of engines visiting the railyard. The relative time per mode for switcher engine activity was taken from the 2006 Port of Oakland inventory (Environ International Corporation 2008; **Table 2-31**). Switching activity consists of one engine operating for 7.5 h per day (365 days per year); however, for consistency with the locomotive line-haul operations (see **Section 2.9.1**), the District assumed activity would occur over the entire day (24 h).

**Table 2-31.** Percentage of time in mode of locomotives at the BNSF railyard.

| Mode/ Throttle notch | Time (%) |
|---|---|
| Dynamic Braking | 1.4 |
| Idle | 59.8 |
| 1 | 6.6 |
| 2 | 15.0 |
| 3 | 9.5 |
| 4 | 4.4 |
| 5 | 1.9 |
| 6 | 0.3 |
| 7 | 0.0 |
| 8 | 1.0 |

Activities of line-haul engines include arriving with a train, separating from the train, potentially moving to the ready area where the engines are assigned to a train, moving to an assigned train, and leaving the yard. Twelve locomotive models and engine tiers were used at the BNSF yard for these operations. A sample of the line-haul engine activity was used to develop the average time in mode for line-haul locomotive arriving and departing from the yard. Because almost all line-haul locomotives have automatic idling-reduction devices (beginning with model year 2001), and idling is restricted to 15 min per event (per CARB agreement; California Air Resources Board 2005b), the idle time was adjusted to 1 h, assuming four in-yard movements per arrival and departure. The average time in mode for line-haul locomotives is summarized in **Table 2-32**.

**Table 2-32.** Average time in mode of locomotives at the BNSF railyard. Idling time is based on assuming 0.5 h per arrival and departure.

| Mode/ Throttle notch | Time (h) |
|---:|---|
| Dynamic Braking | 0.2963 |
| Idle | 1.0 |
| 1 | 0.1726 |
| 2 | 0.0758 |
| 3 | 0.0340 |
| 4 | 0.0049 |
| 5 | 0.0059 |
| 6 | 0.0004 |
| 7 | 0.0036 |
| 8 | 0.0017 |

Emission factors and fuel consumption by notch are consistent with previous Port inventories with adjustments to account for the idling-reduction devices and in-use fuel characteristics of no more than 15 ppm fuel sulfur content. Using California diesel fuel also reduces PM emissions by 7%; a factor of 0.93 was applied in the emissions estimates (Ramboll 2018). The combined emissions from line-haul and switcher activities at the BNSF railyard was 0.182 tpy of DPM and 0.168 tpy of $PM_{2.5}$ (as exhaust only).

### 2.10.2 OGRE

OGRE is a Class III, Surface Transportation Board-certified short line rail company created in 2014 that is currently operating at the former Oakland Army Base. In 2017, OGRE exclusively served non-marine facilities located on Army Base. Switching engine fleet characteristics and annual activity were provided by OGRE. Emission factors for locomotives at OGRE were estimated using locomotive engine surrogates of similar power (**Table 2-33**).

**Table 2-33.** Locomotive engine characteristics at the OGRE railyard.

| Model | Certification Tier | hp | Number of Engines | Engine Surrogate |
|---:|---|---|---|---|
| EMD GP9/16 | Precontrolled | 1500/1600 | 2 | EMD 12-645E (1500 hp) |
| EMD MP15 | Precontrolled | 1500/1600 | 2 | EMD 12-645E (1500 hp) |

OGRE estimated the total switching engine activity to occur over 780 h (annually). The time in mode for the switchers at BNSF was used for the switchers at OGRE (**Table 2-31**); the total hours were distributed by notch, then the total emissions were obtained by summing the emissions by notch. The combined emissions at the OGRE railyard from line-haul and switcher activities was 0.077 tpy of DPM and 0.071 tpy of $PM_{2.5}$ (exhaust only).

### 2.10.3 UP

The UP Oakland Railyard is bounded by highway I-880, the Port, and residential, industrial, and commercial properties. The UP railyard is a cargo handling facility where intermodal containers arrive by truck to be loaded onto trains for transport, or arrive by train and unloaded onto chassis for transport by truck. Both cargo containers and chassis are temporarily stored at the yard. The railyard also has facilities for crane and yard hostler maintenance, locomotive service and repair, and on-site wastewater treatment.

Rail cars on arriving and departing line haul locomotives are moved using switchers. Switchers are used to move sections of inbound locomotives to appropriate areas within the railyard (e.g., intermodal rail cars go to the intermodal ramp for unloading and loading), and to move sections of outbound locomotives to tracks from which they will depart. Switchers are remote controlled in the UP railyard; while some are operated exclusively in the railyard, others are operated in the railyard at other outside facilities.

Emissions from the UP railyard were provided to the District by UP, and estimated using annual fuel consumption of eight switcher locomotives operating on the Niles Subdivision operating 8–12 h per day for every day of the year (365 days), as well as other equipment operating in the UP railyard (CHE, TRUs, and service/repair operations). The total emissions thus reflect the total activity at the UP railyard in 2017, estimated as 1.1098 tpy of DPM, and 1.0210 tpy of $PM_{2.5}$.

## 2.11 Commuter Ferries and Excursion Vessels

PM emissions from ferry and excursion vessel operations within the Source Domain were estimated based on information gathered from CARB, the San Francisco Bay Area Water Emergency Transportation Authority (WETA), ferry and excursion vessel schedules, and field studies.

WETA operates the San Francisco Ferry fleet, composed of 14 high speed passenger-only ferry vessels.[58] There are two commuter ferry terminals inside the West Oakland Source Domain: the Oakland Jack London Square ferry terminal (in Oakland), and the Alameda Main Street ferry terminal (in Alameda). A private excursion cruise operator, Commodore Cruises and Events, is also located within the domain.

*(a) Navigating*

$PM_{10}$ emissions were estimated using the methods for CHC engines (California Air Resources Board 2012b):

[58] Not all vessels operate at the same time. The WETA San Francisco Bay Fleet information can be found at https://sanfranciscobayferry.com/sites/default/files/SFBFfleet.pdf (accessed December 2018).

$$E_{PM_{10}} = EF_0 \cdot F \cdot \left[1 + D \cdot \frac{A}{UL}\right] \cdot LF \cdot HP \cdot T_O$$

where

| | | |
|---|---|---|
| $E_{PM_{10}}$ | = | emissions of $PM_{10}$ (g) |
| $EF_0$ | = | zero-hour PM emission factor as a function of model year, horsepower, and engine use (propulsion or auxiliary) [g/(hp h)] |
| $F$ | = | fuel correction factor (to account for emission reductions from burning cleaner fuel) (unitless) |
| $D$ | = | engine deterioration factor (percentage increase of emissions when the engine is at the end of its useful life) as a function of horsepower (unitless) |
| $A$ | = | current age of engine (y) |
| $UL$ | = | engine useful life as a function of vessel type and engine use (y) |
| $LF$ | = | engine load factor as a function of vessel type and engine use (unitless) |
| $HP$ | = | engine horsepower rating (hp) |
| $T_O$ | = | operating hours for activity (h) |

Emission factors specific to the main propulsion and auxiliary engine by model year are required, in addition to a deterioration rate and a fuel correction factor. As vessel-specific data was not always available, state-wide and Bay Area average emission factors and parameters were used based on data from CARB and WETA (**Table 2-34**). Specifically:

- For commuter ferries, state-average emission factors, load factor, deterioration factor, number of engines per vessel, engine useful life, and fuel correction factors were taken from California Air Resources Board (2012b).
- Ferry-specific engine counts, engine age, engine horsepower, and load factor on commuter ferries used at the two ferry terminals were provided by WETA.[59]
- For excursion vessels, Bay Area-specific data for excursion vessels for main and auxiliary engines were obtained from CARB based on their 2017 Statewide CHC survey (personal communication, August, 2018).

To obtain in-transit operating activity, information from ferry schedules were reviewed for each ferry route. Based on departure and arrival times, the duration of travel time was estimated for the Oakland–Alameda route and for runs directly from ferry terminals to the extents of the Source Domain. Operating activity for excursion vessels was taken from the CARB 2017 Statewide CHC survey. In-transit emissions estimates for each route are presented in **Table 2-35**, where DPM emissions were assumed to equal $PM_{10}$ emissions, and $PM_{2.5}$ emissions were obtained by multiplying the DPM emissions by a size fraction factor of 0.97 (consistent with similar vessels in the 2017 Port Inventory).

[59] Obtained from K. Stahnke, San Francisco Water Emergency Transportation Authority, personal communication, September, 2018.

**Table 2-34.** Commuter ferry and excursion vessel operating parameters. Values obtained from CARB (2012b and personal communication, August, 2018), except number of vessels (n), vessel age (A), horsepower (HP), and load factor (LF) obtained from WETA. EF, F, and D are specific to $PM_{10}$ (DPM). Values reported for excursion vessels are averages over the operating fleet.

| Vessel type | Engine | n | EF [g/(hp h)] | F | D | A (y) | UL (y) | LF | HP (hp) |
|---|---|---|---|---|---|---|---|---|---|
| Ferry | Main | 2 | 0.10 | 0.80 | 0.67 | 3 | 20 | 0.38 | 1950 |
| | Auxiliary | 1 | 0.09 | 0.80 | 0.44 | 3 | 20 | 0.38 | 162 |
| Excursion | Main | 2.01 | 0.15 | 0.50 | 0.75 | 0.67 | 20 | 0.42 | 1473 |
| | Auxiliary | 1.23 | 0.22 | 0.71 | 0.75 | 0.44 | 20 | 0.43 | 116 |

**Table 2-35.** $PM_{2.5}$ and DPM emissions from commuter ferry and excursion vessel in-transit activity.

| Vessel type | Route | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|---|
| Ferry | Oakland – Alameda | 0.074 | 0.076 |
| | Oakland – San Francisco | 0.278 | 0.287 |
| | Oakland – South San Francisco | 0.088 | 0.091 |
| | Alameda – San Francisco | 0.294 | 0.303 |
| | Alameda – South San Francisco | 0.062 | 0.064 |
| Excursion | Commodore Events and Cruises (to San Francisco) | 0.039 | 0.040 |
| **Total** | – | **0.835** | **0.861** |

*(b) Berthing*

As aforementioned, there are two commuter ferry terminals inside the West Oakland Source Domain (one in Oakland, and the other in Alameda), and a berth associated with a privately-operated excursion vessel company (Commodore Cruises and Events).

To estimate the $PM_{2.5}$ emissions from berthing, the number of trip visits at each terminal was determined based on ferry schedules. For excursion vessels, since there was no daily schedule and operating hours vary by event, berthing activity was based on operator data taken from the CARB 2017 Statewide CHC survey. Commuter ferry berthing time was based on a sample of observations taken by District staff in 2018 at the two ferry terminals, where the average berthing time to load and unload commuters at a terminal was approximately 10 min. Both the main and auxiliary engines were observed to run the entire time during this berthing process. Emissions were calculated as described above and are summarized in **Table 2-36**.

**Table 2-36.** $PM_{2.5}$ and DPM emissions from commuter ferry and excursion vessel berthing.

| Vessel type | Berth | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|---|
| Ferry | Oakland (Jack London Square terminal) | 0.006 | 0.006 |
| | Alameda (Main Street terminal) | 0.006 | 0.006 |
| Excursion | Commodore Cruise and Events terminal | 0.058 | 0.060 |
| **Total** | **–** | **0.070** | **0.072** |

# 3. Air Dispersion Modeling

The dispersion model applied in the technical assessment for West Oakland was the American Meteorological Society/EPA Regulatory Model Improvement Committee Regulatory Model (AERMOD). AERMOD was used to perform dispersion modeling using unit emission rates to represent the emissions from emissions sources in the community-scale bottom-up emissions inventory (**Section 2**): permitted stationary sources, on-road mobile sources, truck-related businesses, OGVs, CHCs, CHE, Port Trucks at Port terminals, locomotives, railyard activity, and commuter ferries and excursion vessels. Meteorological data (**Section 3.2**) are used to simulate dispersion using AERMOD (**Section 3.3**), where the emissions from sources with specific temporal and spatial allocations (**Section 3.4**) are dispersed, and concentrations are sampled downwind at receptors (**Section 3.5**). Source contributions at each receptor can then be summed to evaluate total $PM_{2.5}$ concentrations and cancer risk (**Section 4**).

## 3.1 Modeling Approach

The AERMOD modeling system is comprised of three modules: (1) AERMET, a preprocessor for making compatible meteorological data sets, (2) AERMAP, a processor for digital terrain data, and (3) AERMOD, an air dispersion model. Data generated from AERMET and AERMAP are used by AERMOD to estimate downwind concentrations. AERMOD (Cimorelli *et al.* 2004) is a steady-state Gaussian-based plume dispersion model based on planetary boundary layer turbulence structure and scaling concepts. AERMOD can model dispersion from both surface and elevated sources, in simple and complex terrain, and in rural and urban areas.

In AERMOD, emissions are dispersed from a *source*, and concentrations are sampled at a *receptor*. A source is defined by entering its location, physical characteristics (e.g., width, height), and emissions characteristics (i.e., emission rate, and changes of that rate over time). In AERMOD, a source can be defined by using different source types: point, area, and volume sources. Different sources types are better suited for representing different types of emission sources; for example, point sources are typically used to model dispersion from single facility stacks. A receptor is a location where air pollutant concentrations are estimated by the model. Receptors could correspond to the locations of monitoring sites or specific locations of interest (e.g., sensitive receptors). Many receptors must be placed within a modeling domain to adequately sample the spatial extent and gradients of pollutants near emission sources.

Because of its ability to handle multiple source types, the AERMOD modeling system was used to model dispersion from all emissions sources in community-scale bottom-up emissions inventory for West Oakland. The AERMOD FORTRAN source code (version 18081, dated March 22, 2018) was downloaded from the U.S. EPA Support Center for Regulatory Air Models (SCRAM) web site.[60] The source code was compiled on the District's Linux clusters using the Portland Group, Inc. FORTRAN 90/95 compiler (pgf95 v8.0-6 64 bit). AERMET (version 18081) and AERMAP (version 18081) were installed on the District's Microsoft Windows computers via AERMOD View (provided by Lakes Environmental).

[60] http://www.epa.gov/scram001/dispersion_prefrec.htm.

Modeling a large number of sources requires a large amount of computing time, especially when there are many receptors (see **Section 3.5**). To reduce the wall time required to complete the analysis, model runs by individual source were distributed across a large number of computer processors.[61] And, as the dispersion from each source was modeled separately, individual source contributions could be tracked and assessed.

Dispersion modeling requires many input parameters to characterize emission sources, including an emission rate, which may vary over the modeling period (e.g., by hour of day, by day of week, etc.). For a single source, emission rates also vary by pollutant; ordinarily, in a multi-pollutant analysis, the number of model runs required is equal to the number of pollutants. However, the number of model runs can be reduced by using a *unit emission rate*[62] (1 g/s for point and volume sources, 1 g/(s m$^2$) for area sources) for each source. Temporal changes in the unit emission rate are scaled using the emissions or activity profile (e.g., hours of operation) of the source. AERMOD output are then *dispersion factors* with units of concentration per unit emissions ([μg/m$^3$]/[g/s] for point and volume sources, or [μg/m$^3$]/[g/(s m$^2$)] for area sources) at each receptor. Following this approach, average concentrations can be calculated by multiplying the dispersion factor by an average emission rate in a post-processing step (see **Section 4.1.2**). Using this method holds so long as (a) the emission rates for different pollutants are related to the same changes in source activity, and (b) the dispersion factor and emission rate are averaged over the same time scales.[63] This method does not account for any chemical transformations.

## 3.2 Meteorological Data

### 3.2.1 Surface meteorology

The District operates a meteorological monitoring network of stations within the nine Bay Area counties that provide measurements of ambient meteorological parameters to support many air quality-related programs. Several of these stations are near West Oakland. The Oakland Sewage Treatment Plant (OST) station is operating in the current network (**Figure 3-1**). The National Oceanic and Atmospheric Administration (NOAA) operates a network of buoy and land-based weather stations in the Bay as part of the National Ocean Service's Center for Operational Oceanographic Products and Services (CO-OPS) network that monitors atmospheric and ocean/bay surface conditions. Three land-based stations (Oakland Berth 34 [OKXC1], Oakland Middle Harbor Met [OMHC1], and Oakland Berth 67 [LNDC1]) are also located near West Oakland (**Figure 3-1**). All these stations measure wind speed, wind direction and temperature, which are required parameters for the AERMOD model. The OST data are reported as hourly averaged, while the CO-OPS data are two-minute averages reported every six minutes.

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[61] Two computer platforms were used: (1) a 14 node Linux cluster, each with eight Intel® Xeon® E5335 2 GHz processors; and (2) a 12 node Linux cluster, each with 20 Xeon E5-2640 Broadwell 2.4 GHz processors. Processors were used as they became available to complete modeling runs using a job queuing system.

[62] Using unit emissions is sometimes referred to as the χ/Q (“chi over q”) method. The origin of this reference stems from the conventional use of χ to represent average concentration, and Q to represent an emission rate.

[63] For example, in this analysis, for on-road mobile sources, dispersion factors and emission rates were developed separately by day type (weekend and weekday), and then summed to obtain an annual average concentration. All other sources were modeled as annual averages.

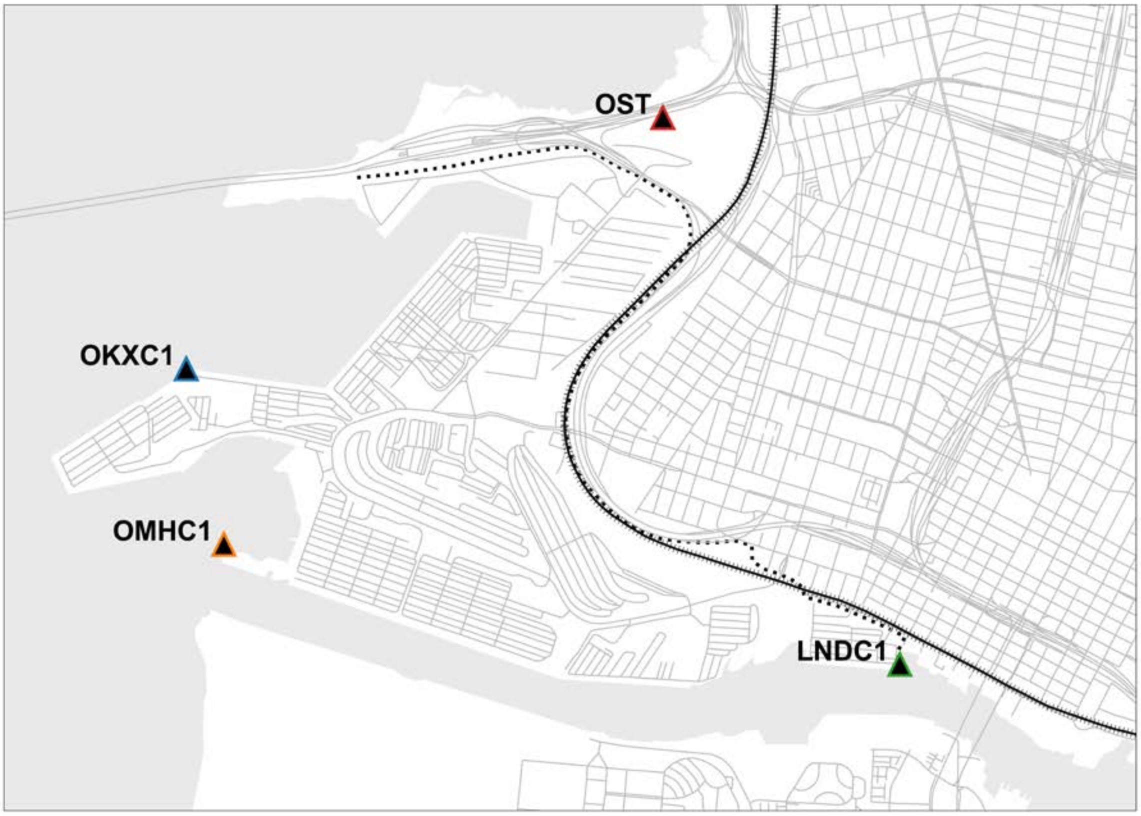


**Figure 3-1.** Surface meteorological monitoring stations considered for this analysis: OST (Oakland Sewage Treatment Plant), Oakland Berth 34 (OKXC1), Oakland Middle Harbor Met (OMHC1), and Oakland Berth 67 (LNDC1).

Of the four meteorological stations, only OST was sited to meet EPA modeling guidelines. The CO-OPS station sitings were meant to aid in the docking of container ships and in navigating the Oakland inner harbor. The wind vanes on all three CO-OPS stations are well below the recommended 10 m installation height (7.6 m at OKXC1 and LNDC1, and 6.7 m at OMHC1). OKXC1 and OMHC1 are also located at the land/water interface, with open water to the west, which is the dominant wind direction in West Oakland. The smooth upwind water surface could lead to lower mechanical mixing (lower dispersion) when modeled in AERMOD. LNDC1 is also sited in a location that is not ideal to support AERMOD modeling, as the surrounding surface roughness can vary depending on the placement of shipping containers and the movement of the shipping cranes, which can in turn affect measurements at the site. OST wind sensors were installed higher (16.3 m) than the minimum recommended height (10 m) to compensate for the heights of nearby structures. For these reasons, OST meteorological data was selected for the West Oakland AERMOD modeling.

OST data for year 2014 were selected for the AERMOD modeling as subsequent years had significant periods of missing data. In 2014, winds were most frequent from the west and west-northwest at speeds of 2.0–6.0 m/s (4.5–13.4 mph) (**Figure 3-2**). The OST data were processed through AERMET to create meteorological inputs used in subsequent dispersion modeling using AERMOD.

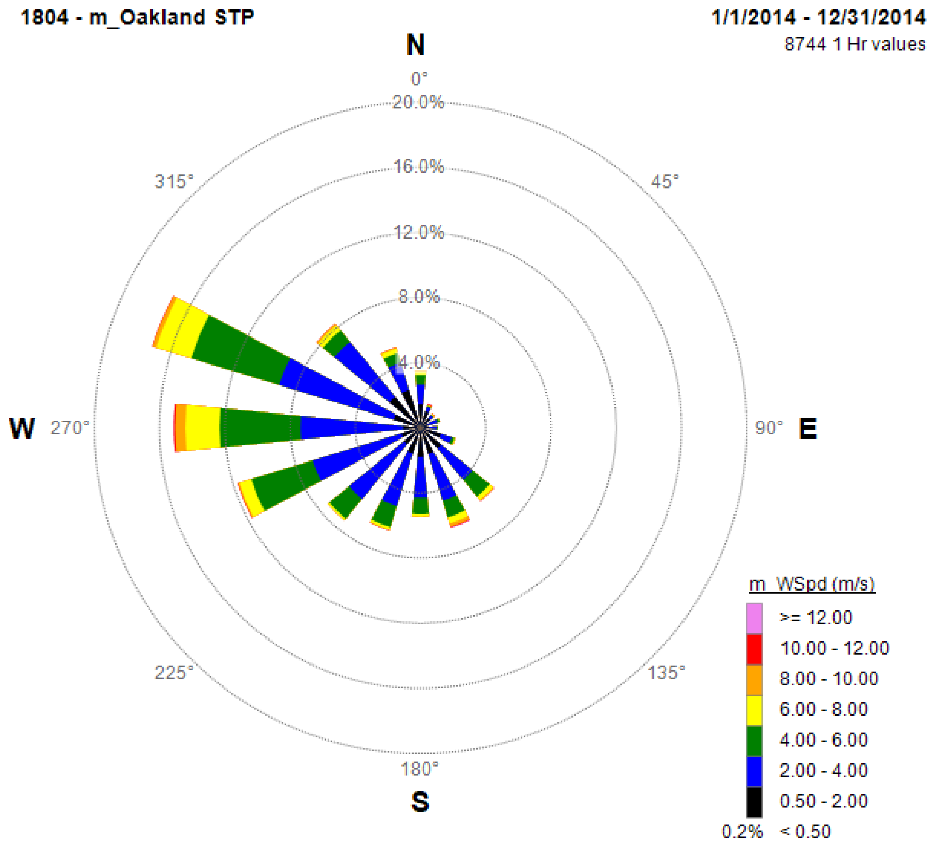


**Figure 3-2.** Annual windrose at the Oakland Sewage Treatment Plant (OST) in 2014. Compass sectors indicate the direction from which the wind is blowing. The percentage of calm winds (WSpd < 0.5 m/s) are also indicated.

### 3.2.2 Upper-air meteorology

The twice-daily (4:00 AM LST and 4:00 PM LST) upper air sounding data from the Oakland International Airport (KOAK; +37.744408° N, –122.223510° W) were also processed through AERMET to create input data for AERMOD dispersion modeling. The KOAK sounding is the only National Weather Service (NWS) upper air station in Northern California. Data from these soundings are namely used to calculate the convective mixing height during daylight hours.

## 3.3 AERMOD Model Configuration

Dispersion factors were modeled using default regulatory model options, including: stack-tip downwash, accounting for elevated terrain, calms processing routine,[64] missing data processing routine,[65] and an urban roughness length of 1.0 m. Additionally, no dry or wet deposition was included. Building downwash effects were not incorporated since individual building heights were not generally available. All sources were classified as urban sources, which is representative of land cover in West Oakland. The urban population (used as a surrogate to define the magnitude of the nighttime urban heat island, which enhances dispersion in the stable boundary layer) used was 650,000.[66] The height of each receptor was set to 1.8 m agl (referred to as "flagpole receptors"), which represents the breathing height of an average adult.

Dispersion factors were output as a daily average over the entire modeling period. Modeling was based on a meteorological dataset from 2014 (see **Section 3.2**). For on-road mobile sources, two modeling periods were used: all weekdays (261 days), and all weekend days (104 days). Otherwise, the period was defined as the entire year (January 1, 2014, through December 31, 2014).

The geographic coordinate system used throughout the modeling was a Universal Transverse Mercator (UTM) projection for zone 10 North with the North American Datum of 1983 (NAD83). Unless otherwise stated, for simplicity, the base elevation of each source was assigned by taking the elevation of the closest receptor as generated using AERMAP (see **Section 3.5**).

All sources in this analysis were located within the Source Domain, which encompassed the entire West Oakland community and Port of Oakland, and includes all emission sources discussed in Section 2 (**Figure 2-2**). A smaller "Receptor Domain" (**Figure 3-3**), embedded within the Source Domain, was used to define the extents of where receptors should be placed in AERMOD (see **Section 3.5**). The location of receptors is more spatially constrained so that they are located in areas where the population could be exposed (i.e., receptors were not placed over the Oakland harbor).

[64] In the calms processing routine, the concentration for a given hour is set to zero if the wind speed of that hour is calm. The (zero) concentration is then excluded when longer term (period) average concentrations are calculated (U.S. Environmental Protection Agency 2018b).

[65] In the missing data processing routine, hours with missing meteorological data are treated the same way as in the calms processing routine (U.S. Environmental Protection Agency 2018b).

[66] This is the total population of Berkeley, Piedmont, Emeryville, Oakland, and Alameda, based on the U.S. Census Bureau July 1 2017 (V2017) dataset (available via https://www.census.gov/quickfacts). The total population from these areas was rounded to the nearest thousand (U.S. Environmental Protection Agency 2015a). A slight over- or under-estimate of the population will not adversely affect modeling results since the urban algorithms in AERMOD depend on the population to the one-fourth power (Cimorelli *et al*. 2004).

**Figure 3-3.** Extents of the Source Domain (red dotted lines) and Receptor Domain (blue solid lines) used in AERMOD modeling. The inner tiles represent the 1 km × 1 km grid cells of the regional modeling.

## 3.4 Sources

### 3.4.1 Overview

Source-specific modeling parameters used for the emission sources in West Oakland (**Section 2**) are described in this section. In AERMOD, the user (modeler) must identify how each emissions source will be modeled (i.e., as a point, area, or volume), and input the location and associated modeling parameters. Location information includes the *x* coordinate (longitude), *y* coordinate (latitude), and *z* coordinate or base elevation (m asl). For point and volume sources, the *x* and *y* coordinates correspond to the center of the source. Multiple *x* and *y* coordinates are required for area sources when represented as polygons. In general, the parameters required by source type are:

- **Point**: emission rate (g/s), stack height (m agl), stack gas exit temperature (K), stack gas exit velocity (m/s), and interior stack diameter (m).
- **Area**: emission rate [g/(s $m^2$)], release height ($Relhgt$, m agl), and initial vertical dispersion coefficient ($Szinit$, m).
- **Volume**: emission rate (g/s), release height (center of volume) ($Relhgt$, m agl), initial lateral dispersion coefficient ($Syinit$, m), and initial vertical dispersion coefficient ($Szinit$, m).

These modeling parameters are important for determining plume rise and how emissions are transported downwind of the source. As aforementioned, the emission rate for all source types was set to a unit emission rate. An optional modeling parameter to vary the emission rate was applied to sources when the diurnal activity profile was available.

The type of source used to model emission sources in West Oakland depended on the source category (**Table 3-1**). The general process used to determine the location (*x* and *y* coordinates) of sources for each source type in described below, while specific parameters by category are summarized in the sections that follow.

**Table 3-1.** AERMOD source types used by source category for emissions sources in West Oakland. Point sources include point, capped, and horizontal emission releases.

| | | AERMOD Source Type | | | |
|---|---|---|---|---|---|
| | | | | Volume | |
| **Section** | **Source Category** | **Point** | **Area** | **Single** | **Adjacent** |
| 3.4.2 | Permitted stationary sources | × | | × | |
| 3.4.3 | On-road mobile sources | | | | × |
| 3.4.4 | Truck-related businesses | | × | | |
| 3.4.5 | OGVs (maneuvering, berthing) | | × | | |
| 3.4.6 | CHCs | | × | | |
| 3.4.7 | CHE | | × | | |
| 3.4.8 | Port Trucks at terminals (transiting, idling) | | × | | |
| 3.4.9 | Locomotives | | | | × |
| 3.4.10 | Railyards | | × | | |
| 3.4.11 | Commuter ferries and excursion vessels – navigating | | | | × |
| 3.4.11 | Commuter ferries and excursion vessels – berthing | | × | | |

*(a) Point Source and Single Volume Source Locations*

The only point and single volume sources in this analysis were permitted stationary sources. The District maintains a database of these sources and their locations, from which the location of each stack was obtained after QA (**Section 2.2**).

*(b) Area Source Locations*

Area sources were manually traced using Google Earth. The polygons were then saved as a shapefile, and an automated program was used to extract the *x* and *y* coordinate values of the vertices and create AERMOD-ready input files.

*(c) Adjacent Volume Source Locations*

In this analysis, mobile sources were modeled following much of EPA's current guidance for PM hot-spot analyses for transportation projects (U.S. Environmental Protection Agency 2015b, 2015c).[67] On-road mobile sources were modeled using adjacent volume sources. Both adjacent area and volume sources can be used to represent emissions from on-road mobile sources in AERMOD, though adjacent area sources are usually favored since they "may be easier to characterize correctly compared to [adjacent] volume sources" (U.S. Environmental Protection Agency 2015b, p. 105). This is because adjacent volume sources must be placed so that the volume centroids are equidistant from each other along the length of the emissions source (e.g., roadway), resulting in up to thousands of individual volume sources to characterize a single emissions source. Common errors made when configuring adjacent volume sources include incorrect volume centroid spacing (so that volumes are no longer adjacent), and using an inappropriate source width (e.g., street width) (Desser 2014). Typically, the initial lateral dispersion coefficient, $Syinit$, is calculated as the source width divided by 2.15. For volume sources, the exclusion zone (EZ) is an area around each volume source where AERMOD does not calculate results,[68] and no receptors should be placed. The radius of the EZ ($r_{EZ}$) from the centroid of the volume is calculated as:

$$r_{EZ} = (2.15 \cdot Syinit) + 1.0 \text{ m}$$

As receptors are to be placed as close at 5.0 m to roadways to adequately sample spatial concentration gradients, the maximum width of a roadway in AERMOD should be 8.0 m (U.S. Environmental Protection Agency 2015c); roadways that exceed this width should be modeled as several series of adjacent volume sources, such as to represent different travel lanes.

Because of the complexity of configuring adjacent volume sources, commercial software can help simplify this task by using a graphical user interface. Though, the process remains arduous if many emissions sources need to be included, such as in this analysis, where all roadways in West Oakland were modeled. For this reason, the District created an internal software package designed to automate the process of configuring adjacent volume sources for all emissions sources that are linear in nature – on-road mobile sources, locomotives on rail lines, and commuter ferries and excursion vessel travel routes.

In this process, the required inputs are a shapefile containing a network of line geometries representing the centerline of the emissions sources (roadway, ferry track, rail line), with a source width assigned to each segment (for roadways, the number of lanes can also be supplied). As a first pass, the number of volumes per line segment is determined by dividing the total length of the segment by its width, and each volume centroid is placed a distance of a width apart.[69] For roadways, if the total width exceeds a maximum width threshold (8.0 m), then the number of lanes is used to create a new series of roadway (lane) 'centerlines' parallel to the input centerline, and the new width is equal to the total width divided by the number of lanes. Multiple iterations are performed to minimize the number of overlapping volume sources at network nodes, as the overlaps can cause spurious small-scale "hot spots" of emissions.

---

[67] That being said, as this analysis is not a formal PM hot-spot analysis, some aspects to the modeling approach differed.

[68] Suppose there is a receptor $A$ within the EZ of volume source $a$; AERMOD will not calculate results (output is 0.0) at $A$. However, if the model is configured with multiple volume sources – $a$, $b$, $c$ – and receptor $A$ is only within the EZ of volume source $a$, then the results at receptor $A$ only represents the contributions from volume sources $b$ and $c$, which is an underestimate of the expected results.

[69] Only a whole number (integer) of volumes can be placed along segment. The first volume centroid is located at a position whose distance is half the width of the source from the starting coordinate of the segment.

### 3.4.2 Permitted Stationary Sources

Depending on the specific source category, emissions from permitted stationary sources were modeled as either point or volume sources in AERMOD. Modeling parameters were based on the most recent data available. All point and volume centroid locations were based on the coordinates available in the 2017 CEIDARS report (see **Figure 2-5**). The District also promulgates the release parameters as part of the CEIDARS report (by individual source at each facility). However, more recent release parameters may be provided by facilities in permit applications (in health risk assessments [HRAs] or in prevention of significant deterioration [PSD] analyses) is conducted as part of a permit application and are therefore not available through CEIDARS. The District therefore collected permit applications (available up to November 2018) and manually updated the 2017 CEIDARS modeling parameters for each permitted source in West Oakland. Increasing the accuracy of the release parameters should result in higher confidence in dispersion model performance and therefore higher confidence in the estimated downwind concentrations.

*(a) GDFs*

Emissions from GDFs were modeled as volume sources in AERMOD, where the initial release parameters were determined by the number of gasoline dispensers at the facility. When the number of dispensers at the facility was known, $Syinit$ was estimated using the equation:

$$Syinit = -0.00393\text{ m} \cdot n^2 + 0.3292\text{ m} \cdot n + 0.7285\text{ m}$$

where $n$ is the number of gasoline dispensers (based on Sonoma Technology Inc. 2011). $Relhgt$ was always set to 1.03 m (see **Table 3-2** for a summary of these parameters).

*(b) All other permitted stationary sources*

Emissions from permitted stationary sources were modeled as point sources when stack release parameters or default parameters were available. Otherwise, the emissions were modeled as volume sources. Default parameters (used when information was not available) for point and volume sources are listed in **Table 3-2**.

**Table 3-2.** Default modeling parameters for permitted stationary sources. These values were applied when no other modeling information was available. The source type indicates the type of source in AERMOD that was used for dispersion modeling. The following variables are used: $Relhgt$ (release height), $Syinit$ (initial lateral dispersion coefficient), $Szinit$ (initial vertical dispersion coefficient). For gasoline dispensing facilities, $n$ is the number of dispensers at the facility.

| Source Description | Source Type | Default | |
|---|---|---|---|
| | | Parameter | Value |
| Prime or Standby Generator | Point | Stack height | 3.66 m (12 ft) |
| | | Stack diameter | 1.83 m (0.6 ft) |
| | | Exit temperature | 739.8 °C (872 °F) |
| | | Exit velocity | 45.3 m/sec (8,923 ft/min) |
| Sources that have incomplete modeling information | Point | Stack height | 6.1 m (20 ft) |
| | | Stack diameter | 3.05 m (1 ft) |
| | | Exit temperature | 644 °C (700 °F) |
| | | Exit velocity | 17.8 m/s (3,500 ft/min) |
| No information available | Volume | $Relhgt$ | 1.8 m |
| | | $Syinit$ | 10 m |
| | | $Szinit$ | 1.0 m |
| Gasoline Dispensing Facility (Gas Station) | Volume | $n$ | 4 |
| | | $Relhgt$ | 1.03 m (3.4 ft) |
| | | $Syinit$ | 1.98 m if $n$ = 4; otherwise use equation in **Section 3.4.2** |

### 3.4.3 On-Road Mobile Sources

The approach for modeling emissions from on-road mobile sources depended on location: those from roadways within terminals at the Port, and those within the rest of the Port area and West Oakland community. This section presents the modeling approach for the latter group; emissions from on-road mobile sources on roadways within terminals are discussed in **Section 3.4.7**.

On-road mobile source emissions were modeled in AERMOD as adjacent volume sources. The location of the volumes (centroids) was developed using a roadway network obtained from Citilabs, and the elevation (expressed as an adjusted release height) was determined from a lidar dataset. Other emissions characteristics were based on current EPA PM hot-spot guidance.

*(a) Location (x, y, and z coordinates)*

A shapefile containing the geographic location of roadways and roadway attributes in Alameda County was obtained from Citilabs (Streetlytics platform) to develop the locations and extents (widths) of adjacent volume sources. A description of this data set and the filtering and QA process applied by the District is described in **Section 2.3**. While the accuracy of volume source locations is dependent on the accuracy of the roadway network obtained from Citilabs, the District did not directly QA the roadway segment centerline locations.

While roadway (source) width is not a readily available parameter, it is needed to determine $Syinit$ of each volume; a combination of the roadway functional class and the number of lanes was used to approximate the roadway width, where the total width was taken as the number of lanes times the width per lane. The width per lane was based on guidance for roadways in urban areas as classified by FHWA (**Table 2-8**): 3.6 m for freeways, 3.0 m for arterials, and 2.7 m for local roads (American Association of State Highway and Transportation Officials 2018).[70]

Adjacent volume source locations were generated using the algorithm described in **Section 3.4.1**(c) (**Figure 3-4**). Volume source locations were identical for Non-Trucks and Trucks. Once the *x* and *y* coordinates of each volume source were determined, the *z* coordinate (base elevation) was taken from the nearest receptor (**Section 3.5**).

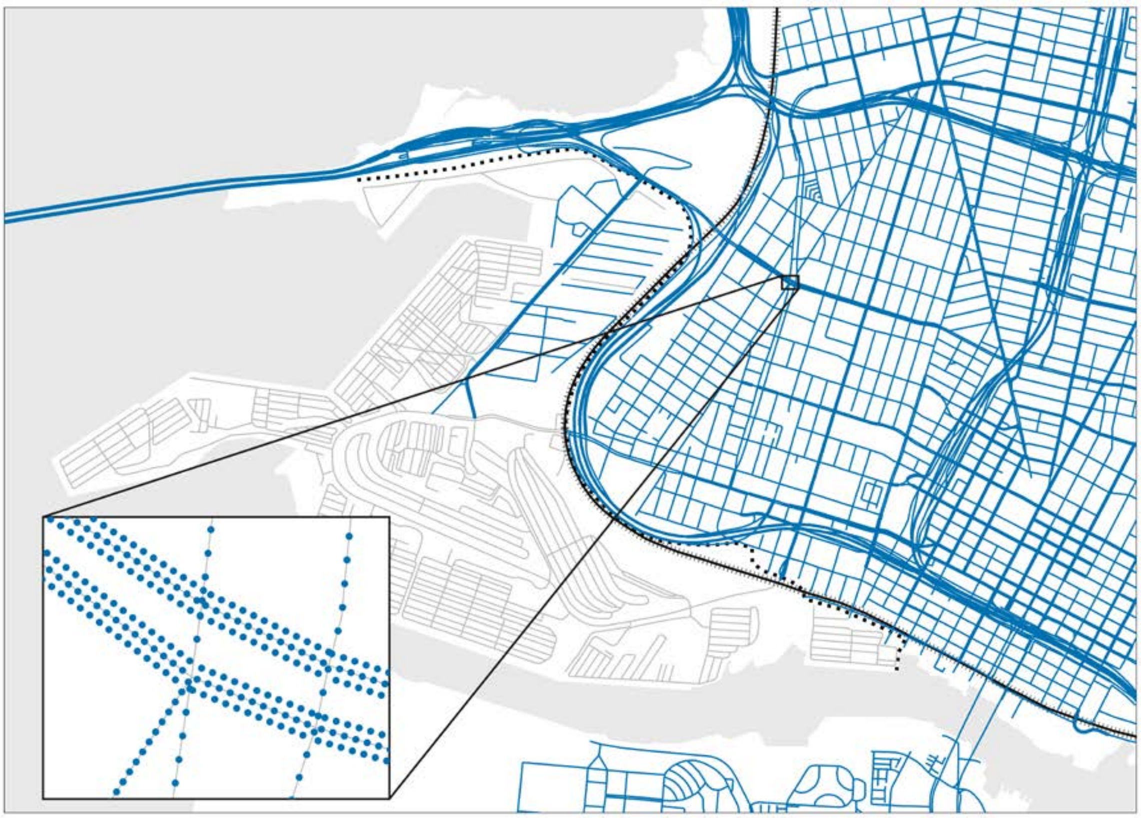

**Figure 3-4.** Locations of adjacent volume sources used to model emissions from on-road mobile sources. In the inset, the grey lines represent the location of roadways centerlines. The location of the marker represents the centroid of the volume source; the size of the marker does not reflect the dimensions of the volume source.

[70] Based on the Citilabs network, on- and off-ramps were assigned to both arterial and local road categories.

*(b) Elevation (Adjusted release height)*

In West Oakland, there are many roadways segments that are elevated, i.e., where the road surface is above grade, such as freeway overpasses. In this analysis, the elevated roadway structure heights were added to the emissions release heights (see (c)) to obtain an adjusted release height. The roadway surface heights were developed from two lidar raster datasets obtained from the U.S. Geological Survey (USGS), downloaded via the National Oceanic and Atmospheric Administration (NOAA) Data Access Viewer:[71] *2010 USGS San Francisco Coastal Lidar* (1 m resolution), and *2006 USGS Topographic Lidar: Alameda County* (2 m resolution). Both datasets were available in UTM zone 10 North projection (NAD83). The 2006 dataset was needed to increase the spatial coverage of elevation information so that elevation data would be available for the entire Source Domain. Roadway surface structure heights were developed as follows:

(1) The ground elevation ($Z_{Ground}$, m asl) and Unclassified (Class 1) elevation ($Z_{Unclassified}$, m asl) data channels were obtained. Unclassified includes the elevation of vegetation, buildings, and other structures (such as roadways). For each channel:
   a. The 2006 dataset was resampled to the resolution of the 2010 dataset.
   b. The 2010 dataset was filled with the 2006 dataset where there was missing data within the Source Domain.
   c. Remaining missing pixel values were filled using an inverse distance weighted (IDW) interpolation.

(2) The resulting absolute structure height, $Z_s$, was calculated as:

$$Z_s = Z_{Unclassified} - Z_{Ground}$$

To reduce some noise in the data, all values ≤ 1.8 m were coerced to 0.0 m.

(3) The average absolute structure height, $\overline{Z_s}$, was added to the release height of each volume source. Given the area of the volume defined as a circle from the volume centroid (*x*, *y*) with a radius of $Syinit$ (which may vary by roadway link):
   a. For non-overlapping volumes, $\overline{Z_s}$ was taken as the average of all pixel values within the circular area.
   b. For overlapping volumes, which can occur at roadway intersections or for roadways overpasses, the release height was calculated by linear interpolation of $\overline{Z_s}$ values from adjacent volumes along the same roadway link.

Given the input datasets and algorithm, this process may not always determine the correct roadway heights due to channel noise, confounding data (e.g., vegetation overhanging roadways, which results in a higher interpreted structure height), or because of nearly-parallel overlapping roadways resulting in a significant number of overlapping volumes (e.g., an overpass over a street). Some freeway segments[72] (n = 12) with incorrect $\overline{Z_s}$ assignments were manually identified and corrected using an IDW interpolation between the known $\overline{Z_s}$ values start and end of the segment. The resulting values of $\overline{Z_s}$ at each volume centroid are shown in **Figure 3-5**; these results could be further improved with additional QA and filtering techniques in the future (see **Section 6.2.2**).

[71] https://coast.noaa.gov/dataviewer/.
[72] Freeway segments were prioritized since they will have the highest AADT and therefore highest emissions.

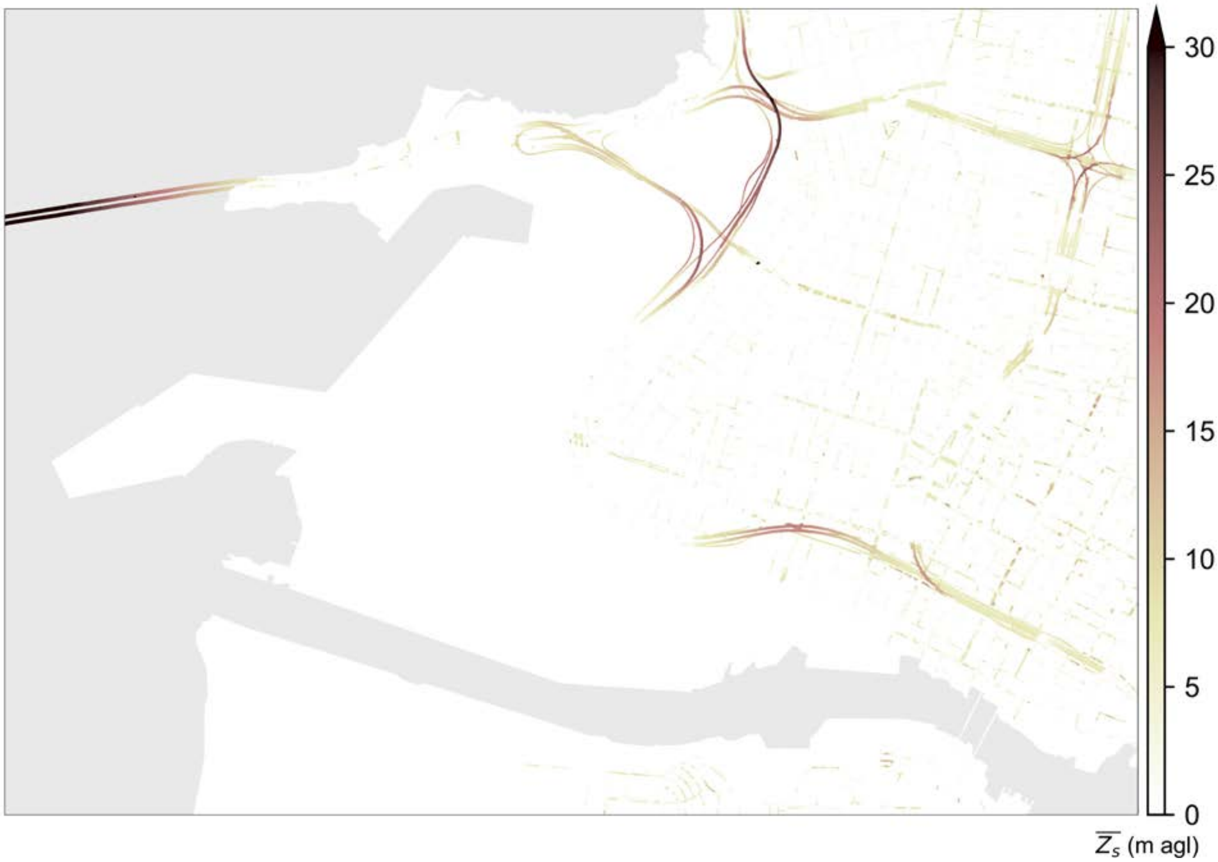


**Figure 3-5.** Average absolute structure heights of roadways at volume source centroids derived from lidar datasets. A $\overline{Z_s}$ value of 0 m agl indicates (white, not visible) that the volume source is at ground level and the roadway is at grade.

*(c) Emissions characteristics*

Though the location of volume sources by vehicle categories (Non-Trucks and Trucks), were identical,[73] they were modeled separately to track individual contributions to concentrations at receptors. While dispersion release parameters differ between Non-Trucks and Trucks, diurnal emission (activity) profiles also differ by day of week. This resulted in a four AERMOD dispersion modeling runs for on-road mobile sources for a given roadway segment: (a) WD Non-Trucks, (b) WE Non-Trucks, (c) WD Trucks, and (d) WE Trucks. For roadways located in the Port but that were not within active terminals, only Truck-configured runs were performed but used to characterize the emissions from all vehicle types.[74]

[73] As suggested by EPA, "overlapping versions" of each roadway segment can be used to represent the total emissions, treated each version with appropriate parameters to represent different vehicle categories (U.S. Environmental Protection Agency 2015c).

[74] This was done for convenience, but also because it is assumed that there is a low percentage of Non-Trucks on roads within the Port.

For all adjacent volume sources, the initial horizontal and vertical dispersion coefficients were based on the AERMOD User's Guide for surface-based sources (U.S. Environmental Protection Agency 2018b):

$$Syinit = W/\ 2.15$$

$$\begin{aligned} Szinit &= PH/\ 2.15 \\ &= (H \cdot \gamma)\ /\ 2.15 \end{aligned}$$

where $W$ is the source width, $PH$ is the initial vertical dimension of the source plume (plume height), $H$ is the average source (vehicle) height, $\gamma$ is a parameter to account for the effects of vehicle-induced turbulence, which equals 1 when vehicles are not moving, or 1.7 when vehicles are in motion (U.S. Environmental Protection Agency 2015c). $H$ depends on the vehicle category, and was taken as 1.53 m for Non-Trucks, 4.0 m for Trucks. Therefore, $Szinit$ was set to 1.2098 m for Non-Trucks and 3.1628 m for Trucks.

Finally, the release height was estimated as the midpoint of the initial vertical dimension, i.e., $Relhgt = 0.5\ \cdot PH$. Therefore, $Relhgt$ was initially set to 1.3 m for Non-Trucks, and 3.4 m for Trucks. For volumes that were not at-grade, $Relhgt$ was then adjusted by $\overline{Z_s}$ to obtain an adjusted release height.

To facilitate a unit emissions modeling approach, diurnal emission profiles for each roadway segment by vehicle category and day type were developed based on activity data (as described in **Section 2.3**). The diurnal activity profiles are comprised of ratios derived from hourly traffic volume normalized by the average daily traffic volume. These values are then used to scale the unit emission rate during the AERMOD run so that the hourly unit emission rate reflect the actual emission rates. For roadway segments located in the West Oakland community, diurnal profiles were link-specific for Non-Trucks, and road type-specific for Trucks (**Figure 3-6**). For roadway segments in the Port, diurnal profiles for Non-Trucks and Trucks were identical (since only one set of runs was performed, as noted above; **Figure 3-7**).

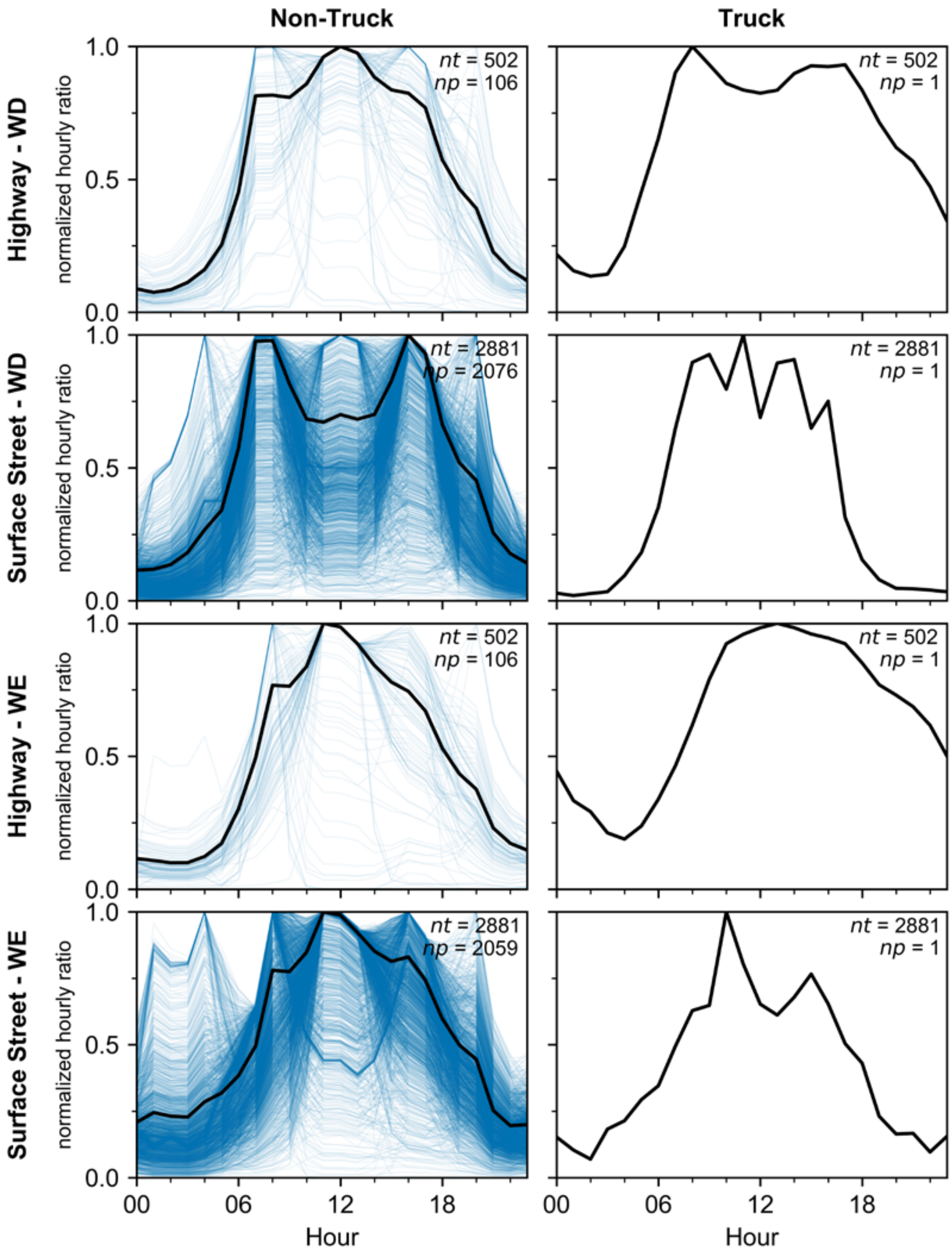


**Figure 3-6.** Diurnal emission profiles used for individual roadway segments in the West Oakland community normalized by maximum hourly volume. Profiles differ by road type (Highway, Surface Street) and day type (WD, WE) (rows), and vehicle category (Non-Truck, Truck) (columns). The number of unique profiles ($np$) and total number of roadway segments ($nt$) is annotated for each case. Individual profiles by roadway segment are plotted (thin blue lines), as well as the average profile (thick black lines); in cases where $np$ > 1, the average profile is for illustrative purposes only. For unit emissions modeling, profiles normalized to the average daily traffic volume were used.

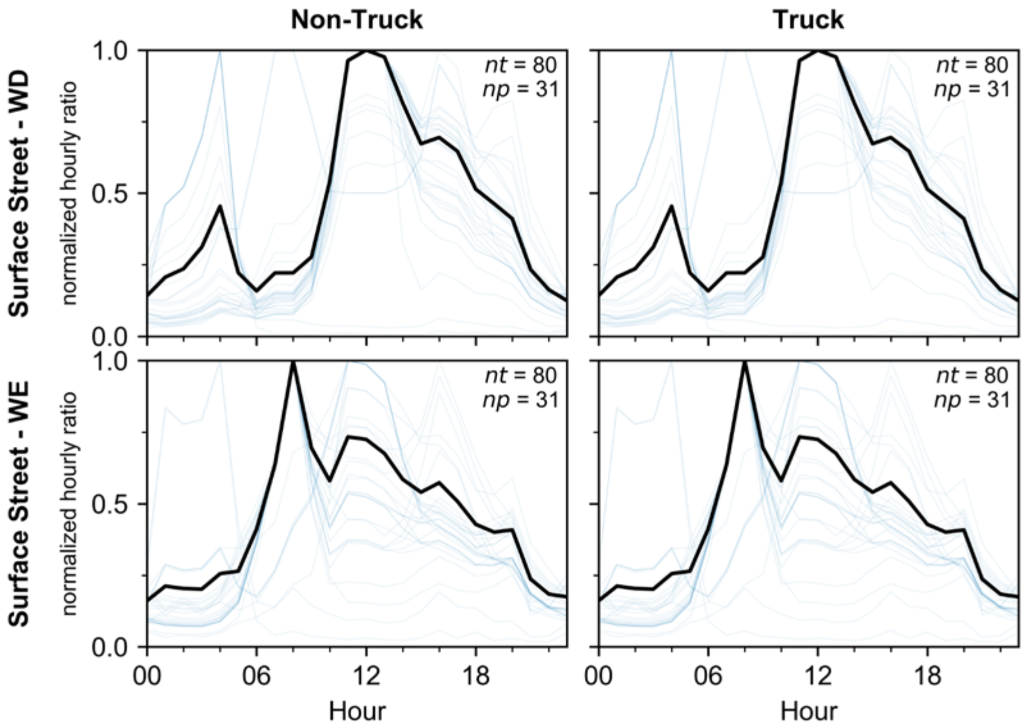


**Figure 3-7.** As in **Figure 3-6**, but for roadway segments in the Port area.

### 3.4.4 Truck-Related Businesses

Groups of idling vehicles in the same location can be modeled as an area source (U.S. Environmental Protection Agency 2015c). Emissions from truck activity at businesses with truck fleets (**Attachment 3**) were modeled as area sources (**Figure 3-8**). The areas were manually developed using satellite imagery, and then verified using Google Street View. The activity within these areas was associated with idling only; therefore, dispersion parameters were calculated as in **Section 3.4.3**, but with $\gamma = 1$ (no vehicle-induced turbulence, which aligns with modeling guidance provided in U.S. Environmental Protection Agency (2015c)). The height of all trucks was assumed to be 4.0 m, which results in $Szinit$ = 1.86 m, and $Relhgt$ = 2.0 m. Emissions from truck-related businesses were assumed to be evenly distributed from 8:00 AM to 5:00 PM on Monday through Saturday (no activity on Sunday).

Emissions from truck activity at Schnitzer Steel was also modeled as an area source (**Figure 3-8**); this includes emissions from all emission processes (running exhaust, idling exhaust, tire wear, brake wear, and road dust). The area was determined from satellite imagery so that it would not encompass the buildings or stockpiles. A release height of 5.5 m and an initial vertical dispersion coefficient of 2.558 m was used, consistent with modeling performed in California Air Resources Board (2008a). Emissions were evenly distributed over the hours of operation: 4:00 AM to 3:30 PM for Monday through Friday, and 5:00 AM to 12:00 PM on Saturday, with no activity on Sunday.


**Figure 3-8.** Area source polygons used to model emissions from truck-related businesses. The "S" indicates the location of Schnitzer Steel.

### 3.4.5 Ocean-Going Vessels

Emissions from maneuvering and berthing OGVs were modeled as two-dimensional area sources that were associated with specific terminal operators. Based on information provided by Ramboll (2018), Port-related OGV emissions were spatially allocated based on AIS records of ship positions in 2017 (2017 NOAA Cadastre AIS dataset). AIS relies on satellite positioning to track locations of commercial marine harbor crafts and large ships, which is required since 2016.[75] The AIS ship position records for ships headed to and from all Port berths were plotted, and the polygons were drawn around the bulk of the data points. For maneuvering and berthing, the positions of ships that headed to and from the four Port terminals were plotted to provide a guide to normal operating zones (by terminal). Spatial allocations according to operating mode were made as follows:

- OGV maneuvering emissions were assigned to polygons extending from the Inner and Outer Harbor channels and towards the entrance to these channels and the Bay Bridge (**Figure 3-9**). These polygons were defined to represent the most likely maneuvering areas applicable to each terminal operating during 2017 (TraPac, Nutter, OICT, and Matson).

[75] https://www.navcen.uscg.gov/?pageName=AISRequirementsRev.

- OGV berthing emissions were assigned to polygons at each terminal berth (**Figure 3-10**). Emissions were allocated between terminals based on the vessel call data from the 2017 SFMX Berth Report.

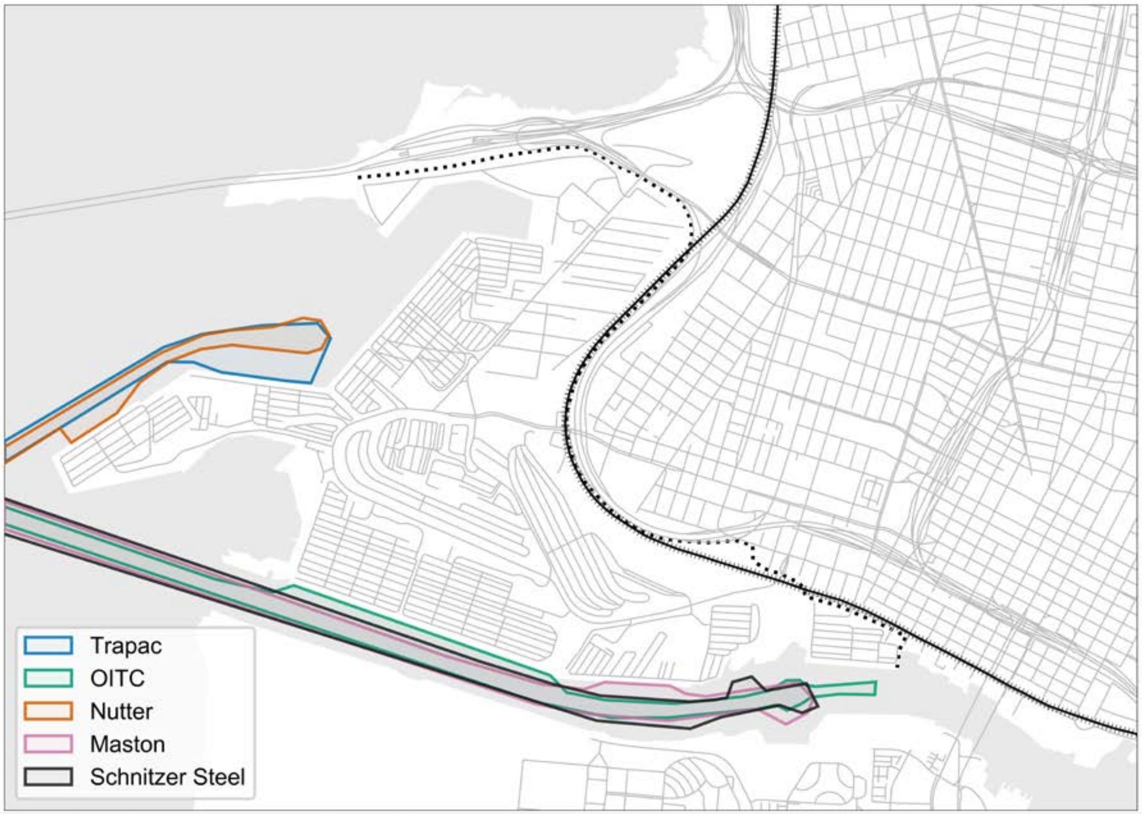


**Figure 3-9.** Area source polygons used to model emissions from OGV maneuvering.

An initial release height of 50 m was used for both OGV maneuvering and berthing activities. Emissions by activity were then temporally allocated by hour of day (ship call and twenty-foot equivalent unit [TEU] cargo volume throughput data showed little seasonal variation). A diurnal profile was developed for OGV maneuvering activity based on an analysis of hourly vessel movements (**Figure 3-11**). The highest frequency of arrival and departure times occurred near the start of labor shifts;[76] therefore, maneuvering emissions were assigned hour-specific allocation factors based on the arrival/departure frequency pattern. OGV berthing emissions at the Port were assigned a constant diurnal profile.

Emissions from OGV transiting, maneuvering, and berthing for ships to Schnitzer Steel were also modeled as an area source, which was approximated based on the spatial coverage of OGVs transiting to the Port (**Figure 3-9**, **Figure 3-10**). All OGV activities from Schnitzer Steel (transiting, maneuvering, hoteling) were modeled with a release height of 37.5 m, and emissions were assumed to be constant in time.

[76] Based on AIS records, a median of 23 min before ship arrival (denoted by 'first line on' time stamp in the SFMX berth report) and 19 min after departure ('last line off') was used to estimate the relative number of events by time of day for this mode within the Source Domain.

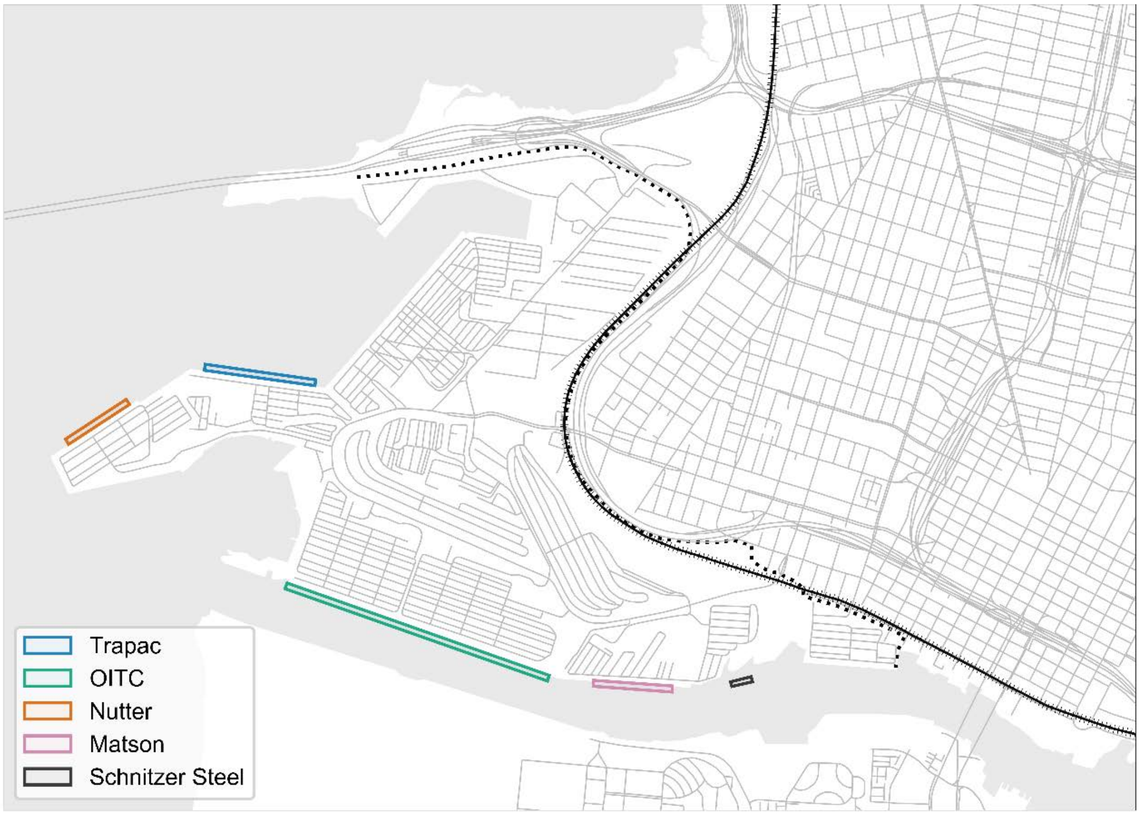


**Figure 3-10.** Area source polygons used to model emissions from OGVs at berths.

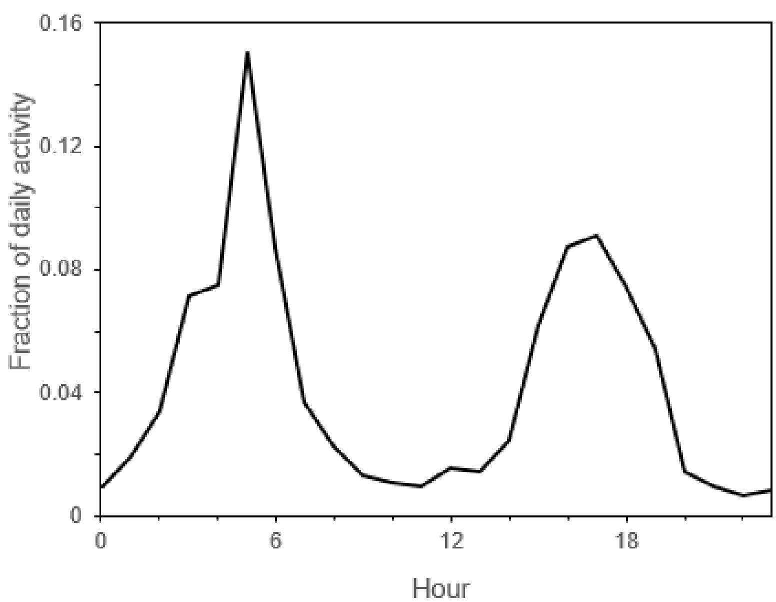


**Figure 3-11.** Diurnal emissions profile of Port OGV maneuvering. The profile is based on activity data from the 2017 Port Inventory.

### 3.4.6 Commercial Harbor Crafts

Emissions from all types of CHCs were modeled as area sources, while the spatial and temporal allocations of emissions varied by vessel type.

Dredging operations were assigned to two separate ship channels and berthing areas where these activities occurred (**Figure 3-12**). The area of the activity was created based on OGV AIS ship positioning information, which occurred near the main channel areas and berths that were dredged in 2017; the area was then extended to include unused Berths 23 and 24 in the Outer Harbor, and exclude the Berths 67 and 68 (which are rarely used).[77] Emissions were then allocated temporally based on the dredging schedule in 2017; dredging only occurred on 153 days (from January – February, and from August – December), and during daylight hours (8 AM – 6 PM). A release height of 6 m was used, with $Szinit$ = 4.744 m (consistent with California Air Resources Board (2008a)).

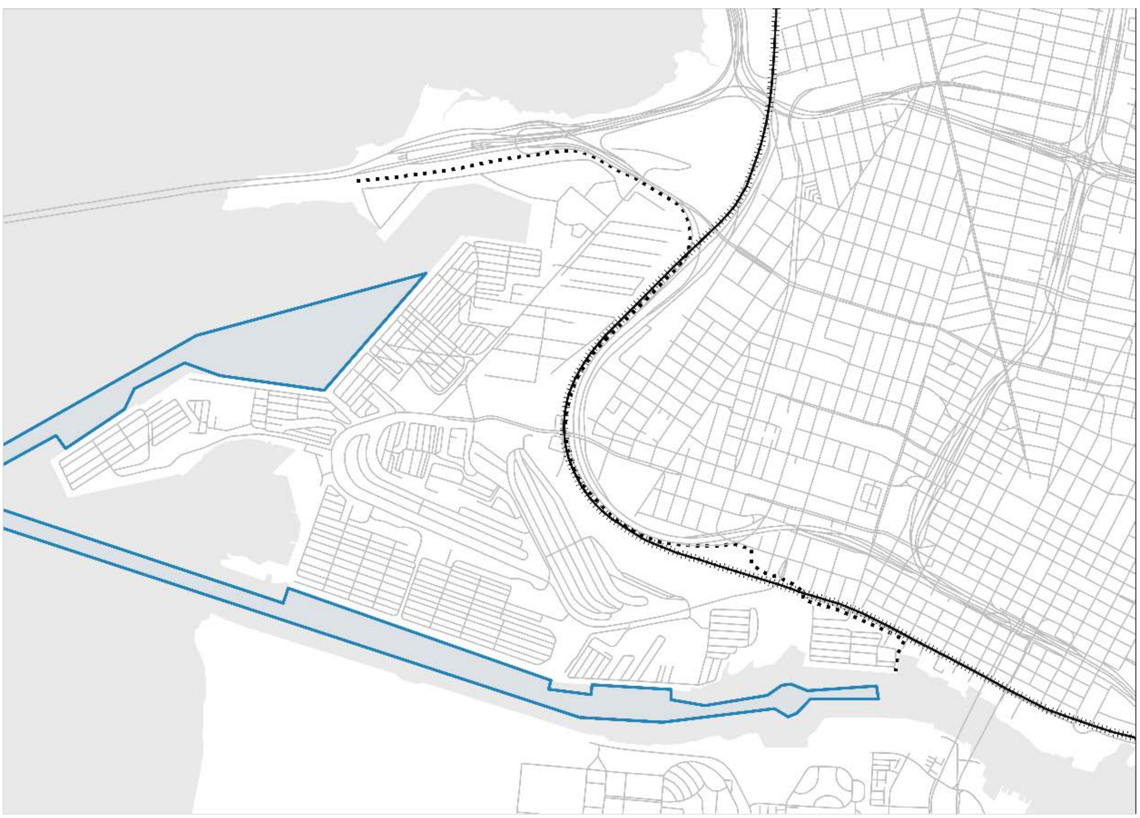

**Figure 3-12.** Area source polygons used to model emissions from dredgers.

Two areas sources were defined for assist tug operations, with one area representing tugs from the companies AMNAV Maritime Services, BayDelta, Crowley, and Foss Maritime, and the other representing tugs from Starlight Marine Services (**Figure 3-13**). Areas were derived based on AIS vessel position records during maneuvering and transit between the companies' base locations

[77] Based on communication with the company who performed the dredging.

(**Table 2-18**) to the Port. Emissions from assist tugs were temporally allocated in the same manner as OGV maneuvering (**Section 3.4.5**). A release height of 6 m was used, with $Szinit$ = 4.744 m (consistent with California Air Resources Board (2008a)).

Bunkering barges and bunkering pumps by terminal operator were assumed to operate in the same areas previously defined for OGV maneuvering and berthing, respectively (see **Figure 3-9** and **Figure 3-10**). Based on monthly bunkering events in 2017 (provided by Ramboll), emissions from bunkering varied by 6.4% to 9.6% on a monthly basis; for simplicity, emissions from bunkering activities were then assumed to be constant over the entire year. Emissions from bunkering barges were temporally allocated in the same manner as those from OGV maneuvering (**Figure 3-11**), whereas emissions from bunkering pumps were assumed constant.

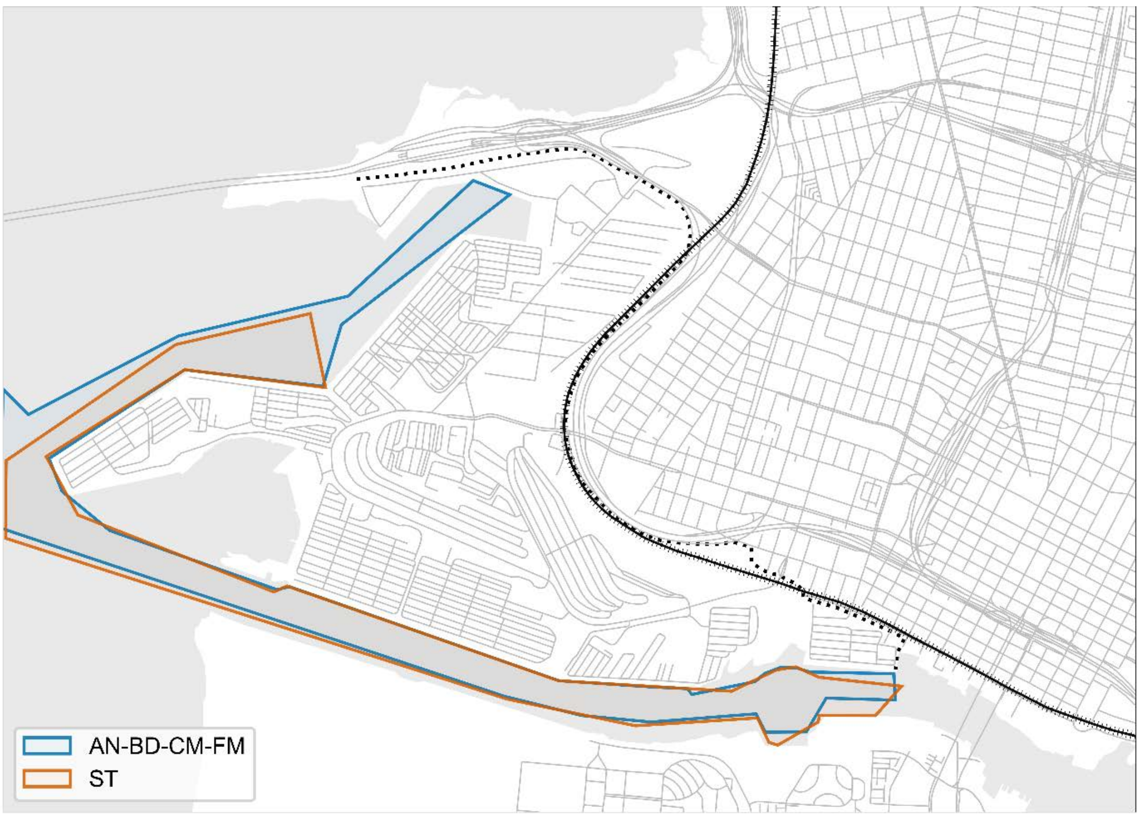


**Figure 3-13.** Area source polygons used to model emissions from assist tugs. Activity from AMNAV Maritime Services, BayDelta, Crowley, and Foss Maritime (AN-BD-CM-FM), and Starlight Marine Services (ST) were modeled separately.

### 3.4.7 Cargo handling equipment

Emissions from CHE were assigned to areas encompassing four terminals at the Port operating in 2017 (**Figure 3-14**). Emissions from CHE in the BNSF railyard were also accounted for. Based on California Air Resources Board (2008a), a release height of 5.5 m and an initial vertical dispersion coefficient of 2.558 m was used. The operating hours (**Table 2-23**) were used to develop temporal profiles for AERMOD dispersion modeling.


**Figure 3-14.** Area source polygons used to model emissions from CHE.

### 3.4.8 Port Trucks at Terminals

Emissions from Port Trucks operating within port terminals were assigned to source areas defined for BNSF Railyard (see **Figure 3-16**) and the same source areas defined for CHE (**Figure 3-14**). The same dispersion modeling parameters as CHE were used for Port Trucks ($Relhgt$ = 5.500 m, $Szinit$ = 2.558 m), as well as the same operating hours to temporally distribute the emissions (**Table 2-23**).

### 3.4.9 Locomotives (Rail Lines)

Emissions from locomotives on consolidated rail lines[78] in West Oakland were modeled as adjacent volume sources. A shapefile containing the geographic location of six rail lines in the West Oakland was used, which includes rail line segments with activity from BNSF and Amtrak. Volume source locations were developed using the algorithm described in **Section 3.4.1**(c), with a width of 6.25 m (width of locomotives plus wake effects). The release height of the locomotives was assumed to be 4.78 m (locomotive stack height). $Syinit$ and $Szinit$ were determined based on the equations used for on-road mobile sources (**Section 3.4.3**): $Syinit$ = 2.9070 m, and $Szinit$ = 3.7795 m. Emissions were assumed to be constant in time.

**Figure 3-15.** Locations of adjacent volume sources used to model emissions from locomotives. The size of the markers does not reflect the dimensions of the volume sources.

[78] For simplicity, emissions from all rail services (passenger, freight) were consolidated to single rail lines, which were then modeled in AERMOD. See **Section 2.9** for further information.

### 3.4.10 Railyards

Emissions from three railyards were modeled as area sources (**Figure 3-16**). The BNSF and OGRE railyards are considered part of the Port, while the Union Pacific (UP) railyard is a separate entity. A release height of 4.78 m was used for locomotives operating at each of the railyards. $Szinit$ was set to 3.7795 m, based on the equations for on-road mobile sources (**Section 3.4.3**). Emissions were assumed to be constant in time.

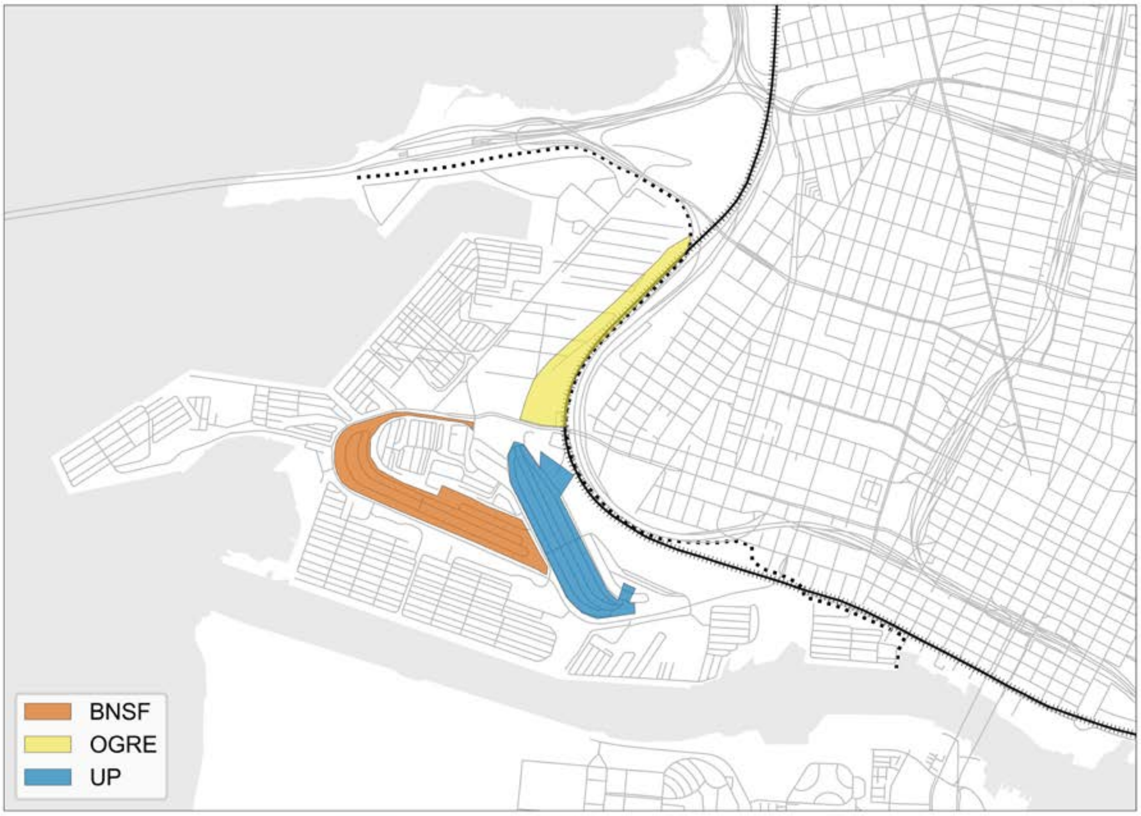


**Figure 3-16.** Area source polygons used to model emissions from locomotives in railyards.

### 3.4.11 Commuter Ferries and Excursion Vessels

Emissions from commuter ferries and excursion vessels were modeled using adjacent volume sources; all parameters were the same for both types of vessels. A network of ferry routes was developed using satellite imagery (**Figure 3-17**), and volume source locations were determined using the algorithm described in **Section 3.4.1**(c). Guidance used for on-road mobile source emissions (**Section 3.4.3**) were also used to determine modeling dispersion parameters for commuter ferries and excursion vessels. A width of 10.56 m was used, based on the weighted average beam of the vessels in the commuter ferry fleet.[79] The release height was calculated as 9.0695 m, based on a stack height of 10.67 m (35 ft).[80] The resulting dispersion parameters were:

[79] Obtained from the WETA San Francisco Bay Fleet information at https://sanfranciscobayferry.com/sites/default/files/SFBFfleet.pdf (accessed December 2018).

[80] In 2017, the exhaust stacks on the types of commuter ferries operating from Oakland and Alameda were above passenger decks.

$Syinit$ = 4.9209 m, and $Szinit$ = 8.4367 m. Emissions for commuter ferries were temporally allocated based on their operating schedules by day of week;[81] this reflects only the operating hours of the ferries and not necessarily the level of activity by hour. Because of the variable schedule of excursion vessels, emissions were assumed to be constant in time.

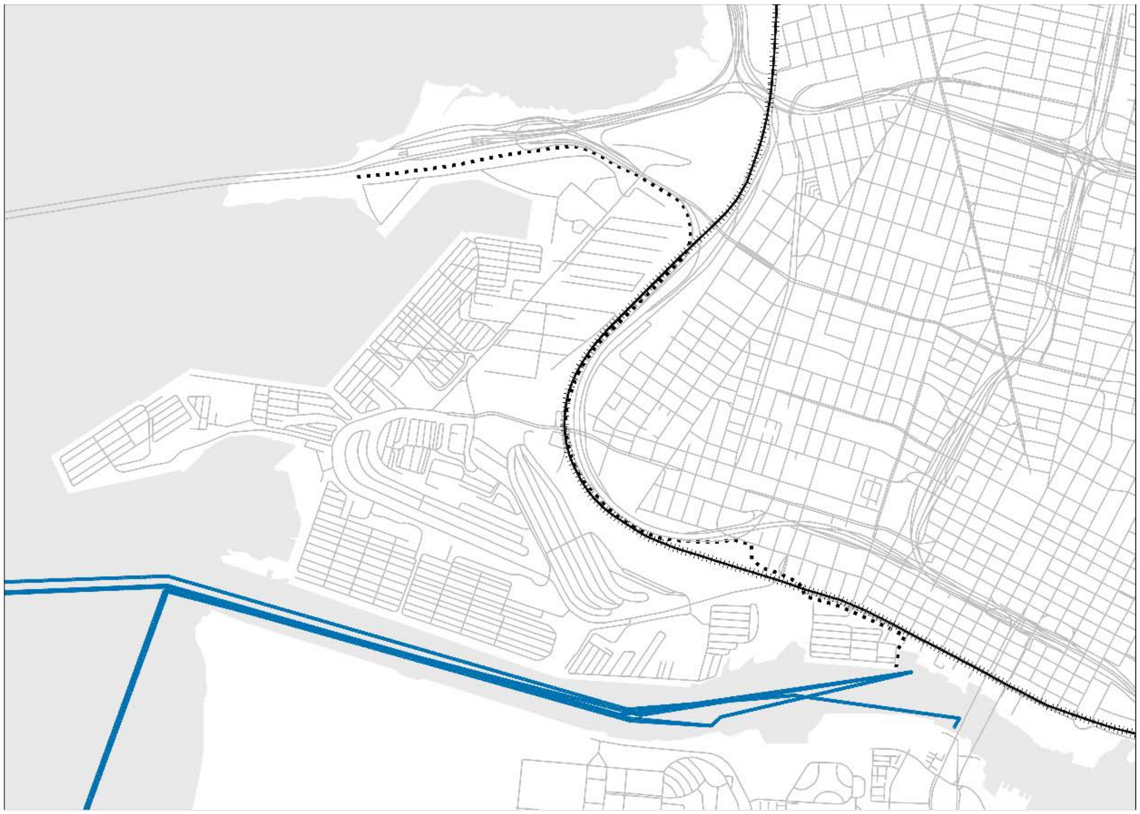

**Figure 3-17.** Locations of adjacent volume sources used to model emissions from commuter ferries and excursion vessels. The size of the markers does not reflect the dimensions of the volume sources.

Within the Source Domain, there are berths for both commuter ferries and excursion vessels. Emissions from ferry berths were modeled as area sources for AERMOD dispersion modeling (**Figure 3-18**). Because of the orientation of the exhaust stacks on some vessels, the release height was set to the physical height of the stack ($Relhgt$ = 10.67 m). Since berthing vessels are stationary, the initial vertical dispersion coefficient was calculated using $\gamma$ = 1 (i.e., there is no motion-induced turbulence that will increase initial dispersion), resulting in $Szinit$ = 4.9620 m.

[81] Based on the WETA San Francisco Bay ferry schedule (effective January 7, 2019) https://sanfranciscobayferry.com/sites/sfbf/files/masterschedule010719.pdf (accessed February 2019). The temporal allocation is based on operating hours; it was assumed that the operating hours were similar to those in 2017–2018.

**Figure 3-18.** Area source polygons used to model emissions from ferries and excursion vessels at berths.

## 3.5 Receptors

A master receptor grid was generated with receptors spaced every 20 m in the *x* and *y* directions within the Receptor Domain (**Figure 3-3**), resulting in 52,671 discrete cartesian receptors.[82] A spacing of 20 m was deemed sufficient to resolve the spatial concentration gradients around small emissions sources (e.g., roadways) and the spacing of city blocks, which are on the scale of tens of meters; it is also consistent with the "dense" spacing suggested for a PM hot-spot analysis around roadways (U.S. Environmental Protection Agency 2015b).

As mentioned, the height of each receptor was set to 1.8 m agl. AERMAP was run to assign terrain elevations (m asl) and hill height scales to each receptor from Shuttle Radar Topography Mission (SRTM) digital terrain data (with an approximate resolution of 30 m × 30 m within 1° × 1° tiles), which are used to determine the dispersion of plumes in the vicinity of topographic features. The West Oakland area is relatively flat, where elevation is near sea level close to the Bay, and slopes upward gently towards the East (**Figure 3-19**).

[82] While the Source and Receptor Domains must align between models, the projections used are different (UTM in AERMOD, and Lambert conformal conic in CMAQ). Additional receptors were initially modeled (totaling 56,658 receptors), and then filtered so that only those within the Receptor Domain were used in subsequent analyses.


**Figure 3-19.** Elevation based on SRTM digital terrain data processed through AERMAP. Elevations are assigned to receptor locations only within the West Oakland Receptor Domain (blue polygon).

For emission sources modeled as point or area sources, the entire master receptor grid was used. For emission sources modeled as volume sources, individual receptors were removed from the master grid where they intersected a volume source EZ (**Section 3.4.1**(c)); results were imputed to these locations in a post-processing step (see **Section 4.4.1**).

## 3.6 Background Concentrations

AERMOD provides estimates of pollutant concentrations associated with local sources in West Oakland. However, total pollutant concentrations in the community are also impacted by regional emissions sources that are located in other parts of Alameda County, the Bay Area, and beyond. To account for the impact of these regional emission sources on air pollutant concentrations in West Oakland, the U.S. EPA's Community Multi-scale Air Quality (CMAQ) model was applied at a 1-km grid resolution over the entire Bay Area (**Figure 3-20**). CMAQ is a complex photochemical grid model that simulates physical and chemical processes in the atmosphere to predict the airborne concentration of gases and particles, as well as the deposition of these pollutants to Earth's surface. CMAQ requires two primary types of input data: (1) meteorological information such as temperature, wind speeds, and precipitation rates; and (2) emissions estimates for all anthropogenic and natural emission sources in the modeling domain.

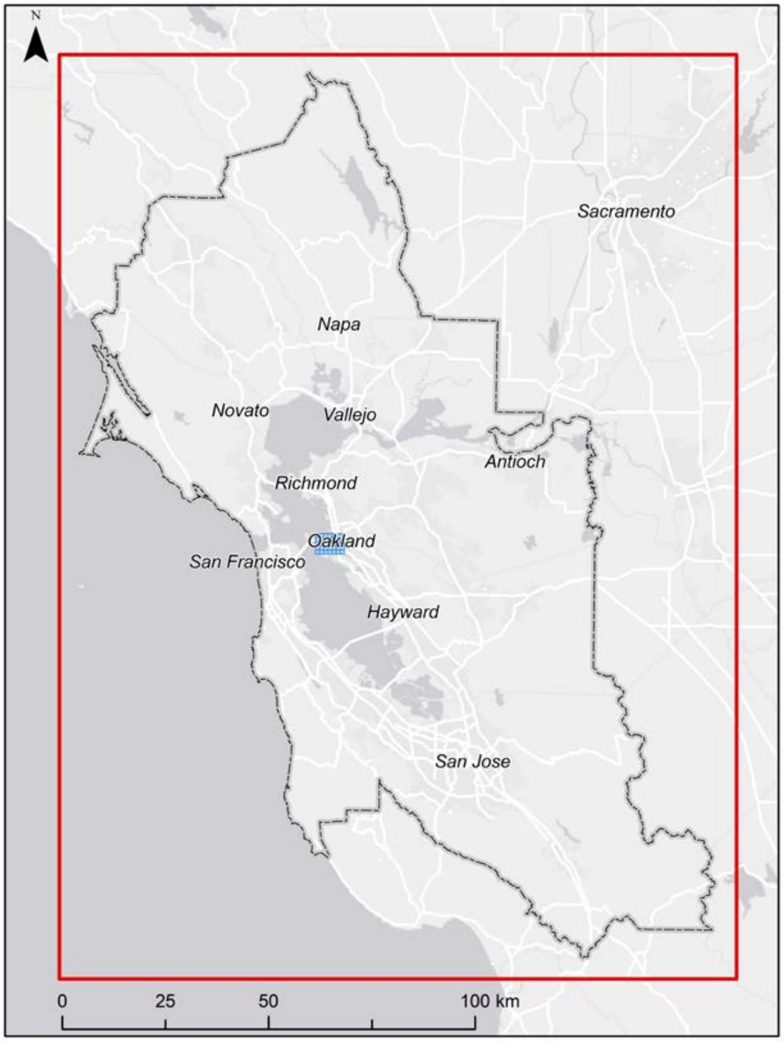


**Figure 3-20.** Regional-scale modeling domain (red rectangle). The subset of grid cells that comprise the community-scale (AERMOD) modeling are indicated by blue squares. The extents of the BAAQMD are also outlined (grey dashed line).

Meteorological inputs for CMAQ were prepared using the Weather Research and Forecasting (WRF) model version 3.8 (Skamarock *et al.* 2008). The WRF model configuration was tested using available physics options, including planetary boundary layer processes, strategies for assimilating meteorological measurement data into the simulations, horizontal and vertical diffusion parameters, and advection schemes. The final choice of options was the one that proved to best characterize meteorology in the domain based on a statistical evaluation. WRF model performance was evaluated by comparing model outputs to available meteorological data from the EPA's Air Quality System (AQS), the District's meteorological network, and the National Centers for Environmental Information (NCEI, formerly the National Climate Data Center [NCDC]). These comparisons were conducted by using the METSTAT program[83] to statistically evaluate the performance of WRF using established metrics such as bias, gross error, root mean square error

[83] version dated December 9, 2013; retrieved from Ramboll Environ: http://www.camx.com/download/support-software.aspx

(RMSE) and index of agreement (IOA). WRF's performance was determined to be within established criteria for these metrics for every day of 2016.

Emissions inputs for CMAQ were assembled from a variety of data sources, including the District's estimates, emissions data from CARB, outputs from CARB's EMFAC2017 model, and outputs from EPA's Biogenic Emission Inventory System (BEIS) version 3.61. These emissions data were processed through the Sparse Matrix Operator Kernel Emissions (SMOKE) processor (Houyoux and Vukovich 1999) version 4.5[84] to develop CMAQ-ready emissions inputs for each day of 2016. SMOKE uses a variety of processing steps to convert "raw" emissions data to the spatial, temporal, and chemical resolution required by air quality models, such as CMAQ. For example, SMOKE disaggregates TOG and $PM_{2.5}$ emissions into a series of model species that CMAQ uses to represent atmospheric chemistry.

For the Bay Area regional modeling, speciation profiles developed for the SAPRC-07 chemical mechanism were applied to TOG emissions from all sources, and profiles developed for the AERO6 aerosol module (AE6) were applied to $PM_{2.5}$ emissions from all sources. The SAPRC-07 mechanism treats some toxic species explicitly, including acetaldehyde, benzene, and formaldehyde, while others are lumped into model species that act as surrogates for multiple compounds with similar mass and reactivity. Therefore, existing SAPRC-07 speciation profiles were modified to treat additional air toxics (acrolein and 1,3-butadiene) explicitly. In addition, AE6 profiles were modified to track DPM emissions separately from other PM emissions. Lastly, emissions estimates for five trace metals that are not included in the AE6 mechanism (cadmium, hexavalent chromium, lead, mercury, and nickel) were taken from EPA's 2014 National Air Toxics Assessment (NATA) inventory.

Once all inputs were prepared, CMAQ version 5.2 (U.S. Environmental Protection Agency 1999) was run to simulate $PM_{2.5}$ and TAC concentrations for the Bay Area for 2016. CMAQ model performance was evaluated by comparing model outputs to available ambient data from the District's Data Management System and the EPA's AQS. Various statistical metrics were used to evaluate the performance of CMAQ, in keeping with EPA's latest modeling guidance (U.S. Environmental Protection Agency 2018a). The CMAQ model performed reasonably well, meeting the performance goals proposed by Boylan and Russell (2006) and criteria by Emery *et al.* (2017), two well-known references for PM model evaluation. The model also showed reasonable agreement with the limited air toxics observations that were available for comparison.

The modeling framework was run (a) with emissions in the West Oakland Source Domain to obtain the total concentrations over the community and perform the model evaluation, and then (b) without emissions to provide an estimate of background pollutant levels in West Oakland. From (b), CMAQ results for the 1-km grid cells in the West Oakland Receptor Domain were extracted and analyzed to develop average background concentration values for the community. The background values for $PM_{2.5}$, DPM, and cancer risk, which represent expected levels in the absence of any local emissions in West Oakland, are summarized in **Table 3-3**.

[84] For further information and technical documentation, see https://www.cmascenter.org/smoke/documentation/4.5/manual_smokev45.pdf

**Table 3-3.** Background pollutant concentrations and cancer risk for West Oakland. Values are derived as an annual average across all grid cells in the Receptor Domain.

| **Parameter** | **Value** | **Units** |
|---|---|---|
| $PM_{2.5}$ concentration | 6.9 | µg/m$^3$ |
| DPM concentration | 0.46 | µg/m$^3$ |
| Cancer risk | 421 | Additional cancer cases per million people |

Additional information on the CMAQ simulations are available in separate reports on the District's 2016 $PM_{2.5}$ modeling (Tanrikulu *et al.* 2019a) and air toxics modeling (Tanrikulu *et al.* 2019b).

# 4. Analysis Methods

In this section, the methods applied to determine pollutant concentrations and cancer risk from emission sources that were identified, quantified, and provided as inputs to dispersion models are outlined. The approach used to aggregate and display the results are also described.

## 4.1 Estimating Pollutant Concentration and Cancer Risk

### 4.1.1 Totals at Receptors

The total of a quantity at a receptor can be calculated by summing the contributions from all sources; based on the community-scale (AERMOD) dispersion modeling, this represents the local contribution to a total quantity, as in **Figure 1-2**. This can also be expressed mathematically; that is, the *incremental contribution* from a specific emissions source $s_j$ (where $j$ is the index of any individual source modeled in AERMOD) to the total of quantity $Y$ (which may a dispersion factor, $F$; pollutant concentration, $C_p$; or cancer risk, $risk$) at a receptor $r_i$ (where $i$ is a location index, and $r_i$ is located at coordinates $(x_i, y_i, z_i)$, and $z_i = 1.8$ m at all receptors in this analysis) can be denoted as: $Y_{ij} \equiv Y(r_i,\ s_j)$. The total quantity of $Y_i$ is then the sum over all contributions from all sources:

$$Y_i = \sum_j Y_{ij}$$

However, as previously explained, individual receptors were removed from the master "grid" (a set of receptors placed every 20 m) where they intersected a volume source EZ (used for modeling on-road mobile sources, locomotives along rail lines, and commuter ferries and excursion vessels). This means that if using only the direct model outputs, at some receptors, $Y_i$ can only be partially summed over all sources because the incremental contribution from some sources was not sampled at $r_i$. Therefore, dispersion factors were imputed at locations of receptors from the master grid that were removed for AERMOD modeling in these instances. Because the receptors that were removed from EZs are likely in areas of high concentrations (since they are closest to emission sources), values at receptors were imputed using the local maximum dispersion factors from a set of $k_{max} = 8$ closest receptors filtered within a distance (radius) of $d_{max} = 28.78$ m (the maximum diagonal distance between two receptors plus 0.5 m); the final number of receptors is therefore $k \le k_{max}$. If no receptors were available within $d_{max}$, the value was imputed using the IDW with a power value of two (i.e., inverse distance squared weighting, IDW2) from the $k_{max}$ (or $k \le k_{max}$ if only $k$ receptors were defined) nearest receptors. The resulting values at receptors could therefore be derived from a mix of local maxima and IDW2 interpolation.

To assess the air quality at receptors, the total pollutant concentrations of $PM_{2.5}$ and DPM were calculated, as well as cancer risk. While the summation technique is identical, calculating the values of each quantity at each receptor requires additional information with respect to emission rates and toxicity, as detailed in the following sections.

### 4.1.2 Pollutant Concentration

The concentration of a pollutant at each receptor location was calculated for a modeled source by multiplying annual average emission rate of a pollutant from a source by the dispersion factor from the source. At each receptor $r_i$ from each source $s_j$, the concentration of pollutant $p$ is then:

$$C_{pij} = ER_{pj} \cdot F_i$$

where

$C_p$ = annual average concentration for pollutant $p$ (µg/m$^3$)
$ER_p$ = annual average emission rate for pollutant $p$ [g/(s m$^2$) for area sources, g/s for point and volume sources]
$F$ = dispersion factor, concentration per unit emission rate [(µg/m$^3$)/(g/(s m$^2$)) for area sources, (µg/m$^3$)/(g/s) for point and volume sources]

The concentration contributions can then be summed over all sources at a receptor to obtain the total concentration from local sources.

### 4.1.3 Cancer Risk

Cancer risk is the incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens from anthropogenic sources. The estimated risk is a unitless probability, often expressed as the number of people who might experience cancer per million people who are similarly exposed (a value "in-a-million"). Chemical species included in the dose calculate include acrolein, benzene, DPM, ethylbenzene, hexane, naphthalene, toluene, and xylene, among others (see **Attachment 1**); the type of TAC emitted depends on the emissions source.

The risk assessment method used here follows guidelines from the California EPA (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA) and the risk management guidance for stationary sources adopted by the CARB and the California Air Pollution Control Officers Association (CAPCOA). Cancer risk was calculated over an assumed 70-year lifetime by multiplying the annual average chemical concentrations of TACs by the chemical intakes and chemical-specific cancer potency factors (CPFs)[85] (**Attachment 1**). The chemical concentrations were modeled from the emission sources to the exposure point at the downwind locations (receptors). Contributions from all emissions sources (**Section 2**) were aggregated to determine the cumulative risk. The District assumed that all emissions sources would remain operational for 30 years at the same level of emissions (the District has previously adjusted emissions for certain source categories where operations will be phased out); the District also assumed that emission factors for on-road mobile sources do not change in future years. The resulting analysis therefore represents a 'snapshot' of the level of cancer risk that would result from the base year emissions.

[85] A CPF is a chemical-specific "theoretical upper bound probability of extra cancer cases occurring in an exposed population assuming a lifetime exposure to the chemical" (Office of Environmental Health Hazard Assessment 2015).

The chemical intake or *dose* describes the frequency and duration of the exposure, estimated using the breathing rates, exposure durations, and exposure frequencies. In accordance with OEHHA's revised health risk assessment guidelines (Office of Environmental Health Hazard Assessment 2015), the intake methodology was updated to address children's greater sensitivity and health impacts from early exposure to carcinogenic compounds. The updated calculation procedures include the use of age-specific weighting factors, breathing rates, fraction of time at home, and reduced exposure durations. Each factor is described below:

- Age Sensitivity Factors (ASFs) account for the heighted sensitivity of children to carcinogens during fetal development and early childhood. Consistent with OEHHA, the District uses ASF values as listed in **Table 4-1**. The District has incorporated ASFs in its air permits since 2010.
- Daily Breathing Rate (DBR) is the age-specific daily air intake. OEHHA developed a range of rates for four age groups: last trimester to newborn, newborn to two years of age, two years to 16 years of age, and older than 16 years of age. CAPCOA and CARB recently recommended the use of 95th percentile breathing rates for the most sensitive age group (less than two years of age) and 80th percentile for all other age groups.
- Fraction of Time at Home (FAH) refers to the estimated amount of time residents stay at home. In past HRAs, the District assumed that residents are home 24 hours per day, 7 days per week. In the 2015 Risk Assessment Guidance, OEHHA recommends less than 100% of time to be used as a FAH based on population and activity statistics. Consistent with OEHHA, this analysis incorporates a FAH of 0.73 for individuals ≥ 16 years old and 1.0 for individuals < 16 years old to address exposures at local schools in close proximity to emitting facilities.
- Exposure Duration (ED) is the length of time an individual is continuous exposed to air toxics. Previously, the District used a 70-year lifetime exposure duration for residents over a 70-year lifespan. Based on updated demographic data, the District follows the OEHHA recommendation of a 30-year exposure duration, consistent with US EPA, for residents.

The values of these factors are summarized in Table 4-1.

**Table 4-1.** Factors used to calculate chemical intake, based on a 30-year average. Age intervals are left-bounded.

| Factor | Unit | Age Groups | | | |
|---|---|---|---|---|---|
| | | **Last Trimester to Newborn** | **0 – 2 years old** | **2 – 16 years old** | **16 – 30 years old** |
| **DBR** | L/(kg day) | 361 | 1090 | 572 | 261 |
| **ASF** | unitless | 10 | 10 | 3 | 1 |
| **FAH** | unitless | 1 | 1 | 1 | 0.73 |
| **ED** | years | 0.25 | 2 | 14 | 14 |

The equation used to calculate the dose for the inhalation pathway of a pollutant $p$ is as follows:

$$dose_{pij} = \frac{1}{AT}\left[c \cdot ef \cdot \sum_{y}^{30\ years} C_{pijy} \cdot DBR_y \cdot FAH_y \cdot ED_y \cdot ASF_y\right]$$

where

| | | |
|---|---|---|
| $dose_p$ | = | accumulated dose for an individual breathing pollutant $p$ for 30 continuous years [mg/(kg day)] |
| $AT$ | = | averaging time [25,550 days, equivalent to 70 year lifespan] |
| $c$ | = | conversion factor [$10^{-6}$ (mg/L)/(µg/m$^3$)] |
| $ef$ | = | exposure frequency (350 days per year[86]) |
| $C_{py}$ | = | annual average concentration of pollutant $p$ during year $y$ [µg/m$^3$] |
| $DBR_y$ | = | daily breathing rate during year $y$ [L/(kg day)] |
| $FAH_y$ | = | fraction of time at home during year $y$ [unitless] |
| $ED_y$ | = | exposure duration of year $y$ [years] |
| $ASF_y$ | = | age sensitivity factor for year $y$ [unitless] |

The cancer risk from a pollutant ($p$) at a receptor ($i$) from a specific source ($j$) is equal to the dose multiplied by the chemical-specific inhalation CPF (**Attachment 1**):

$$risk_{pij} = CPF_p \cdot dose_{pij}$$

In most cases, CPF specific for the inhalation pathways were used. However, some chemicals, in addition to being inhaled, can deposit on the ground in particulate form and contribute to risk through ingestion of soil or through other routes. To account for the additional risks from exposure to non-inhalation pathways, multi-pathway CPFs were used where available from OEHHA. Risks were not estimated for chemicals lacking OEHHA approved toxicity values.

When the pollutant concentration term is dropped from the dose equation, the remaining terms represent a constant cancer risk weighting factor of $WF = 677$ [m$^3$/µg]/[mg/(kg day)], irrespective of pollutant. Because the pollutant concentration term is calculated by multiplying the annual average emission rate of a pollutant from an emissions source by the dispersion factor of that source (**Section 4.1.2**), the cancer risk equation becomes:

$$risk_{pij} = CPF_p \cdot WF \cdot ER_{pj} \cdot F_i$$

The total per-million cancer risk is then the sum of the pollutant-specific risk values ($p$). These can be further summed over all emission sources ($j$).

A similar method was used to calculate cancer risk-weighted emissions (as presented in the Action Plan). In this calculation, the dispersion factor term was dropped from the equation above, and

[86] An $ef$ of 350 days per year was used, which represents the number of days an individual will reside in their home less approximately two weeks of vacation. This value is consistent with current OEHHA and EPA guidance.

annual average emissions (tpy) were multiplied by 677 [mg/(kg day)]/[µg/m$^3$] and pollutant-specific inhalation slope factors (**Attachment 1**). For sources that emit multiple TACs, the total cancer risk-weighted emissions were calculated by summing the cancer risk-weighted emissions for each pollutant. The resulting units are then inverse of the dispersion factor expressed in tpy rather than g/s, which can be thought of as a risk-weighted sum of emissions. For example, given annual DPM emissions from the OGRE railyard (diesel-fueled switchers) are 0.08 tpy, the cancer-risk weighted emissions are then: 0.077 tpy · 677 [mg/(kg day)]/[µg/m$^3$] · 1.1 (mg/kg day)$^{-1}$ ≈ 57 tpy / (µg/m$^3$) ("cancer-risk weighted [CRW] tpy").

## 4.2 Spatial Distributions and Source Apportionment

### 4.2.1 Source Apportionment

As modeling was performed for each emissions source separately (**Section 3.1**), the contributions from each source $s_j$ to the quantity $Y_i$ at each receptor $r_i$ can be tracked and then compared to those contributions from other sources; this is generally termed a *source apportionment*. In this analysis, the results are already apportioned to sources by virtue of running each source individually in AERMOD.

Furthermore, rather than examine the contributions at receptors from each individual source (e.g., a single generator, on-road mobile sources on individual roadways), contribution can be examined from *source categories* (e.g., permitted stationary sources, passenger vehicles on freeways). Sources within a source category may be similar in how they are managed or regulated, their emissions processes, their geographic locations, or are of particular research interest. An individual source can only belong to a single source category. Then, the total of a quantity at a receptor can be expressed as the sum of contributions from different source categories $s_J$, as:

$$Y_{iJ} = \sum_{j \in J} Y_{ij}$$

$$\text{and} \quad Y_i = \sum_J Y_{iJ} = \sum_j Y_{ij}$$

### 4.2.2 Interpreting Map Products

Annual average $PM_{2.5}$, DPM, and cancer risk in West Oakland are presented in a series of maps and map-based products (tables and charts at different locations within the domain). When drawing conclusions from maps, it is important to consider the assumptions used to derive the underlying data.

Specifically, the maps were derived from air dispersion modeling that were used to calculate concentrations and cancer risk estimates from direct emissions. The maps themselves, therefore, portray concentrations associated with directly emitted $PM_{2.5}$ and DPM, as well as cancer risk associated with directly emitted TACs. The results do not reflect regional or long-range transport of air pollutants, nor the effects of the chemical transformation (formation or loss) of pollutants.

However, some discussion of background concentrations resulting from those processes is provided (**Section 3.6**).

Finally, output from AERMOD at receptors represents a value sampled at a single point in space; that is, the values are not averages over grid cell volumes (as output from models such as CMAQ). Therefore, while results at regularly space receptors can be mapped as “grid cells” (raster), the values do not necessarily represent the average value over the area of the “grid cell.” The results at receptors also reflect the choice of flagpole receptor height (1.8 m); while some sources may emit a large quantity of pollutants, these pollutants may not necessarily impact receptors near ground-level if the release heights are much higher.

### 4.2.3 Spatial Aggregation

Receptors were placed every 20 m within the Receptor Domain to adequately capture concentration gradients around various sources. Results can be plotted as “grid cells” centered at each receptor. However, results summarized at larger spatial scales can be more useful when examining population exposures or proposed mitigation measures.

In this analysis, spatially aggregated results were generated by computing the arithmetic average within specific polygons, i.e., the sum from all source categories over all receptors within the polygon divided by the number of receptors. If a polygon contains a subset of receptors $n = |I|$ ($r_{i \in I}$), then:

$$Y_{IJ} = \frac{1}{n} \sum_{i \in I} Y_{iJ}$$

$$\text{and} \quad Y_I = \sum_J Y_{IJ}$$

Three types of spatial aggregation polygons were used, and further details of how they were defined are discussed below:

(1) **Hexagons** were used to form a complete “hexagon grid” of adjacent regular hexagons with a long diagonal of 100 m (incircle radius of 43.3 m);

(2) **Zone polygons** covering seven areas in the West Oakland community (**Figure 4-1**).[87] Within these zones, results were also presented as pie charts, where source categories were further aggregated for simplicity (Highways, Surface Streets, Port, Rail, Permitted, and Other); and

(3) **Census blocks** within the West Oakland community (**Figure 4-2**) were namely used to obtain a *population-weighted result* (or “*residential impact*”). Population-weighted results can help emphasize how air pollution affects areas where residents live. For this approach, the TIGER polygons from the 2010 Decennial Census were used with

[87] These locations were selected in consultation with project co-leads and generally represent areas where pollutant concentrations are known to be elevated based on previous research and/or sensitive receptors.

corresponding 2010 population (**Figure 4-2**), and results were weighted by the population within the polygon as a proportion of the total population summed across all polygons.[88]

Results based on source category and spatial aggregations were combined into interactive maps, which can be used to represent the spatial variation of pollutant concentrations and cancer risk across West Oakland, and to represent the spatial variation of the incremental contributions from different source categories across West Oakland. Taken together, these results are intended to aid local planning efforts by identifying areas or sources where emission reductions may be needed and by providing information on the sources which are contributing to air quality impacts at specific receptor locations.

[88] Although the absolute population of West Oakland has changed since 2010, the population-weighted results only depend on the relative spatial distribution of population among census blocks. Relative changes in this distribution during inter-decennial years (2011–2019) are difficult to estimate accurately; population data at the block level are not published as part of inter-decennial Census products (e.g., American Community Survey).

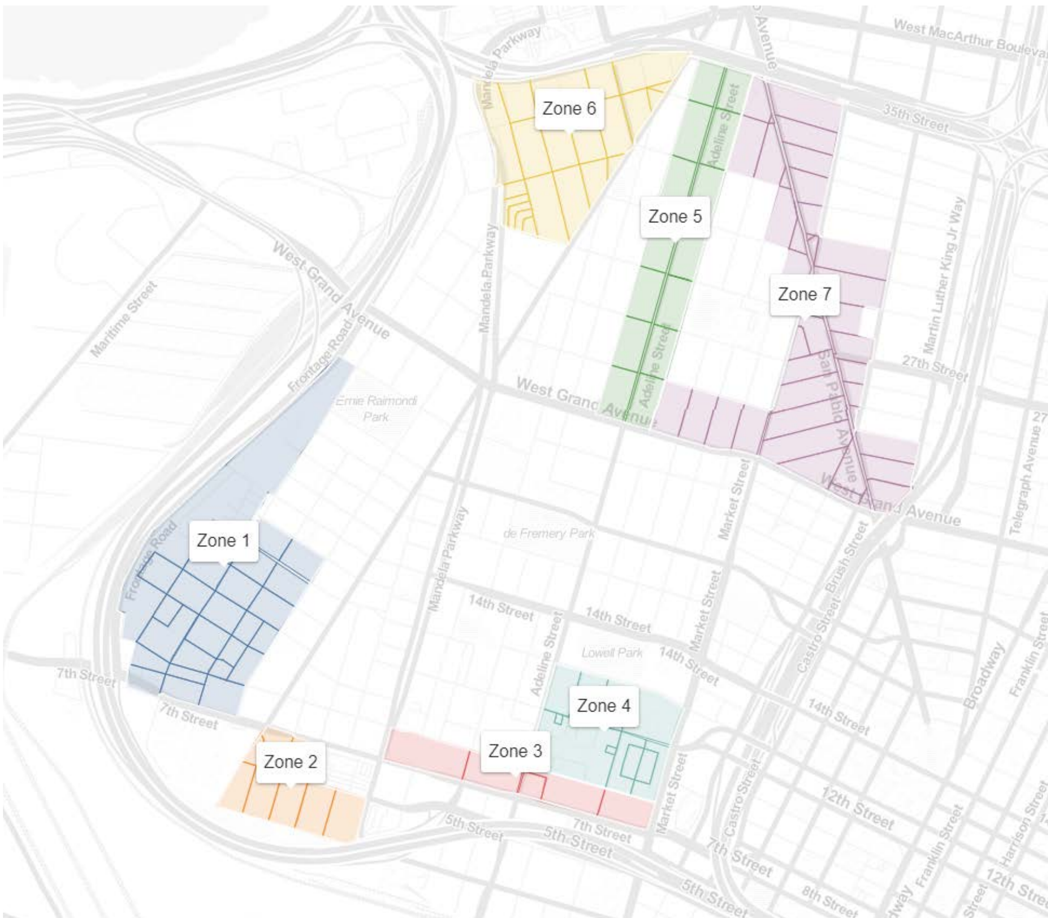


**Figure 4-1.** Zones in the West Oakland community used to assess air quality in this study: 1: Lower Bottoms / West Prescott, 2: 3rd Street, 3: 7th Street, 4: Acorn, 5: Upper Adeline, 6: Clawson, 7: West Grand & San Pablo.


**Figure 4-2.** Percentage of total population by census block in West Oakland, based on 2010 Decennial Census data. Total population for the census blocks examined in West Oakland in 2010 was 33,561 (based on 1,029 census blocks). Only census blocks within the West Oakland community boundary are outlined (blue lines); census blocks with no population are not colored.

# 5. Results

Annual average local $PM_{2.5}$, DPM, and cancer risk results derived from dispersion modeling are presented in this section in a series of maps. Additionally, a source apportionment is performed where information is provided on the relative contributions of the source categories described in previous sections: permitted stationary sources, on-road mobile sources (by road type and vehicle category), Port-related sources (e.g., OGVs, CHE), locomotives on rail lines and at railyards, and other sources (e.g., truck-related businesses). All results are presented with respect to the total emissions represented in the community-scale emissions inventory as noted in **Section 2.1.5**, unless otherwise specified.

## 5.1 $PM_{2.5}$ Concentrations

Based on combined AERMOD results from all sources, the annual average $PM_{2.5}$ concentration associated with local sources in the West Oakland averaged over the community domain[89] was 1.71 µg/m$^3$, with local concentration contributions exceeding 4.0 µg/m$^3$ in areas that are proximate to large emission sources and roadways (**Figure 5-1**). This annualized value reflects an average of all receptors in the domain; when the calculation is weighted by population in Census blocks (i.e., residential areas), the annual average local $PM_{2.5}$ concentration increases slightly to 1.73 µg/m$^3$, largely due to the higher levels of road dust emissions in the residential areas.

The average local $PM_{2.5}$ concentration was 1.71 µg/m$^3$, whereas the background concentration was 6.9 µg/m$^3$ (**Section 3.6**), resulting in a total average $PM_{2.5}$ concentration of 8.61 µg/m$^3$. This value compares well with the annual average $PM_{2.5}$ concentration of 8.7 µg/m$^3$ measured at the West Oakland monitoring site (in 2016). Based on this modeling analysis, local sources account for ~ 20% of the annual average $PM_{2.5}$ concentration in West Oakland.[90]

## 5.2 DPM Concentrations

The annual average DPM concentration associated with local sources in the West Oakland community domain was 0.39 µg/m$^3$, with concentrations exceeding 1.0 µg/m$^3$, namely in areas that are proximate to the Port and railyards (**Figure 5-2**). When the calculation is limited to receptors in residential areas, the annual average local DPM concentration decreases to 0.25 µg/m$^3$, as the highest local DPM concentrations are generally near the Port rather than residential areas.

The average local DPM concentration was 0.39 µg/m$^3$, whereas the background concentration (**Section 3.6**) was estimated as 0.46 µg/m$^3$, resulting in a total average DPM concentration of 0.85 µg/m$^3$ in West Oakland. Based on this modeling analysis, local sources account for about ~ 46% of the annual average DPM concentration in West Oakland.

[89] Results averaged over the "community domain" include all receptors within the Receptor Domain that intersect the Community Boundary (*c.f.* **Figure 1-1**, **Figure 5-1**). The Receptor Domain does not completely cover the Community Boundary; the areas that are excluded are mainly in the Port and over the Bay Bridge.

[90] This local contribution only accounts for directly emitted $PM_{2.5}$ emissions. However, it is likely that the secondary formation of $PM_{2.5}$ from precursor emissions in the West Oakland domain will largely occur beyond the boundaries of the domain.

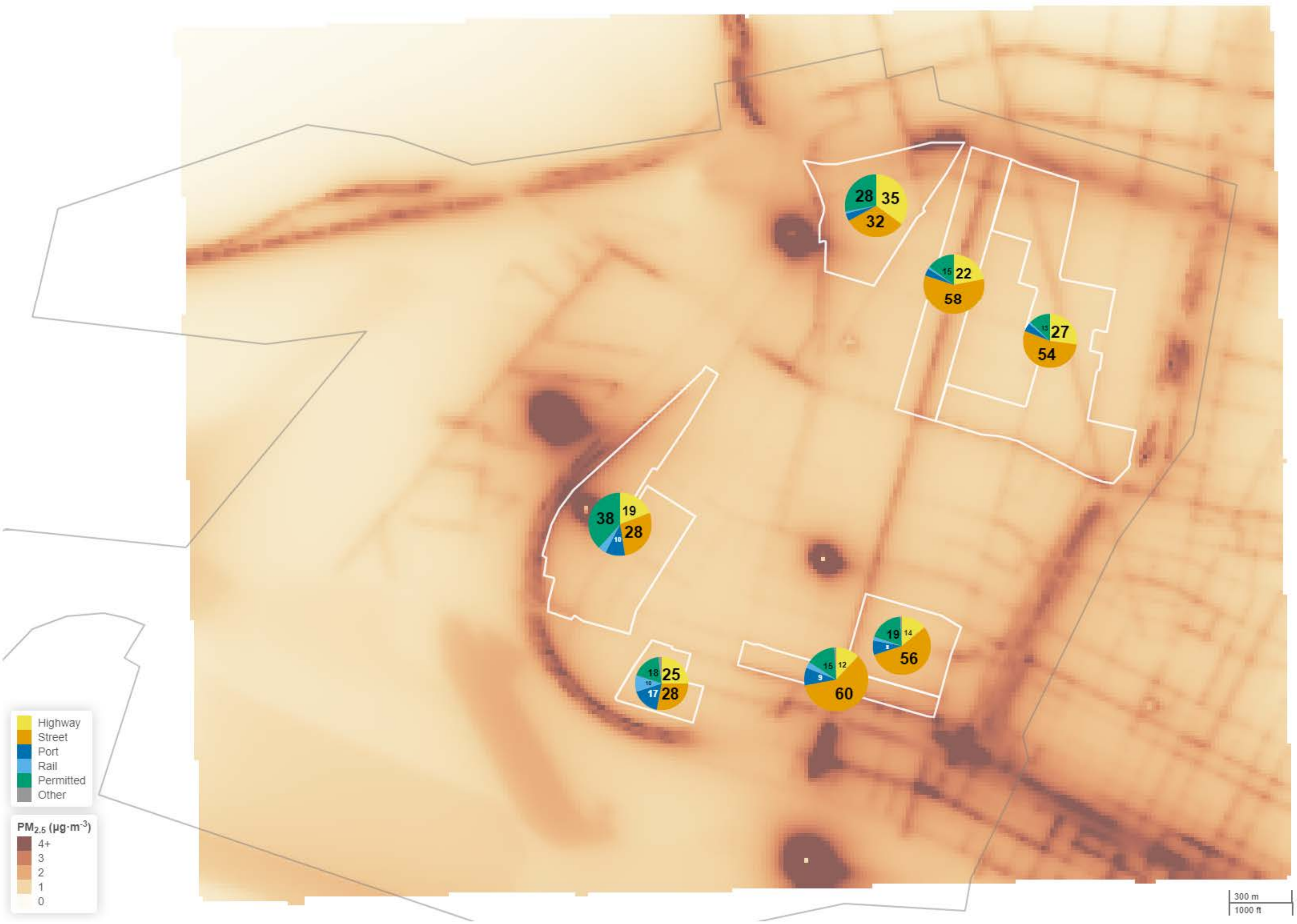


**Figure 5-1.** Annual average $PM_{2.5}$ concentrations associated with modeled local sources in the West Oakland Receptor Domain (colored extents). Pie charts indicate the percentage of concentrations contributed from specific Source Categories in each zone (white polygons, **Figure 4-1**); the size of the pie chart indicates the total magnitude of the concentration. The grey line indicates West Oakland Community Boundary. Outlines of other geographical features (roadways, etc.) are omitted for clarity.

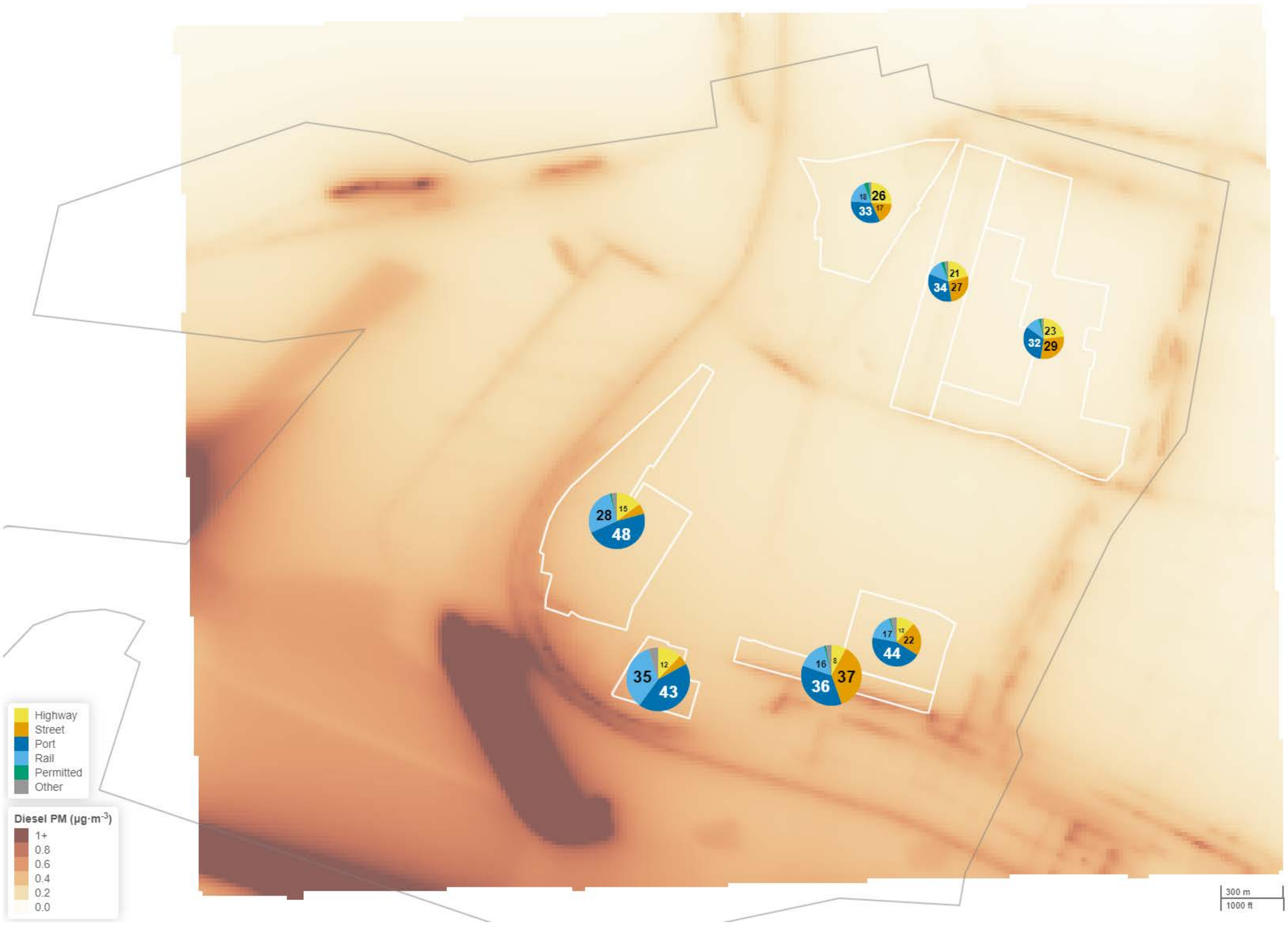


**Figure 5-2.** Annual average DPM concentrations associated with modeled local sources in the West Oakland Receptor Domain (colored extents). Pie charts indicate the percentage of concentrations contributed from specific Source Categories in each zone (white polygons, **Figure 4-1**); the size of the pie chart indicates the total magnitude of the concentration. The grey line indicates West Oakland Community Boundary. Outlines of other geographical features (roadways, etc.) are omitted for clarity.

## 5.3 Cancer Risk

Based on combined AERMOD results from all sources, the excess (local) cancer risk associated with local emissions sources in the West Oakland Source Domain was 303 in-a-million people, with risk values exceeding 1,000 in-a-million in areas that are proximate large emission sources, especially those that emit high levels of DPM (**Figure 5-3**). Furthermore, the annual excess cancer risk decreases to 199 in-a-million when weighted by population, as the highest air toxic concentrations are generally near the Port and the Schnitzer Steel facility rather than residential areas.

The total excess cancer risk in West Oakland is than 724 in-a-million, based on a background value of 421 in-a-million (**Section 3.6**) and a local value of 303 in-a-million. Based on this modeling analysis, local sources account for ~ 42% of the excess cancer risk in West Oakland.

## 5.4 Source Apportionment

To support source apportionment analyses, AERMOD results for all sources were combined in a series of interactive digital maps that allow users to click on a location of interest and view a tabular summary of the contributions of individual local sources to the $PM_{2.5}$ concentration, DPM concentration, and excess cancer risk at that location.[91] The percentage contribution from source categories to the domain-wide averages, and by location or zone were also generated (as depicted by the pie charts in **Figures 5-1**, **5-2**, and **5-3**).

Source contributions to annual average local $PM_{2.5}$ concentration (1.71 µg/m$^3$), annual average local DPM concentration (0.39 µg/m$^3$), and excess cancer risk (303 in-a-million) are tabulated by emissions source category in **Table 5-1**. For $PM_{2.5}$, the main sources include road dust, passenger vehicles (especially on highways) and MHDT/HHDTs. Some stationary sources (e.g., Pinnacle Ag Services, Schnitzer Steel) also contribute a comparable amount. For DPM and cancer risk, the main source include MHDT/HHDTs, assist tugs, OGVs, and locomotives and railyard activity.

Source contributions to local $PM_{2.5}$ concentrations, DPM concentrations, and excess cancer risk within Zones in the West Oakland domain vary by location, and the interactive maps described above allowed users to investigate those variations. For example, while Zone 2 (3rd Street) and Zone 3 (7th Street) are close to each other (< 1 km), the proportions of difference source categories to the overall excess cancer risk within the zones varies considerably (**Figure 5-3**, **Table 5-1**).[92] Within Zone 2, key sources include those in the Port (especially assist tugs and OGVs) and rail (UP railyard and locomotives on rail lines). In contrast, within Zone 3, key sources include those in the Port (assist tugs and OGVs) and on-road mobile sources on surface streets (especially MHDTs/HHDTs).

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[91] See: http://www.baaqmd.gov/ab617woak.
[92] The results within two zones are presented here. Results at other sensitive receptors in West Oakland are available elsewhere.

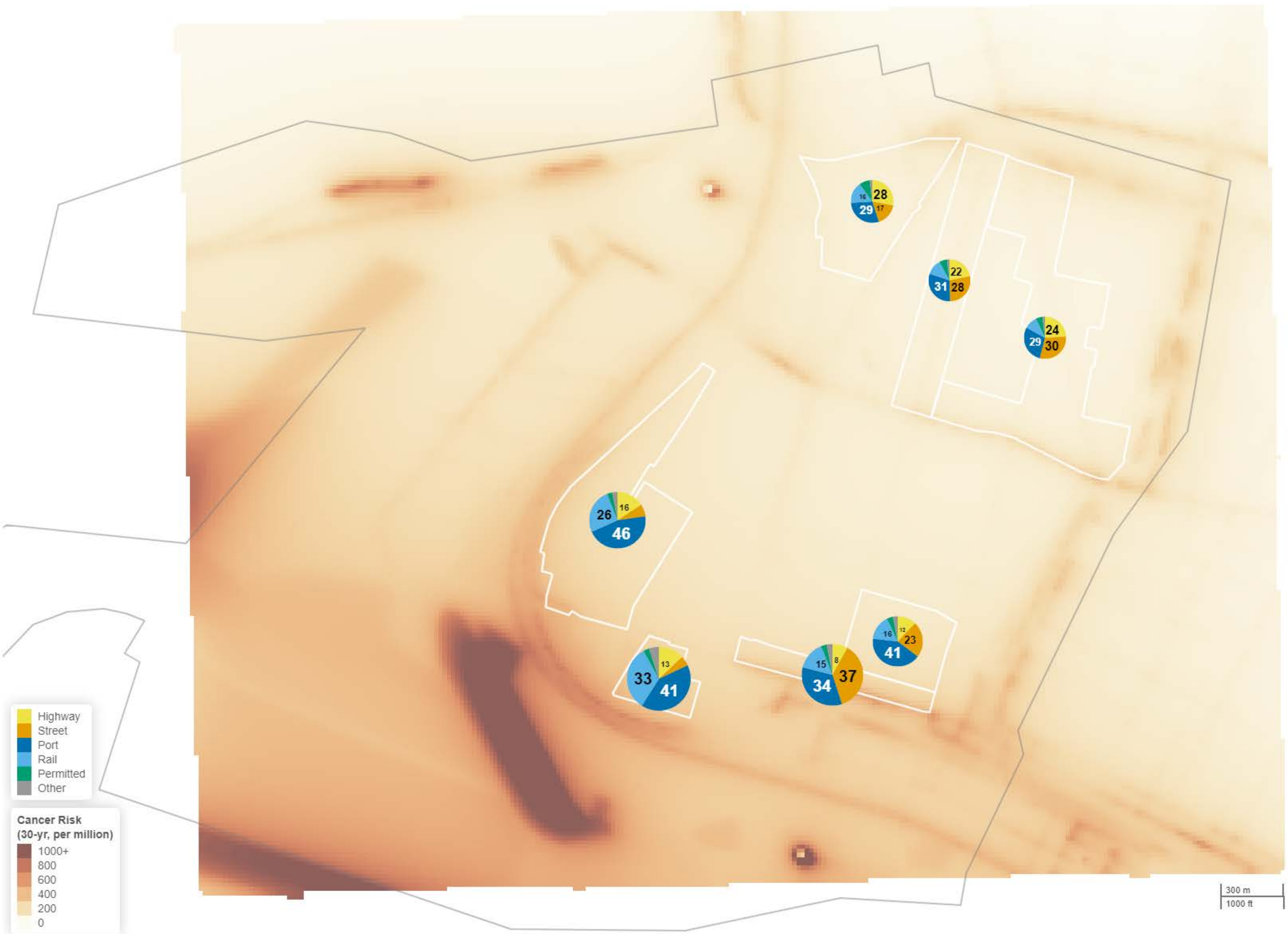


**Figure 5-3.** Annual average excess cancer risk associated with modeled local sources in the West Oakland Receptor Domain (colored extents). Pie charts indicate the percentage of risk contributed from specific Source Categories in each zone (white polygons, **Figure 4-1**); the size of the pie chart indicates the total magnitude of the risk. The grey line indicates West Oakland Community Boundary. Outlines of other geographical features (roadways, etc.) are omitted for clarity.

**Table 5-1.** Source contributions to the annual average $PM_{2.5}$ and DPM concentrations and excess cancer risk across the West Oakland community area. Port Truck contributions represent those from Port Trucks on all roads and within Port terminals.

| Source Category | $PM_{2.5}$ | | DPM | | *risk* | |
|---|---|---|---|---|---|---|
| | μg/m³ | % of total | μg/m³ | % of total | per million | % of total |
| **Highway** | | | | | | |
| Non-Trucks | 0.242 | 14 | 0.004 | 1 | 7 | 2 |
| LHDT | 0.009 | 1 | 0.002 | 1 | 2 | 1 |
| MHDT/HHDT | 0.058 | 3 | 0.043 | 11 | 33 | 11 |
| Road dust | 0.103 | 6 | – | – | – | – |
| **Surface Streets** | | | | | | |
| Non-Trucks | 0.107 | 6 | 0.002 | 1 | 4 | 1 |
| LHDT | 0.005 | < 1 | 0.001 | < 1 | 1 | < 1 |
| MHDT/HHDT | 0.038 | 2 | 0.029 | 8 | 22 | 7 |
| Road dust | 0.395 | 23 | – | – | – | – |
| **Port** | | | | | | |
| OGV – maneuvering | 0.023 | 1 | 0.023 | 6 | 17 | 6 |
| OGV – berthing | 0.048 | 3 | 0.026 | 7 | 20 | 7 |
| Dredging | 0.020 | 1 | 0.020 | 5 | 15 | 5 |
| Assist Tugs | 0.071 | 4 | 0.073 | 19 | 55 | 18 |
| Bunkering (tugs, pumps) | 0.005 | < 1 | 0.005 | 1 | 4 | 1 |
| CHE | 0.027 | 2 | 0.027 | 7 | 20 | 7 |
| Port Trucks | 0.023 | 1 | 0.012 | 3 | 10 | 3 |
| Road dust | 0.043 | 3 | – | – | – | – |
| Railyard – OGRE | 0.004 | < 1 | 0.005 | 1 | 4 | 1 |
| Railyard – BNSF | 0.009 | 1 | 0.010 | 3 | 8 | 2 |
| **Rail** | | | | | | |
| Locomotives | 0.026 | 2 | 0.028 | 7 | 21 | 7 |
| Railyard – UP | 0.057 | 3 | 0.062 | 16 | 46 | 15 |
| **Permitted** | | | | | | |
| CA Waste (10th Street) | 0.029 | 2 | – | – | – | – |
| California Cereal | 0.034 | 2 | – | – | < 1 | < 1 |
| CASS | 0.005 | < 1 | – | – | < 1 | < 1 |
| Dynegy | 0.001 | < 1 | < 0.001 | < 1 | < 1 | < 1 |
| EBMUD | 0.056 | 3 | 0.002 | 1 | 2 | 1 |
| Pinnacle Ag Services | 0.095 | 6 | – | – | – | – |
| Schnitzer Steel – stationary | 0.090 | 5 | – | – | 5 | 2 |
| Sierra Pacific | 0.054 | 3 | – | – | – | – |
| Other | 0.022 | 1 | < 0.001 | < 1 | 2 | 1 |
| **Other** | | | | | | |
| Ferry/Excursion vessels | 0.006 | < 1 | 0.006 | 2 | 5 | 2 |
| Schnitzer Steel – OGV | 0.002 | < 1 | 0.002 | 1 | 2 | 1 |
| Schnitzer Steel – trucks | 0.001 | < 1 | < 0.001 | < 1 | < 1 | < 1 |
| Truck-related businesses | 0.002 | < 1 | 0.002 | 1 | 2 | 1 |
| **Total** | **1.710** | **100** | **0.385** | **100** | **303** | **100** |

**Table 5-2.** Residential (population-weighted) source contributions to excess cancer risk within Zone 2 (3rd Street) and Zone 3 (7th Street). Values have been rounded and may not necessarily sum to the values indicated in the Total row. Port Truck contributions represent those from Port Trucks on all roads and within Port terminals.

| Source Category | Zone 2 | | Zone 3 | |
|---|---|---|---|---|
| | per million | % of total | per million | % of total |
| **Highway** | | | | |
| Non-Trucks | 5 | 1 | 4 | 1 |
| LHDT | 2 | < 1 | 1 | < 1 |
| MHDT/HHDT | 38 | 11 | 22 | 7 |
| **Surface Streets** | | | | |
| Non-Trucks | 4 | 1 | 8 | 3 |
| LHDT | 1 | < 1 | 3 | 1 |
| MHDT/HHDT | 13 | 4 | 108 | 34 |
| **Port** | | | | |
| OGV – maneuvering | 20 | 6 | 16 | 5 |
| OGV – berthing | 23 | 7 | 17 | 5 |
| Dredging | 14 | 4 | 10 | 3 |
| Assist Tugs | 54 | 16 | 42 | 13 |
| Bunkering (tugs, pumps) | 4 | 1 | 3 | 1 |
| CHE | 11 | 3 | 6 | 2 |
| Port Trucks | 8 | 2 | 13 | 4 |
| Railyard – OGRE | 3 | 1 | 2 | 1 |
| Railyard – BNSF | 5 | 2 | 2 | 1 |
| **Rail** | | | | |
| Locomotives | 37 | 11 | 21 | 7 |
| Railyard – UP | 79 | 23 | 27 | 8 |
| **Permitted** | | | | |
| EBMUD | 1 | < 1 | 1 | < 1 |
| Schnitzer Steel – stationary | 7 | 2 | 8 | 2 |
| Other | 1 | < 1 | 2 | < 1 |
| **Other** | | | | |
| Ferry/Excursion vessels | 6 | 2 | 6 | 2 |
| Schnitzer Steel – OGV | 3 | 1 | 2 | 1 |
| Schnitzer Steel – trucks | < 1 | < 1 | < 1 | < 1 |
| Truck-related businesses | 8 | 2 | 1 | < 1 |
| **Total** | **346** | **100** | **323** | **100** |

# 6. Limitations, Uncertainties, and Future Improvements

In this analysis, the District qualitatively evaluated uncertainties associated with the data and methodologies used to create a bottom-up emissions inventory for the West Oakland community, the community-scale modeling approach using the AERMOD dispersion model, and the approach used to quantify air pollutant exposure, cancer risk, and perform the source apportionment. Such assumptions are inherent in efforts to characterize emissions and associated risk in complex settings and can result in or under- or over-predictions in concentration and risk estimates. While a quantitative analysis of the uncertainties may provide more useful information as to the potential variability of impacts, it was beyond the scope of this analysis,[93] especially given that uncertainties for emissions and modeling parameters are generally not available. A qualitative assessment of uncertainties can be useful as a component of a model evaluation, where the quality of the output information (emissions, dispersion factors, concentration and risk calculations) are determined. The following sections summarize common sources of uncertainty associated with the emissions estimation, air dispersion modeling, and risk estimation components of the risk assessment.

## 6.1 Emissions Inventory

There are several sources of uncertainty associated with the bottom-up estimation of emissions from each of the source categories that may affect the subsequent estimation of exposure concentrations and risk characterization. The District identified several emission sources categories where emissions estimates could be improvement.

### 6.1.1 Permitted Stationary Sources

The emissions inventory for permitted stationary source in West Oakland was developed using the District's 2017 CEIDARS report. Rather than following a traditional calendar or fiscal year, the District issues permits to facilities on a rolling 12-month period, and renews those permits every one to three years. Because of this, the emissions shown in the 2017 CEIDARS report may represent a facility's emissions from either 2015, 2016, or 2017. Uncertainties associated with the emission estimates also stem from throughput information, which varies from year to year, and the use of default emission factors. The District did attempt to correct emissions for the largest emissions sources (such as Schnitzer Steel) to better reflect the latest source test results and facility modifications completed by the end of 2017. The District will continue to make improvements to the stationary source database by incorporating source test results as they become available, and by updating emissions factors as necessary.

### 6.1.2 On-Road Mobile Sources

For on-road mobile emissions, uncertainties are primarily associated with link-specific traffic activity, especially fleet mix, and emission factors for Port Trucks, as well as tire wear, brake wear, and road dust.

[93] The District is performing a quantitative evaluation of AERMOD dispersion modeling results for black carbon in a separate study.

*(a) Fleet Mix*

Estimates of fleet mix by roadway link, represented as the fraction of trucks of the total fleet, have significant uncertainties. On surface streets, truck fraction information relied on traffic counts from only four counters over a limited period (1 week) in 2008; the fleet mix could therefore be outdated, and the data from these counter locations may not be representative of all surface streets. On highways, while truck fractions were derived from PeMS, which has higher spatial and temporal coverage (e.g., based on a full year of continuous measurements at several counter locations on each highway), the method of detection still has inherent uncertainties: single loop detectors were used to estimate truck volume based on lane-by-lane flow and occupancy at 5 min resolution, instead of actual truck counts measured by the Automatic Vehicle Classifiers (AVCs) using technologies such as weigh-in-motion (WIM). WIM-based truck traffic counts were available at a limited number of locations but only in 2010, and were therefore not used in this analysis.

The fraction of Port Trucks within the Truck 2 category (MHDTs and HHDTs) was derived using O-D analysis on the StreetLight platform. Data on this platform is GPS-based, and the District designed 49 gates to best capture Port Truck activity in the West Oakland community. There is uncertainty in both actual traffic counts (as no evaluation was performed) and the limited spatial coverage of gates selected.

For the West Oakland community, the VMT-based overall Port Truck fraction within the Truck 2 category derived from StreetLight for 2017 is about half of that estimated in the 2009 truck survey. The decrease could be largely explained by the truck prohibition regulation the City of West Oakland has implemented since 2010. However, further verification is needed when the direct measurements in more recent years become available. For example, a study using video footage acquired from Automated License Plate Readers (ALPR) to collect vehicle counts and license plates at key locations in West Oakland could be used to better estimate the size and characteristics of the Port Truck fleet. The license plate data would provide the necessary information to link registration data from the Department of Motor Vehicles (DMV) or International Registration Plan (IRP) to a list of Vehicle Identification Numbers (VINs) from the Port of Oakland and the Drayage Truck Registry database, which could be used to obtain import vehicle characteristics (e.g., model year, weight class, emission control technologies, and whether the vehicle is a Port drayage truck or not). These characteristics could then be used to better estimate emission factors and emissions. If implemented, the proposed study would provide ground-truthing to improve our understanding and help validate the fleet mix data used in this analysis.

*(b) Emission Factors*

Emission factors for on-road mobile sources were obtained from EMFAC2017 and CT-EMFAC2017, which were used to estimate emissions from roadways in West Oakland, as well from fleet operating at truck-related businesses and Port Trucks operating within Port terminals.

In the future, brake wear, tire wear and re-entrained road dust emissions will dominate total PM emissions, due to increasingly stringent standards for exhaust emissions (Reid *et al.* 2016). However, uncertainties in the emission factors from these processes is much higher because of their complexity and limited research, as they are currently unregulated processes. The methods used to estimate emission factors are either outdated or based on limited measurements or stringent assumptions. For example, brake wear emissions factors in EMFAC2017 are assumed to be independent of vehicle travelling speed, despite the fact that there are often more braking events during low speed driving. CARB is sponsoring four studies that are expected to be completed next year to improve the emissions factors for brake and tire wear. While road dust emissions are estimated using AP-42 methodology, the empirically-derived equation (see **Section 2.3.3**(b)) does not take into account vehicle speed, which can affect the emission factor (U.S. Environmental Protection Agency 2011), and does not restrict the maximum emissions by the number of vehicles. Silt loading values are inherently site-specific as they vary by road type and geographic locations. In this analysis, the county-average default values were used since values specific to West Oakland roadways are not available. Uncertainty in road dust emissions is further complicated by the mismatch between roadway classification systems of the data available, where freeway on- and off-ramps were assigned to multiple functional classes and thus numerous CARB road types, which are used to determine the silt loading factor by roadway segment. This likely resulted in a slight overestimate of road dust emissions from these roadway segments.

Of critical importance to West Oakland is the estimation of emissions from Port Trucks, which in part relies on the emission factors. Some field studies have suggested that there are uncertainties in the emission factors for Port Trucks for specific model years; for running exhaust emission factors for model years 2007 to 2009, a ~ 50% increase in black carbon and ~ 100% increase in $PM_{2.5}$ between calendar years 2013 and 2015 has been observed, while EMFAC2017 estimates only a ~ 26% increase in $PM_{2.5}$ (Preble *et al.* 2016). The inconsistency is likely due to the underestimates of high emitters caused by deterioration of Diesel Particle Filters (DPFs) in EMFAC2017. Further drayage truck studies conducted near the Port of Los Angeles exhibited a similar increase in emission factor in 2015, but showed emission factors in 2017 were closer to 2013 levels (Bishop and Haugen 2018). This suggests that the underestimate of emission factors did not continue in 2017. As noted in Bishop and Haugen (2018), a potential explanation for fewer high-emitting vehicles in 2017 is that there was increased roadside compliance testing and issuance of statewide citations since 2015 by CARB; this may have encouraged corrective maintenance or relocation for some of the high-emitting trucks observed in 2015.

To develop a better understanding of how DPF failure rates can affect emission factors of Port Trucks, the District conducted a sensitivity analysis for 2017 where EMFAC2017-based emission factors of affected model years were adjusted to reflect the same deteriorations observed by Preble *et al.* (2016). The analysis suggested a < 50% underestimate in Port Truck $PM_{2.5}$ running exhaust emissions, which corresponds to a ~ 1% underestimate in the overall 2017 emissions inventory for West Oakland. For future years 2024 and 2029, there should be no impact as the 2007-2009 model year group will be phased out by January 1, 2023 according to CARB's Truck and Bus Rule.

*(c) Other Emission Processes*

While the inventory developed for this analysis represents the majority of $PM_{2.5}$ and DPM from on-road mobile source activity, emissions generated from other operational processes (e.g., start emissions) may be developed in future emissions inventories and may be included in air dispersion modeling if relevant spatial and temporal data are available.

### 6.1.3 Truck-Related Businesses

Estimating emissions from truck-related businesses is inherently uncertain since business operations, such as activity patterns and fleet mix, are generally unknown. Truck fleet size estimates were based on responses District surveys (2009 or 2019 when available). When the District did not receive a response, a default truck fleet size and mix were assigned to the business. The District also applied a default truck fleet mix based on the 2009 West Oakland Truck Survey since fleet mix was not reported in the 2019 survey. The number of trucks reflects the trucks owned or operated by the business but excludes other trucks that visit the premises for business purposes.

In previous surveys conducted by the District (Bay Area Air Quality Management District 2009), the District found that all trucks complied with the 5 min idling regulation adopted by CARB (California Air Resources Board 2004). To be conservative, the District intentionally used a higher value of 15 min of idling per truck trip for all businesses. The accuracy of this assumption is unknown; this will certainly cause an over-prediction of air pollutant exposure from this source category, but without a more detailed or recent survey, it is difficult to quantify the uncertainties.

The results of this analysis suggest that truck-related businesses are relatively minor contributors to the overall air pollution and cancer risk in West Oakland. However, the District may consider a more detailed survey in the future to ensure the accuracy of the predictions and include any changes in business operations. The District may also incorporate additional truck-related businesses as information becomes available.

### 6.1.4 Port-Related Sources

Emissions for Port related activities were taken from the 2017 Port Inventory, prepared by Ramboll (2018). Because the District relied on data provided by the Port, it is difficult to quantify the uncertainties in the emissions estimates. In general, emission inventories have several sources of uncertainties including emission factors, equipment population and age, equipment activity, load factors, and fuel type and quantity. Most uncertainties are associated with the emission factors and engine load factors that were obtained from previous studies, literature reviews, and emission models developed by CARB. To improve the accuracy of the emissions estimates (and reduce uncertainty), the District only used emissions developed using more accurate data on OGV speeds inside the Bay, more realistic OGV emission factors under low load operations, and inclusion of emissions from bunkering that was not quantified in past inventories.

The 2017 Port Inventory, and therefore the emissions inventory presented herein, excludes emissions from smaller emissions sources within the Port, such as TRUs and gasoline powered light-duty vehicles. However, TRUs plug into shore power at the Port (which means they do not run their own engines, thus reducing emissions), and there are few gasoline powered vehicles compared to diesel-powered trucks operated by the Port. Therefore, emissions from these sources are not considered significant, and the overall effect on the Port emissions inventory is minimal.

### 6.1.5 UP Locomotives and Railyard

Freight activity is not always predictable and annual emissions vary by year depending on regional economics. Although the District used the most accurate emissions available, the District can improve the rail emissions inventory by (1) using Tier-specific emissions factors for locomotives and switchers, (2) including other activities and associated emissions at the railyard, and (3) spatially and temporally allocating activities and emissions along the yard and rail lines.

Using a fuel-based emissions inventory is the preferred method for developing an accurate inventory, as performed for the UP freight locomotives and railyard. The District converted the fuel consumption by rail link provided by UP to emissions using a fuel-based emission factor obtained from EPA, which are based on average operating duty cycles and an estimated average nationwide fleet mix for both switcher and line-haul locomotives. Using locomotive-specific conversion factors would yield better estimate of emissions, as fleet mixes vary from railroad to railroad and can be highly regionalized. And, though the use of Tier-specific emission factors (e.g., as shown in **Table 6-1**) could be used to improve the emissions inventory, it is also recognized that individual engines and thus emission factors are highly variable within Tier categories, depending on the specific locomotive model, operation cycle, and condition of operation (Bergin *et al.* 2012). In this analysis, it is not known whether the use of nationwide fuel-based emission factors may have resulted in under- or overestimates of emissions, given that detailed information on the locomotive characteristics and activity is not available.

**Table 6-1.** Fuel-based $PM_{10}$ emission factors for locomotive engines by Tier. Values from California Air Resources Board (2017c).

| Tier | $PM_{10}$ (g/gal) |
|---|---|
| Pre-Tier | 6.66 |
| Tier 0 | 6.66 |
| Tier 0+ | 4.16 |
| Tier 1 | 6.66 |
| Tier 1+ | 4.16 |
| Tier 2 | 3.74 |
| Tier 2+ | 1.66 |
| Tier 3 | 1.66 |
| Tier 4 | 0.31 |

Another improvement for future modeling efforts is the inclusion of other sources of emissions at the UP railyard. This analysis focused on emissions from line-haul locomotives and switchers, and excluded other sources of emissions at the railyard due to lack of data. In 2008, CARB completed an HRA for the UP railyard in Oakland that evaluated the health impacts associated with TACs emissions (California Air Resources Board 2008b). According to this report, activities in the railyard include receiving inbound trains, switching rail cars, loading and unloading intermodal trains, storing intermodal containers and truck chassis, assembling outbound trains, releasing outbound trains, and repairing freight cars and intermodal containers/chassis. Specific emission sources associated with these activities include locomotives, on-road diesel-fueled trucks, CHE, TRUs and refrigerated rail cars (reefer cars), and fuel storage tanks. DPM emissions from the UP railyard in 2005 inventory from California Air Resources Board (2008b) and the 2017 fuel-based emissions in this Action Plan are presented in **Table 6-2**. Although the District's analysis did include the largest sources of emissions primarily from switcher locomotives moving rail cars, line-hauls, and on-road trucks, the analysis did exclude cargo handling equipment and TRUs/reefer cars which contribute 49% of the emissions in the 2005 inventory. For this analysis, UP confirmed that the District modeled the most significant sources of diesel PM at the railyard and that the excluded sources were minor (James Brannon, UP, personal communication, 4 April, 2019). Additionally, at the time of this analysis, emissions from these other sources were not readily available from UP, and it is unknown whether the current activity levels are consistent with operations in 2005. The decline in switcher and line-haul emissions may be an indication that non-modeled sources would likewise experience a decline due to the introduction of new equipment and fleet turnover, resulting in lower emissions.

**Table 6-2.** UP railyard DPM emissions (tpy) in 2005, from California Air Resources Board (2008), and 2017, based on the West Oakland Action Plan (this document). The percent change from 2005 to 2017. The 2017 emissions from freight haul lines includes emissions from both UP and BNSF locomotives. "n/a" indicates that the source category was not included in the 2017 emissions inventory for UP operations.

| **Source Category** | **2005** | **% total** | **2017** | **% total** | **% change** |
|---|---|---|---|---|---|
| Locomotives | | | | | |
| Haul lines (freight) | 1.6 | 14 | 0.5044 | 30 | -68.5 |
| Switchers (railyard) | 1.9 | 17 | 1.1098 | 67 | -41.6 |
| Service/testing | 0.5 | 4 | n/a | – | – |
| TRUs, reefers | 3.2 | 28 | n/a | – | – |
| CHE | 2.2 | 19 | n/a | – | – |
| On-road trucks | 1.9 | 17 | 0.0416 | 3 | -97.8 |
| **Total** | **11.3** | **100** | **1.6558** | **100** | |

The last improvement is the spatial and temporal allocation of emissions at specific railyard source locations. At the time the modeling was completed, information regarding locations of specific sources was not known. Instead, switcher engines and on-road trucks emissions were allocated on to an area that encompassed all of the rail lines, intermodal gates, locomotive service, and main yard. In subsequent discussions with UP, they confirmed that individual source locations identified in the 2008 CARB report were valid for 2017 operations (Gary Rubenstein, personal communication, 5 April, 2019; see **Figure 6-1**). The modeling assumed constant activity throughout the year but adjustments can be made in the modeling to account for temporal variations in activity level by season, time of day, or weekly.

UP is in the process of developing a detailed, comprehensive emissions inventory for the Oakland railyard which is expected to be completed by the end of 2019. UP expects to capture individual locomotive characteristics and movements to develop a bottom-up inventory of sources and emissions in the railyard. The District plans to use this detailed inventory in future UP emissions estimates that will address most of the uncertainties identified in this analysis.

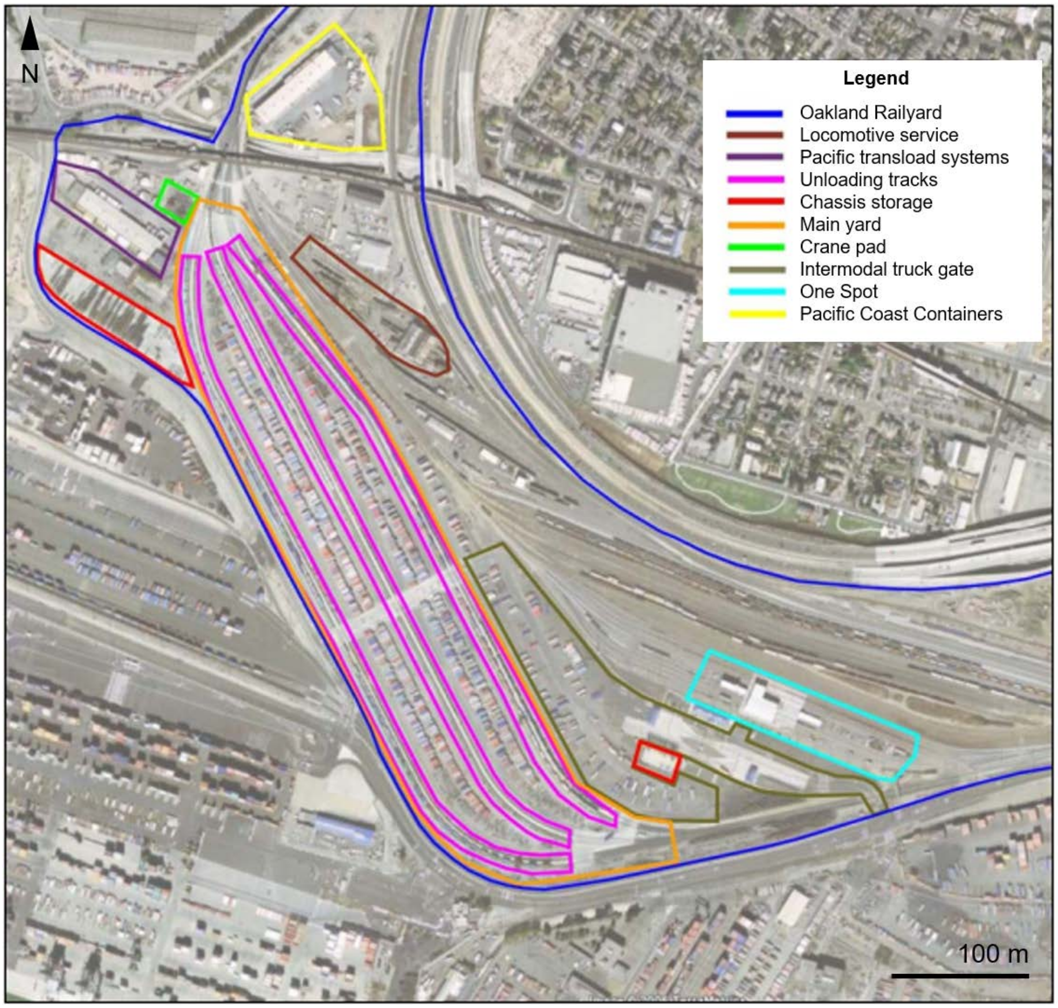


**Figure 6-1.** Layout of operations at the UP railyard in West Oakland. The components delineated represent different emissions sources (obtained from Gary Rubenstein, personal communication, 5 April, 2019).

### 6.1.6 Omitted Emissions Sources from Air Dispersion Modeling

Emissions from other sources that were not included in the community-scale air dispersion modeling were estimated using a top-down approach, as reported in **Table 2-3**. Further refinements to the emissions estimates of these source categories, in addition to their temporal and spatial allocation, would further improve the estimates of community exposure in West Oakland and source apportionment of local concentrations and excess cancer risk as presented in **Section 4**.

*(a) Commercial Cooking*

Commercial cooking emissions for West Oakland were estimated by disaggregating the District's emissions estimates for Alameda County by using spatial surrogate data developed for the regional modeling. The spatial surrogate for commercial cooking was based on the fraction of Alameda

County restaurants that fall within the West Oakland community-scale Source Domain. Approximately 10% of Alameda County restaurants fall within the West Oakland domain, resulting in 20.63 tpy of $PM_{2.5}$ emission in 2017.

To start to refine the District's understanding of commercial cooking emissions at a community-scale in West Oakland, specific restaurant locations were identified from a database purchased from InfoUSA.[94] There are 537 restaurants within the West Oakland Source Domain, where most of the facilities are in Chinatown (south of Downtown), southwest of the West Oakland community (**Figure 6-2**). In fact, only 74 of the restaurants fall within the main residential area of West Oakland, some of which may not use cooking devices that emit $PM_{2.5}$ (e.g., charbroilers, deep fat fryers, or griddles). Additional analyses are underway to evaluate the potential impact of commercial cooking in West Oakland, especially given that the majority of commercial cooking facilities are generally downwind of the West Oakland community.

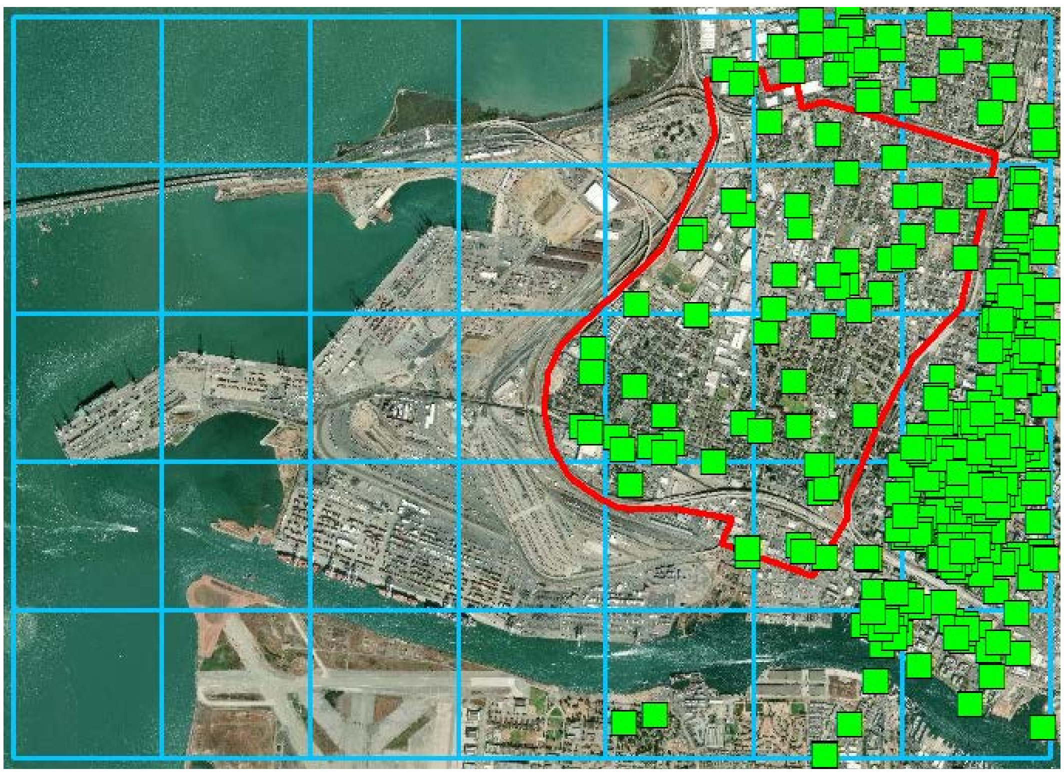

**Figure 6-2.** Restaurant locations (green squares) within the West Oakland Source Domain (blue grid). The major residential area of the West Oakland community is outlined (red line).

[94] https://www.infousa.com/

*(b) Construction*

Emissions from construction equipment and construction dust for West Oakland were estimated by disaggregating CARB's emissions estimates for Alameda County using spatial surrogate data developed for the regional modeling. Alameda County emissions data were obtained from CARB's 2016 SIP Emissions Projections Tool,[95] and the spatial surrogate was developed based on land use data from ABAG. Specifically, ABAG's Existing Land Use Data for 2000 and 2005 were compared to identify land use changes and determine where construction activity likely occurred. This approach leads to high uncertainty in emission estimates for 2017, as construction activity is highly transient, changing in scope and location from year to year. Construction emissions were not included in the community-scale modeling for West Oakland due to uncertainties associated with 2017 emission estimates and the spatial distribution of construction activities in the community. ABAG has not updated the Existing Land Use Data since 2005, and the District is currently exploring other sources of information for recent and projected construction activity in West Oakland.

*(c) Transport Refrigeration Units (TRUs)*

Emissions from TRUs were estimated at the county-level using CARB's OFFROAD model. The District disaggregated Alameda County TRU emissions to West Oakland using an industrial land use spatial surrogate which was derived from ABAG's 2005 Existing Land Use Data. Based on this surrogate, ~ 4% of Alameda County TRU emissions occur in West Oakland.

CARB has also provided the District with estimates for TRU emissions in West Oakland. CARB allocated a portion of Alameda County emissions to West Oakland using a spatial surrogate based on facilities that operate TRUs or are frequented by TRUs.[96] Such facilities include grocery stores, liquor stores, cold storage warehouses, and trans-load facilities. Approximately 80% of West Oakland emissions were classified by CARB as large (> 200,000 $ft^2$) and medium (50,000 – 200,000 $ft^2$) sized facilities. The remaining 20% of TRU emissions were allocated to operation on roadways within West Oakland.

The District's TRU emissions estimate for West Oakland are about half of CARB's estimate (**Table 6-3**). The District plans to investigate this further by contacting the 10 large- and medium-sized facilities in West Oakland identified by CARB to obtain more information regarding their TRU activity. TRU emissions may then be refined and/or included in future community-scale modeling.

**Table 6-3.** 2017 TRU emissions for Alameda County and West Oakland.

| Estimated by | Area | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|---|
| CARB | Alameda County | 6.57 | 7.30 |
| | West Oakland | 0.49 | 0.53 |
| District | West Oakland | 0.24 | 0.26 |

[95] https://www.arb.ca.gov/app/emsinv/2016ozsip/2016ozsip/.

[96] As documented in a memo, *Spatial Allocation Methodology of Transportation Refrigeration Unit (TRU) Emissions for AB617 Communities*, provided to the District by CARB on May 30, 2019.

*(d) Residential Wood Combustion*

The District developed a top-down emission inventory for residential fuel combustion in West Oakland by disaggregating county-level emissions estimates using the proportion of primary heating fuel used by households assigned to wood combustion from the 2010 Census data. This approach results in uncertainties for wood combustion emissions, as some homes may burn wood in fireplaces recreationally, but not report wood as the primary heating fuel.

Past residential wood combustion surveys conducted by the District did not include homes in West Oakland. In addition, community members have reported backyard burning that may not be reflected in the District's residential wood combustion emissions estimates. Due to these uncertainties, and especially given the lack of spatial information, this source category warrants further investigation and was not included in community-scale modeling efforts.

## 6.2 Air Dispersion Modeling

While AERMOD is a state-of-the-art dispersion model for near-field applications, there are still inherent uncertainties associated with the model calculations.

### 6.2.1 Model Formulation

Generally, a model is a (often) simplified representation of a real-world system, where complex processes are parameterized and characterized using equations that are solved by a computer. Some uncertainties in the results are inherent to a model itself, and thus may be referred to as "irreducible" errors or uncertainties. The District used the AERMOD dispersion model to estimate the dispersion factors and consequently pollutant concentrations in West Oakland to which the population could be exposed. AERMOD uses simplified atmospheric physics and scaling concepts to simulate air pollutant dispersion. Some uncertainties in the results arise from the model's inability to represent the complex aerodynamic and dispersion processes.

Specifically, AERMOD is a steady-state plume model; this means that only a single set of temporally averaged (usually 1 h) meteorological parameters are used to represent the atmospheric state over the averaging time at any point in space, i.e., meteorological conditions are spatially homogeneous. This can potentially be problematic in coastal areas or in areas of complex terrain, where wind fields can have high spatiotemporal variability. Given the proximity and orientation of the Bay surrounding the West Oakland community, only using a single meteorological dataset introduces uncertainties to the potential dispersion of pollutants. Wind directions from the meteorological dataset from OST, located to the northwest of the modeling domain, used in AERMOD were predominantly from the northwest (**Figure 3-2**). These winds influence the dispersion from emissions sources at any location within the domain, though winds likely have a more southerly component at locations along the channel and Inner Harbor. As a result, dispersion to locations in the northeastern section of the domain may be slightly underestimated. And, while AERMOD uses a dividing-streamline concept to model dispersion of plumes around topographic features (Cimorelli *et al.* 2004, Snyder *et al.* 1985), the inherent uncertainties in this formulation are likely less important for dispersion modeling in West Oakland, as the area is relatively flat (**Figure 3-19**).

AERMOD also does not account for small-scale flow patterns and dispersion around structures or recirculation and channeling in urban canyons, as is typical in urban areas with multi-story buildings. While AERMOD can include some of the influence of building wakes on plume rise and dispersion (using the Plume Rise Model Enhancements [PRIME] model downwash algorithm [Schulman *et al.* 2000]), this calculation feature can only be used for point sources (Cimorelli *et al.* 2004); most of the emissions sources in this analysis were modeled as area and volume sources.

The performance of the AERMOD modeling system has been evaluated against several observational datasets (Perry *et al.* 2005); the accuracy of the output depends on the pollutant, type of source modeled, terrain (flat or complex), whether or not wake effects are accounted for, and the averaging period of results compared to observations (e.g., 3 h, 24 h). AERMOD tends to perform well, especially in reproducing the highest concentrations of pollutant distributions (Perry *et al.* 2005), which are often used to assess compliance with air quality regulations (e.g., National Ambient Air Quality Standards [NAAQS]) or investigate "worst-case scenarios." However, if there are additional "reducible" uncertainties associated with input data (e.g., wind direction), "composite errors in the highest estimated concentrations of 10 to 40 percent are found to be typical," (U.S. Environmental Protection Agency 2017, paragraph 4.1(e)). AERMOD may also underestimate lower concentrations, which can namely impact annual average estimates (Perry *et al.* 2005). While the overall distribution of pollutant concentrations may be well captured by AERMOD, the exact time and location of the concentrations may be less certain (Cimorelli *et al.* 2004, Perry *et al.* 2005), especially given the steady-state formulation.

That being said, AERMOD is currently the preferred model for near-field (≤ 50 km) dispersion of emissions, as listed in EPA's Guideline on Air Quality Models ("Appendix W" to 40 CFR Part 51; U.S. Environmental Protection Agency 2017). AERMOD is routinely used in research and regulator frameworks, performs better than similar models (e.g., Perry *et al.* 2005), and has been applied to estimate pollutant concentrations in similar studies (e.g., California Air Resources Board 2008b). The District has evaluated and used an appropriate meteorological dataset such that "reducible" uncertainties are limited (see **Section 3.2.1**). As future modeling efforts are implemented, the District will ensure that the latest versions of each model in the AERMOD modeling framework are used to reduce some of the inherent uncertainty.

### 6.2.2 Dispersion Modeling and Emissions Source Parameters

The selection dispersion modeling and emissions source parameters use for AERMOD dispersion modeling also introduce limitations and uncertainties to the results. Some of these are discussed below:

- **Urban surface roughness length**: All sources were modeled as urban sources with a surface roughness length set to 1.0 m. While this is the default value for regulatory applications in AERMOD (U.S. Environmental Protection Agency 2018b), and is considered appropriate for most applications (U.S. Environmental Protection Agency 2015a) as it is representative of centers of large towns and cities or landscapes with regularly-spaced large elements, a more representative value could be derived and used West Oakland. Though, the default value was used in this analysis to be consistent with other permit modeling performed by the District.

- **Building downwash**: The effects of building downwash were not accounted for. The building downwash option in AERMOD, using the PRIME algorithm, accounts for the buildup of air pollution in a building's cavity due to recirculating winds created by nearby buildings; the effects are governed by the building geometry and the wind direction. Typically, building downwash leads to higher concentrations downwind of the (stack) emission source. Parameters required to use this feature include the building height and dimensions; for West Oakland, these parameters could be derived from the lidar dataset used (**Section 3.4.3**(b)) or similar dataset. However, the building downwash algorithms can only be applied to point sources; they do not apply to volume or area sources, which were the primary source types used in this analysis. The District did not apply building downwash to point sources for consistency.

- **AERMOD source type selection**: Source types must be selected by the modeler to represent the physical geometry and emission characteristics of emission sources. In AERMOD, these are generally point, area, or volume sources. While the District selected source types based on general modeling guidance, previous studies, and/or engineering judgements, some AERMOD source types may not adequately capture the emissions characteristics of certain sources, while the District did not have necessary configuration information for others (e.g., see the discussion below for permitted stationary sources).

- **Missing parameters**: When modeling parameters were not known, the District used default model values or values based on general modeling guidance, previous studies, and/or engineering judgements. Modeling parameters were often selected so that the modeling would produce more conservative results.

While there are uncertainties related to dispersion modeling parameters used for all emissions source categories, those that could be improved upon in future modeling analyses are discussed below:

**Permitted Stationary Sources**: Only a limited number of facilities had complete release parameter information (**Table 2-5**). Missing parameters, such as stack height and diameter, were assigned "default" values (**Table 3-2**), which were based on previous modeling studies conducted by the District. Moreover, in spite of significant effort expended to improve the exact location of stacks and emission sources at permitted facilities, errors and uncertainties persist due to the complex arrangement of the facilities. The District also had to use either a single volume source or point source for each permitted stationary source; however, the District recognizes that some sources, particularly fugitives, tanks, and waste piles, may be more accurately modeled as area sources. In future modeling analyses, the District may seek to remove this restriction and include more site-specific emissions release parameters, where available.

**On-road mobile sources**: The main uncertainties in the modeling parameters for on-road mobile sources is related the source (roadway) width ($W$), and the release heights ($Relhgt$) assigned to each volume source. First, the width determines the initial horizontal dispersion coefficient ($Syinit$), the size of the exclusion zone ($r_{EZ}$), and therefore which receptors from the "master grid" must be excluded (**Section 3.4.1**, **3.5**) and where dispersion factors must be imputed (**Section 4.1.1**). In this analysis, the roadway width was based on road type class (originally based on the Citilabs dataset) and FHWA guidance. The highest degree of uncertainty likely applies to on- and off-ramps, since they were distributed among multiple road type classes. Second, since current EPA guidance (U.S. Environmental Protection Agency 2015b) does not include recommendations on how to model on-road mobile source emissions on elevation roadways in AERMOD, the District adjusted the release heights to account for the elevation of roadways. The structure elevation data was based on a lidar dataset (**Section 3.4.3**(b)). The resulting structure heights appeared to be overestimated (and "noisy," with a higher degree of spatial variability than expected) on surface streets (**Figure 3-5**), where it is assumed that roadways are generally at grade. An improvement or further assumption could be that structure elevation data should only be assigned to freeways and on- and off-ramps, since they are the largest source of on-road mobile source emissions, and are most likely to be above grade. This would require further refinement of the road type classes assigned to each roadway segment. Otherwise, an alternative dataset could be used, such as the Caltrans automated pavement condition survey (APCS).[97] This dataset contains the start and end elevations of roadway segments for freeways in California. As such, the elevation along each segment could be interpolated to volume source locations. However, since the primary purpose of the APCS data is to assess pavement conditions, the data is not necessarily well calibrated. Using the dataset would also require more refined geospatial processing techniques to properly match segments from the APCS shapefile to those in the Citilabs dataset. The APCS dataset also does not include all elevated roads and on- and off-ramps in West Oakland. In summary, both the width and release heights of the volume sources used to model emissions form on-road mobile sources could be improved with further refinement of road type classification, especially for on- and off-ramps.

Since there can be discrepancies between real-world emissions characteristics from a source and how they are represented in AERMOD, exposure concentrations derived in this analysis should be taken to represent approximate exposure concentrations.

### 6.2.3 Receptors

Receptors were placed at a height of 1.8 m agl; this parameter is used to conservatively model exposures within an individual's "breathing zone." Using the flagpole receptors may not always capture the highest predicted concentration, especially in cases where both the source and the receptors are elevated above the surface terrain. Concentrations estimated at receptors also only represent those that an individual may be exposed to outdoors (indoor air quality and exposure is not assessed).

[97] Currently, the most recent dataset is the 2016 Elevation APCS dataset ("Elevation2016APCS", created July 27, 2016, by the Caltrans Office of Pavement Management and Performance; available at: http://www.dot.ca.gov/hq/tsip/gis/datalibrary/Metadata/Elevation.html).

## 6.3 Risk Assessment Methodology

A risk assessment is a decision-making tool that can be used to estimate the probability of adverse health effects in humans exposed to pollutants in the environment. Risk assessment methodology uses an estimated level of contamination in the environment (concentration) while assuming a constant rate of intake and length of exposure, combined with chemical effect factors, to produce cancer risks. While mean parameters values derived from scientifically defensible studies are a reasonable estimate of central tendency, the exposure variables used in this assessment are only estimates. Therefore, that is to say, the resulting cancer risk estimated in this analysis is not the expected rate of illness in West Oakland, but is rather an estimate of potential risk that can be used to compared to risk from other sources or in communities if using a similar methodology.

Risk assessments are designed to be overly conservative to ensure that the probability, expressed as the chance of developing cancer for one million people that are exposed at a specific location, are health protective of the most sensitive population. EPA notes that the conservative assumptions used in a risk assessment are intended to assure that the estimated risks do not underestimate the actual risks posed by an emissions source, and that the estimated risks do not necessarily represent actual risks experienced by populations at or near a source (Environmental Protection Agency 1989). The methodology and parameters used in risk assessments have long been established and are accepted practice for comparing exposure and health impacts between sources. The main assumptions within the risk assessment methodology (based on OEHHA's guidance) are:

(1) Ambient pollutant concentrations (estimated from dispersion modeling in this analysis) are constant over the exposure period (30 years), while in reality, average pollutant concentrations vary on many time scales, including daily, seasonally, and inter-annually.
(2) An individual is exposed *in vitro* starting from the last trimester of pregnancy and continues to reside at the same location into adulthood and only nominally absent from the location of exposure.
(3) Some chemical toxicity values are estimated based on *in vivo* studies using animals that are extrapolated to estimate effects on humans. High chemical doses administered to these animals are often much higher than what human are exposed to in the environment.

All of these factors are designed to overestimate exposure, cancer risk, and health effects to humans. Thus, while resulting in conservative cancer risk estimates, each assumption contributes to inherent uncertainties in the results. Further uncertainties lie within the variability of in emissions from different emissions sources (which result in fluctuations of pollutant concentrations over time), changes in daily human activity patterns and therefore location of exposure (i.e., not always at the place of residence), and range of individual responses to chemical exposures (which could depend on genetics, immune system response, metabolism, etc.).

ASF values, as recommended by OEHHA, increase the effective CPF to account for increased sensitivity of younger individuals to cancer-causing pollutants. However, there may be pollutants in the urban environment whose cancer toxicity is amplified due to the presence of other pollutants (synergic effects) or because of pre-existing conditions or sensitivities; these effects are not accounted for. Furthermore, there may be pollutants whose toxicity is not yet recognized or quantified and, as such, is unaccounted for in this analysis.

While the District used CPF values recommended by OEHHA to estimate cancer risk associated with pollutant exposures from the modeled emissions sources, these values are uncertain in both the estimation of response and dose for many pollutants. For example, the level of risk for DPM is uncertain; public health and regulatory organizations, such as the International Agency for Research on Cancer (IARC), World Health Organization (WHO), and EPA, agree that diesel exhaust may cause cancer in humans, though there is uncertainty in the CPF value (see Scientific Review Panel 1998, Office of Environmental Health Hazard Assessment 2011). As such, any adopted changes to CPFs or exposure factors will be incorporated in future risk assessments for West Oakland.

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# Attachment 1. Toxic Air Contaminants

**Table A-1-1.** Inhalation CPF by Chemical Abstract Service (CAS) number. Inhalation CPFs are adjusted to account for multi-pathway slope factor, where applicable (consistent with Regulation 2-5). Chemicals listed are those that were emitted from one or more sources in the West Oakland emissions inventory (Section 2). Only those chemicals with an associated inhalation CPF were modeled and therefore included in the calculation of cancer risk (Section 4).

| CAS number | Chemical name | Inhalation CPF [(mg/(kg day))$^{-1}$] |
|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane | – |
| 75-35-4 | 1,1-Dichloroethylene | – |
| 107-06-2 | 1,2-Dichloroethane | 0.072 |
| 106-99-0 | 1,3-Butadiene | 0.6 |
| 542-75-6 | 1,3-Dichloropropene | 0.055 |
| 106-46-7 | 1,4-Dichlorobenzene | 0.04 |
| 12391-1 | 1,4-Dioxane | 0.027 |
| 1746-01-6 | Chlorinated dioxins and furans (2,3,7,8-Tetrachlorodibenzo-p-dioxin and related compounds; California TCDD equivalent) | 650000 |
| 75-07-0 | Acetaldehyde | 0.01 |
| 67-64-1 | Acetone | – |
| 10-702-8 | Acrolein | – |
| 7664-41-7 | Ammonia | – |
| 7440-38-2 | Arsenic | 180 |
| 71-43-2 | Benzene | 0.1 |
| 7440-41-7 | Beryllium | 8.4 |
| 7440-43-9 | Cadmium | 15 |
| 75-15-0 | Carbon Disulfide | – |
| 124-38-9 | Carbon Dioxide ($CO_2$) (non-biogenic) | – |
| 630-08-0 | Carbon Monoxide (CO) | – |
| 67-66-3 | Chloroform | 0.019 |
| 7440-50-8 | Copper and Copper Compounds | – |
| 18540-29-9 | Chromium (hexavalent, 6) | 560 |
| 9-90-1 | DPM (Diesel Exhaust Particulate) | 1.1 |
| 107-21-1 | Ethylene Glycol | – |
| 111-76-2 | Ethylene Glycol Monobutyl Ether | – |
| 100-41-4 | Ethylbenzene | 0.0087 |
| 50-00-0 | Formaldehyde (gas) | 0.021 |
| 7647-01-0 | Hydrogen Chloride | – |
| 7664-39-3 | Hydrogen Fluoride | – |
| 7783-06-4 | Hydrogen Sulfide | – |

| CAS number | Chemical name | Inhalation CPF [(mg/(kg day))$^{-1}$] |
|---:|---|---|
| 64742-48-9 | Isoparaffinic solvents C10+ | – |
| 67-63-0 | Isopropyl Alcohol | – |
| 7439-92-1 | Lead and Lead Compounds | 0.98 |
| 7439965 | Manganese & Manganese Compounds | – |
| 7439976 | Mercury (Inorganic) | – |
| 74-82-8 | Methane ($CH_4$) | – |
| 67-56-1 | Methanol | – |
| 74-83-9 | Methyl Bromide | – |
| 78-93-3 | Methyl Ethyl Ketone | – |
| 75-09-2 | Methylene Chloride (Dichloromethane) | 0.0035 |
| 91-20-3 | Naphthalene | 0.12 |
| 7440-02-0 | Nickel and Nickel Compounds | 0.91 |
| 10024-97-2 | Nitrous Oxide ($N_2O$) | – |
| 110-54-3 | n-Hexane | – |
| 98-56-6 | Parachlorobenzotrifluoride (PCBTF) | – |
| 50-32-8 | Polycyclic aromatic hydrocarbons (PAH) (as benzo(a)pyrene equivalent) | 86 |
| 108-95-2 | Phenol | – |
| 1336-36-3 | Polychlorinated Biphenyls (PCB) | 74 |
| 7782-49-2 | Selenium | – |
| 127-18-4 | Tetrachloroethylene (Perchloroethylene) | 0.021 |
| 108-88-3 | Toluene | – |
| 79-01-6 | Trichloroethylene | 0.007 |
| 1330-20-7 | Xylenes (technical mixture of m, o, p-isomers) | – |

# Attachment 2. Permitted Stationary Sources

**Table A-2-1.** Permitted stationary sources in the West Oakland Source Domain. "M" indicates whether the facility was modeled (×) or not (–); facilities were not modeled if either (a) there were no $PM_{2.5}$ or TAC emissions available in the database for the base year, or (b) all TAC emissions were associated with pollutants that did not have associated cancer risk toxicities. The plant number (Plant No.) indicates a unique facility. Cities are abbreviated as "O" for Oakland, "A" for Alameda, and "E" for Emeryville. The SIC code indicates the Standard Industrial Classification code. The values of *x* and *y* are the coordinates of the source centroid in UTM zone 10 North (NAD83).

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 24024 | 2150 Webster Holdings VII | 2150 Webster Street | O | 9631 | 564648.165924 | 4185022.458960 | Generator |
| × | 111616 | AAA San Pablo Fuel Inc. | 3420 San Pablo Ave | O | 5411 | 563549.336623 | 4186746.924690 | Gas station |
| × | 14532 | AC Transit General Office | 1600 Franklin Street | O | 9621 | 564409.165973 | 4184484.458940 | Generator |
| – | 23085 | Acorn Restoration | 2914 Poplar Street | O | 7641 | 562956.166026 | 4186300.458690 | Spray booth |
| × | 16713 | Alameda County Employees Retirement Assn (ACERA) | 475 14th Street | O | 4812 | 564069.166042 | 4184376.458890 | Generator |
| × | 20828 | Alameda County General Services Agency | 1111 Jackson Street | O | 9199 | 564574.165975 | 4183921.459000 | Generator |
| × | 107875 | Alameda County General Services Agency | 165 13th Street | O | 5411 | 564684.165951 | 4183963.459030 | Gas station |
| × | 10997 | Alameda County GSA | 661 Washington St | O | 9199 | 563718.490000 | 4183843.070000 | Generator and boiler |
| × | 10998 | Alameda County GSA | 400 Broadway Avenue | O | 9299 | 563845.760000 | 4183606.200000 | Standby generator |
| × | 13929 | Alameda County GSA | 1106 Madison Street | O | 9199 | 564717.040000 | 4183834.660000 | Standby generator |
| × | 17114 | Alameda County Public Works Agency | 3455 Ettie Street | O | 9532 | 562573.165973 | 4186712.458690 | Generator |
| × | 19321 | Alameda Cremations | 2900 Main Street, Suite 116 | A | 7261 | 562363.166189 | 4182717.459020 | Crematory |
| × | 3676 | Alta Bates Summit Medical Center | 450 30th Street | O | 8062 | 564611.165840 | 4186083.458850 | Generator and boiler |
| – | 22763 | Amber Flooring Inc | 3441 Louise Street | O | 1752 | 562851.080000 | 4186802.130000 | Coatings |
| × | 200693 | Amtrak | 120 Magnolia Street | O | | 562481.166186 | 4183885.458960 | Generator |
| × | 2112 | Aramark Uniform Services | 330 Chestnut Street | O | 7218 | 562723.166109 | 4183993.458910 | Boiler |
| × | 18668 | AT&T Corp | 344 20th Street | O | 4899 | 564670.058785 | 4184834.236440 | Generator |
| – | 200827 | Automotive Collision Repair | 365 26th Street | O | 7532 | 564651.165873 | 4185526.458920 | Autobody |
| – | 3069 | B and T One Hour Cleaners | 190 14th Street | O | 7216 | 564726.165955 | 4184100.459030 | Petroleum dry cleaning |
| × | 200393 | BA1 1330 Broadway LLC | 420 13th Street | O | | 564191.165976 | 4184276.458970 | Generator |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 200620 | BA1 2201 Broadway LLC | 2201 Broadway | O | | 564482.165923 | 4185116.458900 | Generator and boiler |
| × | 112534 | Bart Gas & Food | 1395 7th St | O | 5411 | 562206.166118 | 4184385.458900 | Gas Station |
| × | 20703 | Bay Area Rapid Transit Dist. (BART) | 418 Clay Street | O | 4911 | 563677.166072 | 4183706.459010 | Generator |
| × | 22703 | Bay Area Rapid Transit | 550 W MacArthur Blvd | O | 6512 | 564569.165800 | 4186899.458770 | Generator |
| × | 9684 | Bay Ship and Yacht Co | 2900 Main Street, Suite 2100 | A | 3731 | 562367.166212 | 4182722.458960 | Coatings/blasting |
| × | 12691 | Berkeley Millwork & Furniture Co | 2279 Poplar Street | O | 2511 | 562731.018032 | 4185768.066460 | Finishing with heater |
| – | 17822 | Berkeley Repertory Theatre | 2526 Wood Street | O | 5812 | 562399.166012 | 4186237.458670 | Painting operations |
| × | 21949 | Bicycle Coffee LLC | 364 2nd Street | O | 2043 | 563894.166042 | 4183377.459030 | Coffee roaster |
| × | 21713 | Blue Bottle Coffee Company | 300 Webster Street | O | 2095 | 563994.323692 | 4183422.851580 | Coffee roaster |
| × | 111014 | BNSF Intermodal | 333 Maritime St | O | 5411 | 560377.166300 | 4184470.458710 | Gas station |
| × | 15538 | BNSF Railway Co | 333 Maritime Street | O | 4013 | 562230.166190 | 4184011.458950 | Generator |
| – | 10987 | Bolero Co | 2905 Union Street | O | 7532 | 562984.165983 | 4186288.458700 | Autobody |
| × | 22884 | Broadway Franklin LLC | 1111 Broadway | O | 6512 | 564043.166022 | 4184189.458930 | Generator |
| × | 210258 | Burger King | 1240 Broadway | O | 5812 | 564138.165974 | 4184245.458950 | Charbroiler |
| × | 24153 | Cafe Tartine LLC | 325 Martin Luther King Way | O | 2095 | 563327.1661 | 4183779.459 | Coffee roaster |
| × | 10131 | California Cereal Products Inc. | 1267 14th Street | O | 2043 | 562586.166136 | 4184922.458790 | Grain system |
| – | 20665 | California Finest Body & Frame | 1415 18th St | O | 7532 | 562386.166089 | 4185378.458730 | Spray booth |
| × | 111397 | California Highway Patrol | 3601 Telegraph Ave | O | 5411 | 564529.375244 | 4186675.889090 | Gas station |
| × | 14572 | California Highway Patrol-Telecommunications | 3601 Telegraph Ave | O | 9221 | 564569.885283 | 4186642.089800 | Generator |
| × | 21295 | California Hotel | 3501 San Pablo Ave | O | 6513 | 563493.165960 | 4186770.458660 | Generator |
| × | 15740 | California Waste Solutions - Wood Street | 3300 Wood Street | O | 5093 | 562495.166064 | 4186548.458720 | Recycling |
| × | 15739 | California Waste Solutions-10St Street | 1820 10th Street | O | 5093 | 561475.166213 | 4185141.458710 | Recycling |
| × | 22649 | Caltrans | 200 Burma Road | O | 4111 | 560738.166175 | 4186460.458630 | Generator |
| × | 100210 | Caltrans - East Bay Yard | Burma Road | O | 5411 | 560755.166135 | 4186467.458670 | Gas station |
| × | 200062 | Caltrans SFOBB Maintenance Complex | 200 BURMA RD | O | 5411 | 560733.166177 | 4186456.458660 | Gas station |
| × | 146 | CASS Inc, | 2730 Peralta Street | O | 5093 | 562822.166009 | 4186107.458720 | Furnace |
| × | 21941 | Cathedral Gardens Oakland | 638 21st Street | O | 3679 | 564035.165958 | 4185114.458850 | Generator |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 1253 | Central Concrete Supply A U.S. Concrete Company | 2400 Peralta Street | O | 3273 | 562704.166064 | 4185937.458700 | Cement Silo |
| – | 21947 | Chevron Environmental Management Company | 706 Harrison Street | O | 1522 | 564240.166026 | 4183668.459020 | Soil vapor extraction |
| × | 107693 | Chevron SS #9-4800 | 1700 Castro St | O | 5411 | 563781.373230 | 4184857.894450 | Gas station |
| × | 111947 | China Town 76 Unocal #0752 | 800 Harrison St | O | 5411 | 564281.166049 | 4183753.458990 | Gas Station |
| × | 20248 | CIM Group Properties | 1901 Harrison Street | O | 6512 | 564679.140000 | 4184629.770000 | Generator and fire pump |
| × | 20345 | CIM Properties | 1333 Broadway | O | 6512 | 564093.994123 | 4184334.960920 | Generator and boiler |
| × | 23838 | City Center 1300 LLC | 1300 Clay Street | O | 6531 | 563966.165972 | 4184412.458950 | Generator |
| × | 20438 | City of Alameda Northside Pump Station | 1253 Marina Village Parkway | A | 4911 | 563904.166063 | 4182438.459100 | Generator |
| × | 14502 | City of Oakland, Environmental Services Division | 150 Frank Ogawa Plaza | O | 9199 | 564173.165992 | 4184440.458930 | Generator |
| × | 21819 | City of Oakland | 455 27th St, Fire Station 15 | O | 9229 | 564573.165885 | 4185607.458900 | Generator |
| × | 201072 | City of Oakland | 1111 Broadway | O | 9224 | 564046.420000 | 4184190.710000 | Generator |
| × | 14503 | City of Oakland, Environmental Services Division | 1 Frank Ogawa Plaza | O | 9199 | 564064.166028 | 4184463.458910 | Generator |
| × | 14291 | City of Oakland, Public Works Facilities | 455 7th Street | O | 9221 | 563833.166039 | 4183787.459030 | Generator |
| × | 14301 | City of Oakland, Environmental Services Division | 1605 Martin Luther King Jr Way | O | 9224 | 563758.972178 | 4184774.902360 | Generator |
| × | 14302 | City of Oakland, Environmental Services Division | 14th & Mandela Way | O | 9224 | 562266.166084 | 4185050.458770 | Generator |
| × | 109646 | City of Oakland Fire Station 1 | 1605 Martin Luther King Way | O | 5411 | 563796.165984 | 4184760.458890 | Gas station |
| × | 107940 | City of Oakland-Fire Department Drill Tower | 250 Fallon St | O | 5411 | 564794.166029 | 4182969.459090 | Gas Station |
| × | 106473 | City of Oakland-Police Admin Building | 495 6th Street | O | 5411 | 563821.166076 | 4183803.458970 | Gas Station |
| – | 17439 | Clear Channel Outdoor | 2865 Hannah Street | O | 5199 | 562755.165971 | 4186373.458720 | Coatings |
| × | 111913 | Clear Channel Outdoor | 2857 Hannah St | O | 5411 | 562751.166014 | 4186335.458710 | Gas station |
| × | 18641 | Color Folio Design | 1467 Park Avenue | E | 7389 | 562617.166008 | 4187249.458660 | Coatings |
| – | 20821 | ConGlobal Industries | 555A Maritime Street | O | 5085 | 560475.166256 | 4184659.458700 | Roller coater |
| – | 18431 | Continental Auto Body | 1355 Park Ave | E | 7532 | 562817.165947 | 4187280.458640 | Autobody |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| – | 23039 | Cooks Collision | 1900 Martin Luther King Way | O | 7532 | 563928.165958 | 4184901.458940 | Autobody |
| – | 23040 | Cooks Collision | 149 11th St | O | 7532 | 564697.165942 | 4183778.459030 | Spray booth |
| × | 201187 | Coolport LLC | 575 Maritime Street | O | 9224 | 560017.110000 | 4184626.200000 | Generator |
| × | 17190 | County of Alameda | 1221 Oak Street | O | 9229 | 564784.165962 | 4183908.459030 | Generator |
| × | 13908 | County of Alameda - GSA | 1401 Lakeside Drive | O | 9199 | 564725.165954 | 4183831.458990 | Generator and boiler |
| × | 18947 | County of Alameda - Public Works Agency | 8th Ave & Between Fallon St | O | 9229 | 564622.166034 | 4183582.459050 | Generator |
| × | 17739 | Cushman & Wakefield | Jack London Square | O | 6531 | 563565.166106 | 4183351.458960 | Generator |
| – | 20526 | Custom Wood Finishing | 2311 Adeline Street | O | 5712 | 563032.165995 | 4185688.458740 | Generator |
| – | 22272 | Dawit Auto Body | 4101 Martin Luther King Way | O | 7532 | 564365.165829 | 4187302.458680 | Autobody |
| × | 20537 | Department of Transportation | Toll Operations Building, SF Oakland Bay Bridge | O | 4911 | 560392.166186 | 4186542.458540 | Generator |
| × | 20586 | Digital 720 2nd LLC | 720 2nd Street | O | 4813 | 563160.166139 | 4183761.458900 | Generator |
| × | 20802 | Domain Residences, LLC | 1389 Jefferson St | O | 6512 | 563805.166051 | 4184475.458910 | Generator |
| × | 19997 | DWFIU 1999 Harrison, LLC | 1999 Harrison Street | O | 6531 | 564708.984401 | 4184731.933590 | Generator |
| × | 11887 | Dynegy Oakland LLC | 50 Martin Luther King Jr Way | O | 4931 | 563278.166088 | 4183491.458950 | Turbines |
| × | 8001 | East Bay Municipal Utility District | 1200 21st Street | O | 4941 | 562895.166049 | 4185545.458780 | Spray booth |
| × | 13712 | East Bay Municipal Utility District | 1100 21st Street | O | 4941 | 563100.165995 | 4185500.458840 | Generator |
| × | 13728 | East Bay Municipal Utility District | 375 11th Street | O | 4941 | 564204.165985 | 4184024.458980 | Microturbine |
| × | 109891 | East Bay Municipal Utility District | 2144 Poplar St | O | 5411 | 562740.166030 | 4185560.458750 | Gas Station |
| × | 13737 | East Bay Municipal Utility District PSK | 2101 7th Street | O | 4941 | 560669.166256 | 4184799.458780 | Generator |
| × | 591 | East Bay Municipal Utility District | 2020 Wake Avenue | O | 4952 | 562060.166061 | 4186640.458610 | Generator |
| × | 14238 | East Bay Municipal Utility District | 1001 W Red Line Ave | A | 4941 | 561168.166359 | 4182649.458950 | Generator |
| – | 20061 | Englund Studio | 1850 Campbell Street | O | 3369 | 562304.166125 | 4185571.458820 | Spray booth |
| × | 19971 | Essex Portfolio LLC DBA The Grand Apartments | 100 Grand Avenue | O | 1522 | 564718.017588 | 4185172.851520 | Generator |
| × | 20724 | FEMA | 1111 Broadway | O | 9111 | 564046.420000 | 4184190.710000 | Generator |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 24194 | Former Mobil and Ashland Bulk Fuel Terminals | 909 Ferry Street (Port of Oakland, Berth 23) | O | 4953 | 560392.166189 | 4185875.458610 | Soil Vapor Extraction |
| × | 22746 | Fox Television Stations Inc. on behalf of KTVU | 2 Jack London Square | O | 4833 | 564257.166075 | 4182885.459060 | Generator |
| × | 16749 | General Services Administration-East Bay Office | 1301 Clay Street | O | 9199 | 563912.165967 | 4184445.458890 | Generator and boiler |
| – | 3737 | George V Arth & Son | 110 10th St | O | 7532 | 564726.165981 | 4183733.459040 | Spray Booth |
| × | 17588 | Global Power Group, Inc | 3938 Horton Street | E | 5311 | 562750.510967 | 4187105.463270 | Generator |
| × | 111475 | Golden Bay Gas and Food | 2200 Telegraph | O | 5411 | 564367.165953 | 4185153.458910 | Gas station |
| – | 5776 | Harold's Auto Body & Paint Shop | 2126 Market Street | O | 7532 | 563487.166011 | 4185366.458800 | Spray booth |
| – | 10587 | HC Fine Finishes | 1231 24th Street | O | 7641 | 562909.166023 | 4185797.458780 | Spray booth |
| – | 200331 | High End Custom and Collision | 1649 28th Street | O | 7532 | 562714.166025 | 4186218.458670 | Autobody |
| × | 19039 | Hotel Oakland | 270 13th Street | O | 7011 | 564549.987799 | 4184129.882810 | Generator |
| – | 20036 | Hustead's Collision Center Inc | 2915 Market Street | O | 7532 | 563630.165961 | 4186090.458730 | Autobody |
| – | 378 | Ideal Cleaners | 322 14th Street | O | 7216 | 564436.165966 | 4184245.458950 | Petroleum dry cleaning |
| × | 16965 | Ikea US West Inc - 165 Emeryville | 4400 Shellmound Street | E | 5021 | 562311.166002 | 4187352.458640 | Generator |
| × | 112176 | J and O Tire | 2236 Poplar St | O | 5411 | 562850.165989 | 4185865.458780 | Gas Station |
| × | 20823 | Jefferson Oaks Housing | 1424 Jefferson St | O | 9531 | 563894.166034 | 4184557.458880 | Generator |
| × | 21940 | John Hansen & Sons Inc | 327 Clay Street | O | 5149 | 563545.166086 | 4183682.458970 | Coffee roaster |
| × | 3490 | Johnson Plating Works Inc | 2526 Telegraph Ave | O | 3471 | 564430.165947 | 4185542.458900 | Chrome plating and spray booth |
| × | 23430 | Kaiser Permanente | 1950 Franklin Street | O | 8063 | 564555.165907 | 4184744.458970 | Generator |
| × | 23431 | Kaiser Permanente | 1800 Harrison Street | O | 8063 | 564727.165920 | 4184544.459000 | Generator |
| × | 23433 | Kaiser Permanente | 410 19th Street | O | 8063 | 564328.165955 | 4184763.458920 | Generator |
| × | 24068 | KBS SOR II Oakland City Center | 505 14th Street | O | 6512 | 564019.165980 | 4184397.458960 | Generator |
| – | 10397 | Le Magic Cleaners | 1706 Franklin Street | O | 7216 | 564418.165953 | 4184573.458930 | Closed loop dry cleaner |
| × | 18110 | Level 3 Communications LLC | 1330 Broadway | O | 4813 | 564091.979994 | 4184356.933650 | Generator |
| × | 23231 | Level 3 Communications LLC | 1970 Broadway | O | 4813 | 564449.165974 | 4184842.458890 | Generator |
| – | 12569 | Lithograph Reproductions Inc | 4120 Martin Luther King Jr Way | O | 2752 | 564430.165808 | 4187306.458740 | Lithography printing |
| × | 8511 | Madison Street Press | 614 Madison Street | O | 2752 | 564529.166012 | 4183455.459030 | Printing press |
| × | 109725 | Market Street Shell #135692 | 610 Market St | O | 5411 | 563156.166075 | 4184124.458940 | Gas station |
| × | 12765 | MCI,dba Verizon Business | 1330 Broadway | O | 4813 | 564223.165967 | 4184305.458950 | Generator |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 13299 | MetroPCS California/Florida Inc | 720 2nd Street | O | 4911 | 563163.166110 | 4183762.458900 | Generator |
| × | 110209 | Mobile SS#63049 | 3400 San Pablo | O | 5411 | 563557.165952 | 4186699.458730 | Gas station |
| × | 20742 | Modern Coffee Enterprises Inc | 4059 Emery Street | E | 2095 | 563233.165888 | 4187309.458620 | Coffee roaster |
| × | 5133 | Mr. Espresso | 696 3rd Street | O | 2095 | 563275.166087 | 4183767.458960 | Coffee roaster |
| × | 2650 | Nor-Cal Metal Fabricators | 1121 3rd Street | O | 3479 | 562614.166145 | 4183939.458950 | Sandblaster |
| × | 1500 | Northern California Power Agency | 2900 Main Street, Site 1 | A | 4911 | 562350.166214 | 4182722.459010 | Turbines |
| × | 14423 | Oakland 14th Office | 475 14th Street | O | 6512 | 564070.166005 | 4184375.458960 | Generator |
| × | 19514 | Oakland Center 21 | 2101 Webster Street | O | 6512 | 564602.165884 | 4185023.458930 | Generator and boiler |
| × | 111332 | Oakland Marinas | 2 Webster St | O | 5411 | 563852.166087 | 4183149.459000 | Gas Station |
| × | 22781 | Oakland Marriott City Center | 1001 Broadway | O | 7011 | 564012.166045 | 4184110.459010 | Generator |
| × | 22033 | Oakland Museum of California | 1000 Oak Street | O | 9199 | 564818.165994 | 4183721.459080 | Spray Booth |
| × | 20527 | Oakland Unified School District | 1011 Union Street | O | 8211 | 562519.166083 | 4184691.458810 | Generator |
| × | 110551 | Oakland Valero Service Center | 2225 Telegraph Ave | O | 5411 | 564314.165906 | 4185166.458910 | Gas station |
| × | 109903 | OFD Fire Station #2 | 100 Jack London Square | O | 5411 | 563393.166112 | 4183400.458970 | Gas Station |
| × | 109994 | OFD Fire Station #3 | 1445 14th St | O | 5411 | 562259.166096 | 4185053.458770 | Gas Station |
| × | 20093 | Olympic Tug and Barge Co Inc | 321 A Avenue | A | 5171 | 562965.166147 | 4182944.458960 | Generator |
| × | 13494 | Pacific Bell | 1587 Franklin Street | O | 4813 | 564362.165940 | 4184509.458900 | Generator |
| × | 14173 | Pacific Gas and Electric | 1919 Webster Street | O | 4931 | 564560.165977 | 4184740.458900 | Generator |
| × | 14551 | Pacific Gas and Electric | 689 2nd Street | O | 4931 | 563202.166106 | 4183633.458910 | Generator |
| × | 8227 | Pacific Interment Service | 1094 Yerba Buena Ave | E | 7261 | 563548.165902 | 4187269.458640 | Cremator |
| × | 21029 | Pacific Renaissance Plaza | 388 9th St Ste 229 | O | 6512 | 564147.165974 | 4183921.458950 | Generator |
| × | 12318 | Peerless Coffee Co | 260 Oak Street | O | 2095 | 564511.166029 | 4183116.459040 | Coffee roaster |
| × | 23722 | Pinnacle Ag Services | 2440 W 14th Street | O | 3711 | 561300.166191 | 4185579.458760 | Generator |
| × | 13682 | Port of Oakland | Clay & Water Street at Jack London Square | O | 9621 | 563468.166074 | 4183346.458990 | Generator |
| × | 16715 | Port of Oakland | 651 Maritime Street | O | 1799 | 560444.166280 | 4184718.458760 | Generator |
| × | 23577 | Port of Oakland | 1599 Maritime Street | O | 4491 | 560760.166236 | 4185498.458690 | Generator |
| × | 111027 | Port of Oakland | 651 Maritime St | O | 5411 | 560444.166314 | 4184583.458760 | Gas station |
| × | 3791 | Prime Smoked Meats Inc | 220 Alice Street | O | 5049 | 564174.166067 | 4183265.459000 | Smoke house |
| × | 200462 | Prologis | 2420 West 21st Street | O | | 561611.166143 | 4186200.458680 | Generator |
| – | 18373 | PS Printing LLC | 2861 Mandela Parkway | O | 2752 | 562528.166041 | 4186330.458750 | Print press |
| – | 6191 | Quality Body and Fender | 2510 Martin Luther King Way | O | 7532 | 564096.165965 | 4185558.458880 | Autobody |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 23547 | Radio Mirchi | Pole Plaza AHN 18, Pole #110141241 | O | 7812 | 559827.166257 | 4186509.458600 | Generator |
| – | 15931 | Redline Import - Auto Collision | 2300 Market Street #C | O | 7532 | 563540.165986 | 4185575.458840 | Spray area |
| × | 106875 | Rino Pacific | 1107 5th St | O | 5411 | 562682.166122 | 4184104.458920 | Gas station |
| × | 14607 | Rotunda Partners II | 300 Frank Ogawa Plaza | O | 6552 | 564150.024407 | 4184549.804730 | Generator |
| × | 23098 | Royal Coffee Company | 2523 Broadway | O | 5812 | 564682.165897 | 4185486.458840 | coffee roaster |
| × | 14068 | S F Bay Area Rapid Transit District | 101 8th Street | O | 9621 | 564606.166019 | 4183538.459010 | Generator |
| × | 19696 | Safety-Kleen Systems Inc. | 400 Market Street | O | 4953 | 563110.166078 | 4183947.458990 | Soil vapor extraction |
| × | 23208 | Safeway #3125 | 3889 San Pablo Ave | E | 5141 | 563353.165963 | 4187112.458680 | Generator |
| × | 18658 | San Francisco Bay Bridge Toll Plaza | Bay Bridge East | O | 9229 | 560407.166233 | 4186541.458600 | Generator |
| – | 12725 | San Pablo Auto Body | 2926 San Pablo Ave | O | 7532 | 563730.165966 | 4186076.458770 | Spray booth |
| × | 20386 | Satellite First Communities, L P | 540 21st Street | O | 8361 | 564210.165960 | 4185069.458930 | Generator |
| × | 112517 | Sausal Corporation | Bay Bridge Toll Plaza | O | 5411 | 560399.166202 | 4186546.458570 | Gas station |
| × | 208 | Schnitzer Steel Products Company | Adeline Street | O | 5093 | 562499.999966 | 4183475.097660 | Electric shredder |
| – | 16860 | SFPP, L P | Bay Street, off 7th | O | 4613 | 560823.090000 | 4184843.250000 | Diesel additive tank |
| × | 18268 | Sierra Pacific | 3213 Wood Street | O | 3272 | 562424.166075 | 4186446.458730 | Aggregate |
| – | 23904 | Sila Nanotechnologies Inc | 2450 Mariner Square Loop | A | 2819 | 563636.166150 | 4182428.459110 | Wipe cleaning |
| – | 22778 | Solstice Press | 113 Filbert Street | O | 2752 | 562802.166129 | 4183786.458940 | Lithography printing |
| × | 112577 | Southern Counties Oil Company LP | 105 5th St | O | 5411 | 564515.165988 | 4183298.459090 | Gas station |
| × | 16848 | SPRINT | 1075 7th Street | O | 4812 | 562783.166090 | 4184227.458860 | Generator |
| × | 16850 | SPRINT | 114 Brush Street | O | 4812 | 563080.166080 | 4183689.458930 | Generator |
| × | 15760 | SSA Terminals (Oakland) LLC | 1999 Middle Harbor Rd | O | 4731 | 560385.166356 | 4183504.458880 | Generator |
| × | 111133 | SSA Terminals-Oakland LLC | 1999 Middle Harbor Rd | O | 5411 | 560352.166317 | 4184036.458820 | Gas station |
| – | 200748 | Stanford Cleaners | 2134 MARKET ST | O | 7389 | 563492.165996 | 4185376.458810 | Dry cleaning |
| × | 109165 | State of CA - Caltrans | Oak Bay Bridge, E Side, Toll Plaza | O | 5411 | 560420.740000 | 4186547.050000 | Gas Station |
| × | 19281 | State of California | 1515 Clay St, Elihu Harris Building | O | 9441 | 563982.971169 | 4184583.007780 | Generator and boiler |
| × | 14195 | State of California Department of Transportation | 111 Grand Avenue | O | 9621 | 564732.570000 | 4185092.270000 | Generator and boiler |
| × | 201213 | SVF Latham Square Owner LLC | 1611 Telegraph Avenue | O | | 564207.165993 | 4184578.458940 | Boiler |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| – | 21159 | Tam's Auto Body | 2300 Market Street Ste B | O | 7532 | 563536.165942 | 4185564.458800 | Spray booth |
| × | 20487 | Target Corporation Store #T2767 | 1555 40th Street | O | 5311 | 562487.166001 | 4187011.458690 | Generator |
| × | 21790 | Target Corporation Store #T2829 | 2700 5th Street | A | 5311 | 563474.166162 | 4182610.459060 | Generator |
| × | 112426 | Tfuels Inc. dba Grand Arco AMPM-C Kim | 889 West Grand Ave | O | 5411 | 563515.165961 | 4185422.458780 | Gas station |
| × | 20987 | The Ellington Community Association | 222 Broadway | O | 6531 | 563773.166110 | 4183461.459050 | Generator |
| × | 17703 | The Home Depot (Store #0627) | 3838 Hollis Street | E | 5311 | 563036.124968 | 4187011.436650 | Generator |
| × | 17073 | T-Mobile | 720 2nd Street | O | 4812 | 563192.166114 | 4183660.458950 | Generator |
| × | 14837 | Trans Pacific Centre | 1000 Broadway | O | 6512 | 564090.166016 | 4184053.459000 | Generator |
| × | 200278 | Trapac | 2800 7TH ST | O | 5411 | 559401.166329 | 4184726.458700 | Gas station |
| × | 17431 | Union Pacific Railroad | 1400 Middle Harbor Road | O | 4011 | 561766.166221 | 4183829.458870 | Generator |
| × | 100583 | Union Pacific Railroad | 1400 Middle Harbor Road | O | 5411 | 561771.166175 | 4183835.458880 | Gas station |
| – | 200538 | Uptown Body and Fender | 401 26th Street | O | 7532 | 564580.165868 | 4185529.458890 | Autobody |
| × | 21130 | US Postal Service - Building Maintenance | 1675 7th Street | O | 4311 | 561587.340000 | 4184448.030000 | Generator and fire pump |
| × | 23711 | USPA City Center LLC | 555 12th Street | O | 6512 | 563819.165993 | 4184285.458950 | Generator and boiler |
| × | 14711 | Verizon Business | 1999 Harrison Street | O | 4813 | 564743.165909 | 4184727.458960 | Generator |
| × | 22412 | Verizon Wireless | 1404 Franklin Street | O | 4812 | 564296.165973 | 4184311.458980 | Generator |
| × | 16284 | Verizon Wireless (Alameda Perm) | 114 Brush Street | O | 4812 | 563080.166085 | 4183688.458990 | Generator |
| × | 18297 | Verizon Wireless (Bay Bridge East) | 107 Burma Road | O | 4812 | 559595.580000 | 4186253.340000 | Standby generator |
| × | 23143 | Viridis Fuels | 2040 Wake Avenue | O | 2861 | 561701.520000 | 4186478.240000 | Boiler |
| × | 22483 | Watermark Bayside, LLC dba Bayside Park | 1440 40th Street | E | 8051 | 562722.165936 | 4187177.458620 | Generator |
| × | 5385 | Weatherford BMW | 575 West Grand Avenue | O | 7532 | 564168.165947 | 4185174.458840 | Spray booth |
| × | 112042 | Westco Gas | 731 West Macarthur Blvd | O | 5411 | 564109.914073 | 4186891.051810 | Gas station |
| × | 22058 | Westcore City Properties, LLC | 1221 Broadway | O | 2812 | 564098.166021 | 4184261.458990 | Generator |
| – | 2620 | WH Strehle Company | 494 36th Street | O | 7532 | 564686.165809 | 4186614.458780 | Autobody |
| × | 23954 | Windstream | 427 14th Street | O | 6531 | 564224.165990 | 4184308.458940 | Generator |

# Attachment 3. Truck-Related Businesses

**Table A-3-1.** Businesses with truck fleet activity operating in the West Oakland Source Domain. Only businesses with an assigned ID were included in this analysis; those excluded were either missing information or had < 4 vehicles per day (VPD). The reference ("Ref.") of the activity information was collected from either a 2019 survey (S19), a 2009 survey (S09), or assumed parameters (A, where a number in parentheses indicates the ID from which the information is based on). A hyphen (–) indicates that the business was excluded from the analysis due to inappropriate business or activity type, and "n/a" indicates that no information was available. The fleet assumed for each business was either HHDT only (all EMFAC2017-based HHDT vehicles except Port Trucks), MHDT only, bus only (BUS), or a mixed fleet (mix) with 0.265 HHDT (Non-Port Truck), 0.10 LHDT, 0.135 MHDT, 0.50 Port Trucks (T7 POAK). All business addresses are located in Oakland, except those with an asterisk (located in Emeryville).

| ID | Business Name | Address | VPD | Ref. | Fleet | Activity Type |
|---|---|---|---|---|---|---|
| | All Star Moving & Storage | 1468 14th Street | 0 | – | – | Storage only |
| | Alpi International Ltd. | 1685 34th Street | < 4 | – | – | Wholesale product supplier |
| | American President Lines Ltd | 1579 Middle Harbor Road | < 4 | – | – | Shipment management |
| 1 | AM&S Transportation Co/ Trade Winds Import Export | 1700 24th Street | 70 | S19 | mix | Trucking |
| 54 | AMPCO Adeline | 1599 Adeline Street | 1000 | S19 | mix | Parking facility |
| 53 | AMPCO MLK | 1 Martin Luther King Jr Way | 1000 | S19 | mix | Parking facility |
| 36 | Aramark Uniform Services | 330 Chestnut Street | 5 | A | MHDT | Uniform rental services |
| 2 | Atthowe Transportation Co Inc. | 3924 Market Street | 5 | S19 | mix | Carrier/broker |
| 24 | AV Trucking Co Inc. | 1155 3rd Street | 41 | S19 | mix | Office |
| 3 | Bay Area Container Transport | 3427 Ettie Street | 19 | S19 | mix | Broker |
| 55 | Best Bay Trucking | 1 Market Street | 50 | S19 | mix | Trucking |
| 4 | Cademartori Trucking | 1833 Peralta Street | 22 | S19 | mix | Shipping/trucking |
| 5 | California Cereal Products | 1267 14th Street | 5 | S19 | mix | Food processing |
| 6 | California Waste Solutions Inc. - 10th | 1820 10th Street | 50 | S19 | mix | Recycling |
| 37 | California Waste Solutions Inc. - Wood | 3300 Wood Street | 50 | A (6) | mix | Recycling |
| 7 | CASS, Inc | 2730 Peralta Street | 6 | S19 | mix | Recycling |
| 38 | CCY Inc. | 2505 Poplar Street | 5 | A | mix | Importers |

| ID | Business Name | Address | VPD | Ref. | Fleet | Activity Type |
|---|---|---|---|---|---|---|
| 8 | Central Concrete | 2400 Peralta Street | 13 | S19 | mix | Concrete |
| 59 | CFN Fuel Station | 2236 Poplar Street | 80 | A (63) | mix | Gas station |
| | Commander Moving | 1829 Mandela Pkwy | < 4 | – | – | Moving/storage |
| | Dusty & Sons Truck Tire Center | 2201 Mandela Pkwy | < 4 | – | – | Tire sales |
| 9 | East Bay Resources | 2430 Willow Street | 5 | S19 | mix | Recycling |
| 60 | EBMUD Adeline | 2127 Adeline Street | 84 | S09 | mix | Office and yard |
| 61 | EMBUD Wake | 2020 Wake Avenue | 84 | A (60) | mix | Yard |
| | FBC International Co. | | – | – | – | Marketing company |
| 10 | Form and Reform | 2601 Adeline Street | 3 | S19 | mix | Light manufacturing |
| 40 | Golden Bear Produce | 315 Franklin Street | 112 | S09 | mix | Carrier |
| | Green Pro Tech (DPF Cleaning) | 18th & Campbell | < 4 | – | – | Diesel particulate filter cleaning |
| 41 | Green Tech Imports | 2811 Adeline Street | 5 | A | mix | Shipping |
| 42 | Greyhound Bus | 2103 San Pablo Avenue | 55 | S09 | BUS | Bus |
| 56 | GST Transport | 1 Market Street | 50 | S19 | mix | Shipping/inspection |
| 57 | High Mountain Transport LLC | 2505 Bataan Avenue | 20 | S19 | mix | Trucking |
| 43 | Iron Mountain Information Management | 1350 West Grand Ave | 5 | A | MHDT | Shredding/storage |
| 11 | ISSA Transportation Services, LLC (JB Truck Repair) | 1639 18th St | 10 | S19 | mix | Truck repair |
| | JB Truck Electrical Repair | 1433 18th St | < 4 | – | – | Truck services |
| 12 | J&A Truck Repair | 2300 Poplar Street | 14 | S19 | mix | Truck repair |
| 44 | J&O Tires/Scales | 2401 Union Street | 5 | S09 | mix | Truck services |
| 13 | JH Fitzmaurice | 2857 Hannah Street * | 4 | S19 | mix | Home construction and improvement |
| 14 | Kamal Trucking Corp | 526 2nd Street | 56 | S19 | mix | Carrier |
| | KMC Trading (Chang's) | 2505 Poplar St | < 4 | – | – | Recycling |
| 15 | Lange Trucking/Hoovestol | 2226 Campbell Street | 26 | S19 | mix | Trucking |
| 62 | Lenger & Sons Produce Express | 2565 Buna Street #90 | 5 | A | MHDT | Trucking (food) |
| 45 | Matheson Mail Transportation | 2500 Poplar Street | 30 | S09 | mix | Local general freight trucking |
| 46 | Mayway Corporation | 1338 Mandela Pkwy | 5 | A | mix | Distribution |

| ID | Business Name | Address | VPD | Ref. | Fleet | Activity Type |
|---|---|---|---|---|---|---|
| 16 | Mindful Distribution | 2935 Adeline Street | 4 | S19 | MHDT | Beer distributor |
| | MK Enterprises | 2225 Campbell St | < 4 | – | – | Print advertising |
| | Mueller Nicholls | 2400 Union St | < 4 | – | – | Carrier |
| 17 | Mutual Express Company | 1700 West Grand Avenue | 40 | S19 | mix | Trucking |
| 18 | Narayan's Trucking Inc. | 1155 3rd Street, Suite 260 | 41 | S19 | mix | Office |
| 19 | National Recycling | 1312 Kirkham Ct | 5 | S19 | mix | Recycling |
| 20 | Natural Logistics | Beach Street * | 14 | S19 | mix | Shipping/trucking |
| 58 | Oakland Port Trucking | 1 Market Street | 25 | S19 | mix | Trucking |
| 21 | OMSS | 10 Burma Road | 1200 | S19 | mix | Truck parking |
| 22 | PACE Supply (Morgan Southern) | 425 Market Street | 75 | S19 | mix | Plumbing wholesale |
| 23 | Pacific Coast Container (PCC Logistics) | 2498 16th Street | 58 | S19 | mix | Broker |
| 25 | Pacific Coast Supply | 1735 24th Street | 10 | S19 | mix | Building materials |
| | Pacific Rail Services | 1408 Middle Harbor Road | n/a | – | – | Repair |
| 26 | Portillo Trucking Company | 160 Franklin Street | 16 | S19 | mix | Trucking |
| 27 | Quintero Trucking | 2270 Poplar Street | 21 | S19 | mix | Trucking |
| 63 | Rinehart Oil Truck Fueling Station | 1107 5th Street | 80 | S19 | mix | Gas station |
| | RCM International (Martin Construction) | 2850 Poplar Street | < 4 | – | – | Concrete mixing |
| 28 | S.F. Enterprises (Modern Express and Courier) | 2525 Mandela Pkwy | 7 | S19 | mix | Yard |
| 29 | Saroni Food Services | 1301 26th Street | 12 | S19 | mix | Food (cold storage facility) |
| 30 | Sea Logix | 1425 Maritime Street Bldg 319 | 5 | A | mix | Trucking/drayage |
| 47 | Sierra Concrete | 3211 Wood Street | 10 | A | mix | Concrete |
| | Skasol | 1696 W Grand Avenue | < 4 | – | – | Manufacturer |
| 31 | Starline Supply Company | 2401 Peralta Street | 8 | S19 | mix | Carrier |
| | Starving Student Movers | 2850 Poplar Street | 4 | – | – | Moving company |
| | Steel Company (name unknown) | 1699 W Grand Avenue | n/a | – | – | Steel |
| 48 | Sutta Shredding Company | 1221 3rd Street | 5 | A | MHDT | Recycling |
| | Sweet Maria's Coffee Warehouse | 2823 Adeline Street | < 4 | – | – | Retail |
| | Terminal Maintenance Company | 2502 Middle Harbor Drive | n/a | – | – | Carrier |

| ID | Business Name | Address | VPD | Ref. | Fleet | Activity Type |
|---|---|---|---|---|---|---|
| 49 | TFS Trucking | 2226 Myrtle Street | 10 | A | mix | Yard |
| 32 | Tighe Transportation & Wisle | 2230 Willow Street | 2 | S19 | mix | Trucking |
| | Transpacific Trading | 2433 Poplar St | < 4 | – | – | Tire sales |
| 50 | U.S. Freight Systems | 1819 10th Street | 10 | A | mix | Shipping/trucking |
| 51 | U.S. Postal Service Depot | 1675 7th Street | 1034 | S09 | HHDT | Postal depot |
| 33 | VA Transportation Inc. | 1340 Mandela Pkwy | 47 | S19 | mix | Shipping/trucking |
| | Western Seafare | 1297 26th Street | n/a | – | – | Refrigerated warehouse |
| | Western States Teleport Inc. | 2303 Poplar Street | – | – | – | Telephone company |
| 34 | Wings Century Trucking | 1599 Maritime Street | 50 | S19 | mix | Trucking |
| 35 | Wyse Logistics | 1301 24th Street | 56 | S19 | mix | Drayage, warehouse, transloading, bulk trucks |

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# Appendix A – Technical Support Document

## Part II: Business-As-Usual Future Year Emissions Inventory and Air Pollutant Dispersion Modeling

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# Table of Contents

**1. Introduction .......... 1**

**2. Emissions Inventory .......... 3**
2.1 Development and Overview .......... 3
2.1.1 Pollutants .......... 3
2.1.2 Domain .......... 3
2.1.3 Emissions Sources and Future Years .......... 3
2.1.4 Approach .......... 5
2.1.5 Emissions by Category .......... 6
2.2 Permitted Stationary Sources .......... 14
2.3 On-Road Mobile Sources .......... 15
2.3.1 Travel Activity .......... 15
2.3.2 Emission Factors .......... 16
2.3.3 Additional Control Factors .......... 17
2.3.4 Emissions .......... 17
2.4 Truck-Related Businesses .......... 19
2.4.1 Surveyed Businesses .......... 19
2.4.2 Schnitzer Steel .......... 19
2.5 Ocean-Going Vessels .......... 20
2.5.1 Port of Oakland .......... 20
2.5.2 Schnitzer Steel .......... 20
2.6 Commercial Harbor Crafts .......... 20
2.6.1 Operation and Maintenance Dredging and Disposal .......... 20
2.6.2 Assist Tugs .......... 20
2.6.3 Bunkering Barges .......... 21
2.7 Cargo Handling Equipment .......... 21
2.8 Port Trucks at Terminals .......... 21
2.9 Locomotives (Rail Lines) .......... 26
2.9.1 Freight Haul Lines .......... 26
2.9.2 Passenger Rail Lines .......... 26
2.10 Railyards .......... 26
2.10.1 BNSF .......... 26
2.10.2 OGRE .......... 26
2.10.3 UP .......... 26
2.11 Commuter Ferries and Excursion Vessels .......... 27

**3. Air Dispersion Modeling .......... 28**

**4. Analysis Methods .......... 30**

**5. Results .......... 31**
5.1 $PM_{2.5}$ Concentrations .......... 31
5.2 DPM Concentrations .......... 31
5.3 Cancer Risk .......... 31

5.4 Source Apportionment ........ 38

**6. Limitations, Uncertainties, and Future Improvements ........ 41**

**7. References ........ 44**

# Notation

## Acronyms

| | |
|---|---|
| AB | Assembly Bill |
| ABAG | Association of Bay Area Governments |
| AERMOD | American Meteorological Society/Environmental Protection Agency Regulatory Model |
| agl | above ground level |
| BAAQMD | Bay Area Air Quality Management District |
| BAU | business-as-usual |
| BY | base year |
| CARB | California Air Resources Board |
| CEIDARS | California Emissions Inventory Development and Reporting System |
| CF | control factor |
| CHC | commercial harbor craft |
| CHE | cargo handling equipment |
| CT-EMFAC | Caltrans-EMissions FACtors (model) |
| DPM | diesel particulate matter |
| EIC | Emission Inventory Category |
| EMFAC | EMission FACtors (model) |
| EPA | Environmental Protection Agency |
| EZ | exclusion zone |
| FY | future year |
| GCF | growth and control factor |
| GF | growth factor |
| HHDT | heavy heavy-duty truck |
| LHDT | light heavy-duty truck |
| MHDT | medium heavy-duty truck |
| MPO | metropolitan planning organization |
| MTC | Metropolitan Transportation Commission |
| NAICS | North American Industry Classification System |
| NEI | National Emissions Inventory |
| OEHHA | Office of Environmental Health Hazard Assessment |
| OGRE | Oakland Global Rail Enterprise |
| OGV | ocean-going vessel |
| OICT | Oakland International Container Terminal |
| O&M | operation and maintenance |
| PM | particulate matter |
| $PM_{2.5}$ | particulate matter 2.5 micrometers or less in diameter |
| SCC | Source Classification Code |
| SIC | Standard Industrial Classification |
| SIP | State Implementation Plan |
| SMOKE | Sparse Matrix Operator Kernel Emissions (model) |
| TAC | toxic air contaminant |
| TRU | transport refrigeration unit |

| | |
|---|---|
| UP | Union Pacific |
| VMT | vehicle miles traveled |
| VHT | vehicle hours traveled |

## Units

| | |
|---|---|
| g | gram |
| ton | U.S. ton (2,000 lb) |
| tpy | tons per year (U.S. ton/year) |
| µg | microgram |
| | |
| m | meter |
| mi | mile |
| | |
| h | hour |
| min | minute |
| s | second |
| | |
| mph | miles per hour (mi/h) |

# 1. Introduction

This is a companion document to *Appendix A – Technical Support Document Part I: Base Year Emissions Inventory and Air Pollutant Dispersion Modeling* ("Part I"), for the West Oakland Community Action Plan ("Action Plan") pursuant to Assembly Bill (AB) 617, jointly prepared by the Bay Area Air Quality Management District (BAAQMD, "the District") and the West Oakland Environmental Indicators Project (WOEIP). Please refer to Part I for background information, a detailed description of emissions sources the base year (2017) emissions inventory, air dispersion modeling approach, and pollutant and cancer risk assessment.

The technical work performed to develop forecasted (future year) emissions inventories for the Action Plan is described in this document. The objective of this technical work was to create forecasted inventories for $PM_{2.5}$, DPM, and toxic air contaminant (TAC) pollutants to determine which emission sources may impact the West Oakland community in the future; specifically, the future-year emissions inventories were convolved with the dispersion factor fields (developed in Part I) to quantify the effects of changing emissions on potential pollutant concentrations and cancer risk within the West Oakland community.

Forecasted emission inventories were developed for all emissions sources described in Part I:

- permitted stationary sources,
- on-road mobile sources (Truck and Non-Truck vehicles on all surface streets and freeways, and extended idling from vehicles operating at certain "truck-related businesses"),
- maritime and railyard activity at the Port of Oakland (the "Port"),
- locomotives and railyard activities, and
- commuter ferries and excursion vessels.

Forecasted emissions were estimated by combining the base year (BY, where $BY = 2017$ in this analysis) emissions inventories (developed using a bottom-up approach, as described in Part I) with ancillary datasets that provide *growth factors* (GFs) and *control factors* (CFs) based on *business-as-usual* (BAU) conditions. BAU conditions include only the known changes in activity ("growth") and changes in emission characteristics ("control", such as lower emission factors due to new technology introduced into the fleet via fleet turnover) that are currently anticipated through approved ("on the books") regulations. BAU conditions can also be viewed as those conditions that would occur without the implementation of the Action Plan ("without-Plan" scenario).

The base year is used to establish initial pollutant concentrations from which forecasted inventories can be developed. The forecasted emissions inventories with BAU conditions include anticipated reductions from existing regulations reflect the estimated emissions that would occur without any further mitigation measures. Resulting pollutant concentrations and risk estimates can be used to show where high levels of air pollution may persist, and additional actions may be warranted. Identifying emissions sources that contribute to elevated pollutant concentrations in the community is important to develop specific mitigation strategies to reduce forecasted exposures, as the largest emissions sources accounted for within emissions inventories may not directly cause the largest impacts on air quality at downwind locations.

In this analysis, two forecasted inventories were developed: 2024, and 2029 emissions inventories, which correspond to 5 years and 10 years from the adoption of the Action Plan, respectively. As in the 2017 base year analysis (Part I), the forecasted emissions inventories (**Section 2**) were used in conjunction with *air pollution dispersion modeling* (**Section 3**) to support a *source apportionment* analysis (**Section 4**). This is essentially a forecasted version of the *community-scale* modeling as performed in Part I. A brief overview of the results (**Section 5**), and a discussion of sources of uncertainty in the datasets and methods are also presented (**Section 6**).

# 2. Emissions Inventory

The District forecasted emissions for $PM_{2.5}$ and TACs from emissions sources in West Oakland. A summary of the emissions inventory developed for the Action Plan for the future years (2024, 2029) is described in this section by source category: permitted stationary sources, on-road mobile sources, truck-related businesses, sources due to activity in the Port of Oakland (ocean-going vessels, commercial harbor crafts, cargo handling equipment, Port Trucks at terminals, railyards), locomotives, railyards, and commuter ferries and excursion vessels. Specific temporal and spatial allocation information for emissions source categories are discussed in Part I Section 3; these parameters were not changed for future-year dispersion modeling.

## 2.1 Development and Overview

### 2.1.1 Pollutants

AB 617 focuses on evaluating local community risk impacts associated with $PM_{2.5}$ and TACs (including DPM); $PM_{2.5}$ and DPM are the primary air pollutants that pose the greatest risk to the health of residents in West Oakland (California Air Resources Board 2008a). A full list of TACs compounds included in this analysis is provided in Part I Attachment 1. In the following emissions inventories and modeling results, DPM is both included in TAC emission estimates and presented separately from $PM_{2.5}$ and TACs. Only $PM_{2.5}$ emissions and concentrations from directly emitted $PM_{2.5}$ and TACs were evaluated; secondary $PM_{2.5}$ and TACs were not included.

### 2.1.2 Domain

The same Source Domain used for the 2017 base year emissions inventory was used to develop the forecasted emissions inventories. This domain is 7 km × 5 km and encompassed the entire West Oakland community and Port of Oakland, as well as part of downtown Oakland (see Part I Figure 2-1). All emission sources discussed in this section are located within the Source Domain; if an emissions source's extents were beyond those of the Source Domain, only the emissions associated with the area within the Source Domain were included in the inventory.

### 2.1.3 Emissions Sources and Future Years

The emissions inventory consists of emissions from various source categories, as shown in **Table 2-1**, including stationary and mobile (on-road, off-road) sources of emissions. Annual emissions estimates were developed for two future years: 2024 and 2029. These years correspond to 5 years and 10 years from the adoption of the Action Plan, respectively.

There were several emissions sources that were omitted in the community-scale air pollutant dispersion modeling and risk assessment, and are thus also omitted in the assessments in future years as well, notably residential wood burning, transport refrigeration units (TRUs), commercial and residential cooking (see Part I for further details). Emissions from these categories were still forecasted and include in the emissions inventory by using the 2017 emissions (estimated using a top-down approach) and appropriate growth and control factors.

**Table 2-1.** Emission source categories in West Oakland and data source used to derive growth and control factors to forecast emissions. Emissions based on EMFAC2017 emission factors were adjusted to account for reduction programs adopted by CARB after the release of EMFAC2017; the "2016 SIP" dataset is described in **Section 2.1.4**. Emissions inventories developed using a bottom-up approach were used for further air dispersion modeling and analyses; emissions inventory developed using a top-down approach are included in the total emissions inventory, but not included in any subsequent modeling.

| Approach | Section | Source Category | Reference/Data Source |
|---|---|---|---|
| Bottom-up | 2.2 | Permitted stationary sources | District, ABAG |
| | 2.3 | On-road mobile sources | EMFAC2017, CARB |
| | 2.4 | Truck-related businesses | EMFAC2017, MTC/ABAG, District |
| | 2.5 | Ocean-going vessels | 2016 SIP, CARB, California Air Resources Board (2019b) |
| | 2.6 | Commercial harbor crafts | 2016 SIP, District, California Air Resources Board (2019b) |
| | 2.7 | Cargo handling equipment | 2016 SIP |
| | 2.8 | Port Trucks at Terminals | EMFAC2017, California Air Resources Board (2019b), CARB |
| | 2.9 | Locomotives | 2016 SIP, California Air Resources Board (2017a) |
| | 2.10 | Railyards | 2016 SIP, UP |
| | 2.11 | Commuter ferries and excursion vessels | 2016 SIP |
| Top-down | 2.1.5 | Other area sources | 2016 SIP (v1.0.4), SMOKE |
| | 2.1.5 | Non-road sources | 2016 SIP (v1.0.4), SMOKE |

### 2.1.4 Approach

The forecasted inventories were based on the community-scale bottom-up emissions inventory developed for the 2017 base year; most Port-related emission were based on the *Port of Oakland 2017 Seaport Air Emissions Inventory* ("2017 Port Inventory"), developed by Ramboll (2018). A bottom-up emissions inventory involves estimating emissions using (1) emission factors (mass of pollutant emitted per unit of activity), and (2) local activity information of the emission processes (e.g., number of events, duration of activity). Emission factors vary by source type and/or emissions process, and can depend on other factors (e.g., source age, model year, control technology, load, fuel type, speed, and ambient conditions, where applicable). Local activity information varies by source and by year (and by season and/or hour, depending on the source). Activity data is convolved with corresponding emission factors to estimate emissions. Forecasted inventories can be developed from bottom-up emissions inventories by source using one of two general approaches:

(1) **Recalculate emissions (bottom-up):** Activity and emission factors are adjusted based on anticipated changes in operations (growth) and technology (control). Changes in operations may be specific to the source (e.g., known changes in permitted activity) or from a related dataset (e.g., projected number of jobs).

(2) **Adjust base year emissions ("top-down" adjustment):** Total emissions of the source category from the base year are adjusted by the fractional change of emissions projected for the source category (or related category) from regional inventories. These fractional changes are the GF, CF, and/or combined growth and control factor (GCF), which are expressed as a factor relative to the base year, where factors less than 1.0 indicate a decrease, factors greater than 1.0 indicate an increase, and factors equal to 1.0 indicate no change in emissions are anticipated in future years. For example, if a regional inventory indicates that $PM_{2.5}$ emissions for a particular source category were 0.9 tpy in 2017 and 1.2 tpy in 2024, then the 2017 bottom-up emissions would be adjusted by a factor of 1.333 to estimate 2024 emissions.

The approach used to forecast emissions depended on the source category (**Table 2-1**); a combination of both approaches can also be used. For example, the District forecasted emissions from on-road mobile sources within West Oakland based on (1) updated emission factors provided by EMFAC2017 and (2) projected activity for Alameda County. For approach (2), the District primarily used forecasted emissions by Emission Inventory Code (EIC) and criteria pollutant obtained from CARB from the California Emission Projection Analysis Model (CEPAM) 2016 State Implementation Plan (SIP) inventory[1] v1.05 (snapshot v19.05.10) for Alameda County, except for rail, which were based on California Air Resources Board (2017a) for passenger rail and the 2019 SIP inventory v1.00 for all other rail. For simplicity, we refer to this enhanced dataset as the "2016 SIP" dataset. EICs are maintained by CARB and consist of 14 digits that describes the source category, type, materials, and process.[2] Within CEPAM, emission forecasts rely on a suite of complex emission models which apply various assumptions regarding fleet, equipment age and

[1] This inventory can be accessed online via https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php. The 2016 SIP inventory is based on a 2012 base year.

[2] A single EIC may be associated with one or more SCC/SIC codes (see **Section 2.2**).

turnover, and control measures to estimate future emissions. Further details about the emission estimation assumptions for a given source category require extracting the model's specific methodology for that equipment category and process, which can be done by CARB upon request.

For each EIC and pollutant, the combined growth and control factors ($GCF$) were calculated as:

$$GCF_{FY} = \frac{EI_{FY}}{EI_{BY}}$$

where the factor is the ratio between the future-year emissions ($EI_{FY}, FY \in \{2024, 2029\}$) that take into account both forecasted growth and control, and the base-year emissions ($EI_{BY}, BY = 2017$). The GCF can then be applied to the base year emissions developed for the community-scale modeling ($E_{BY}, BY = 2017$) in the Action Plan to obtain the future-year emissions ($E_{FY}, FY \in \{2024, 2029\}$):

$$E_{FY} = GCF_{FY} \cdot E_{BY}$$

Recall that EICs inherently summarize many aspects of an emission source; GCFs therefore vary by year, economic sector, source type, material (e.g., gasoline versus diesel fuel), pollutant, and emission process (e.g., exhaust versus idling).

### 2.1.5 Emissions by Category

In this section, an overview of the future-year emissions inventories for $PM_{2.5}$, DPM, and TACs are presented and compared to the 2017 base year inventories. A description of how these inventories were developed by source category are presented in the remaining sections.

Based on the bottom-up 2017 base year emissions inventories, $PM_{2.5}$ emissions are forecasted to be 87.09 tpy in 2024 and 94.50 tpy in 2029 in West Oakland (**Figure 2-1**, **Figure 2-2**). From the base year emissions (85.91 tpy), this represents a +1.38% by 2024 and +10.00% increase by 2029. From the base year, DPM emissions are forecasted to decrease by 2024 (21.22 tpy, -11.28%), but nearly return to base year levels by 2029 (23.81 tpy, -0.43%) (**Table 2-3**). The increases can mainly be attributed to a projected increase in Port-related emissions (**Table 2-2**), especially from OGVs and assist tugs. The change in total cancer-risk weighted TAC emissions are also mainly driven by emissions OGV and assist tugs, but emissions decrease from 19,054 tpy in the base year to 16,939tpy in 2024 (+11.1%), and to18,997 tpy (-0.30%) by 2029 (**Table 2-4**).

As discussed Part I, there are several emission sources in West Oakland that were not accounted for in the bottom-up community-scale emissions inventory (and are not included in the subsequent analyses or risk calculations). These emissions sources were namely fuel combustion and commercial area sources, and non-road mobile sources (**Table 2-5**, **Table 2-6, Table 2-7**). Base year emissions from these sources were derived from regional-scale modeling using a top-down approach, and then projected using GCFs derived from the 2016 SIP dataset. Of these emissions sources, only non-road mobile sources emit DPM; it is projected that $PM_{2.5}$, DPM, and TAC emissions from non-road sources will decrease by 2029. However, total $PM_{2.5}$ from these source categories increases, with the largest increase associated with commercial cooking operations (**Table 2-5**).

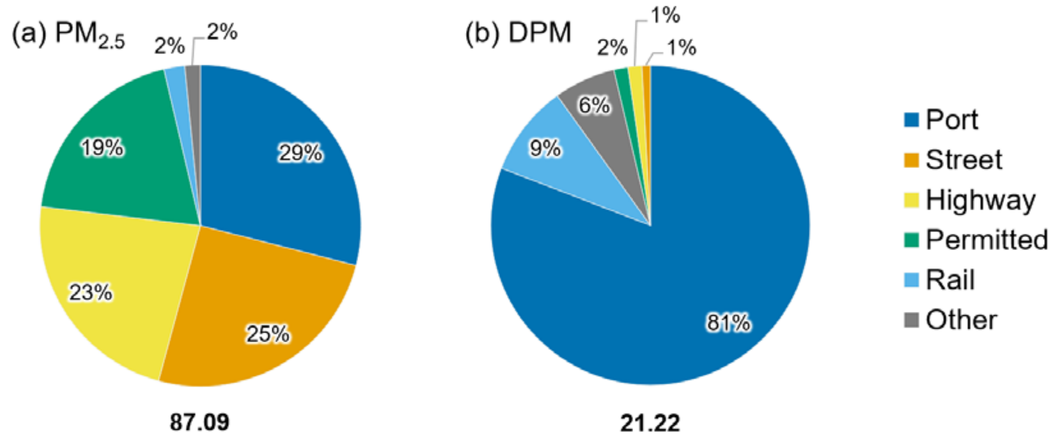


**Figure 2-1.** Emissions of (a) $PM_{2.5}$ and (b) DPM by source category included in the 2024 community-scale West Oakland emissions inventory within the Source Domain (modeled sources only). Emissions from Highway and Street are composed of emissions from all on-road mobile sources except Port Trucks, which are attributed to the Port category. Total emissions (tpy) of each pollutant are displayed below each pie chart. Source categories are further described in **Table 2-2**.

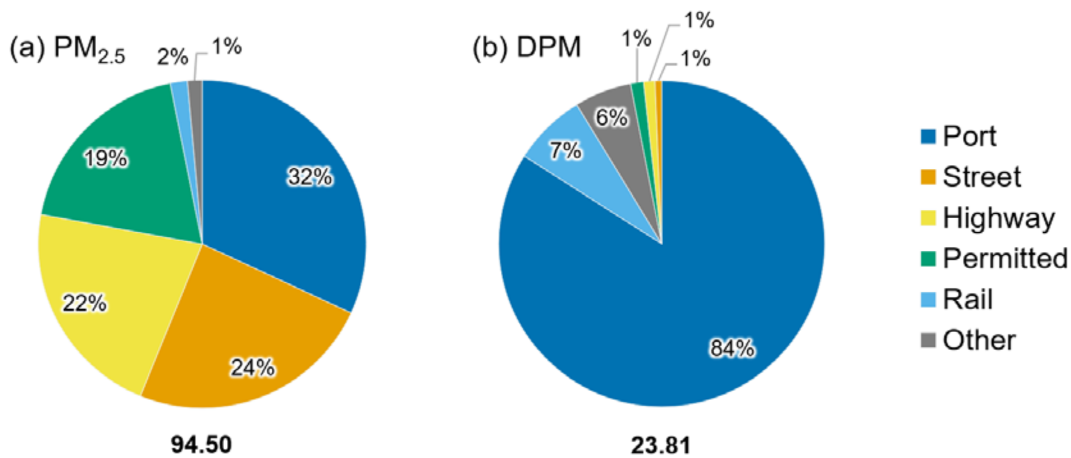


**Figure 2-2.** As in **Figure 2-1**, but for 2029.

**Table 2-2.** $PM_{2.5}$ emissions by Source Category within the Source Domain (modeled emissions only). Percentage (%) of emissions are reported as a total of the emissions inventory ("Total" row). The Port Trucks category includes emissions from all Port Trucks, regardless of location (i.e., within the Port and operating on Highways and Surface Streets). See sections in this document (and Part I) for specific emission processes by category.

| Source Category | 2017 | | 2024 | | 2029 | |
|---|---|---|---|---|---|---|
| | tpy | % | tpy | % | tpy | % |
| **Highway** | **20.29** | **23.6** | **19.77** | **22.7** | **20.55** | **21.7** |
| Non-Trucks | 12.22 | 14.2 | 12.88 | 14.8 | 13.33 | 14.1 |
| LHDT | 0.41 | 0.5 | 0.42 | 0.5 | 0.43 | 0.5 |
| MHDT/HHDT | 2.48 | 2.9 | 0.94 | 1.1 | 0.98 | 1.0 |
| Road dust | 5.17 | 6.0 | 5.53 | 6.4 | 5.81 | 6.1 |
| **Surface Streets** | **22.38** | **26.1** | **21.97** | **25.2** | **22.94** | **24.3** |
| Non-Trucks | 4.82 | 5.6 | 5.02 | 5.8 | 5.16 | 5.5 |
| LHDT | 0.35 | 0.4 | 0.35 | 0.4 | 0.35 | 0.4 |
| MHDT/HHDT | 2.44 | 2.8 | 0.77 | 0.9 | 0.80 | 0.9 |
| Road dust | 14.77 | 17.2 | 15.83 | 18.2 | 16.62 | 17.6 |
| **Port** | **21.99** | **25.6** | **25.24** | **29.0** | **30.00** | **31.9** |
| OGV – maneuvering | 3.94 | 4.6 | 5.61 | 6.4 | 7.06 | 7.5 |
| OGV – berthing | 7.83 | 9.1 | 10.29 | 11.8 | 13.00 | 13.8 |
| Dredging | 1.12 | 1.3 | 0.80 | 0.9 | 0.64 | 0.7 |
| Assist Tugs | 3.82 | 4.4 | 3.07 | 3.5 | 2.97 | 3.1 |
| Bunkering (tugs, pumps) | 0.27 | 0.3 | 0.25 | 0.3 | 0.24 | 0.3 |
| CHE | 1.59 | 1.9 | 1.78 | 2.0 | 1.96 | 2.1 |
| Port Trucks | 0.93 | 1.1 | 0.66 | 0.8 | 0.77 | 0.8 |
| Road dust | 2.25 | 2.6 | 2.53 | 2.9 | 3.25 | 3.4 |
| Railyard – OGRE | 0.07 | 0.1 | 0.08 | 0.1 | 0.08 | 0.1 |
| Railyard – BNSF | 0.17 | 0.2 | 0.18 | 0.2 | 0.18 | 0.2 |
| **Rail** | **2.04** | **2.4** | **1.82** | **2.1** | **1.60** | **1.7** |
| Locomotives | 1.02 | 1.2 | 0.70 | 0.8 | 0.43 | 0.5 |
| Railyard – UP | 1.02 | 1.2 | 1.12 | 1.3 | 1.17 | 1.2 |
| **Permitted** | **17.84** | **20.8** | **16.94** | **19.4** | **17.92** | **19.0** |
| CA Waste (10th Street) | 0.46 | 0.5 | 0.51 | 0.6 | 0.54 | 0.6 |
| California Cereal | 0.58 | 0.7 | 0.63 | 0.7 | 0.67 | 0.7 |
| CASS | 0.72 | 0.8 | 0.78 | 0.9 | 0.83 | 0.9 |
| Dynegy | 1.96 | 2.3 | 0.00 | 0.0 | 0.00 | 0.0 |
| EBMUD | 3.99 | 4.6 | 4.28 | 4.9 | 4.49 | 4.8 |
| Pinnacle Ag Services | 1.48 | 1.7 | 1.62 | 1.9 | 1.73 | 1.8 |
| Schnitzer Steel – stationary | 5.20 | 6.1 | 5.53 | 6.3 | 5.89 | 6.2 |
| Sierra Pacific | 0.91 | 1.1 | 1.00 | 1.1 | 1.09 | 1.2 |
| Other | 2.53 | 2.9 | 2.59 | 3.0 | 2.67 | 2.8 |
| **Other** | **1.36** | **1.6** | **1.36** | **1.6** | **1.36** | **1.4** |
| Ferry/Excursion vessels | 0.91 | 1.1 | 0.92 | 1.1 | 0.92 | 1.0 |
| Schnitzer Steel – OGV | 0.30 | 0.4 | 0.37 | 0.4 | 0.37 | 0.4 |
| Schnitzer Steel – trucks | 0.04 | < 0.1 | 0.04 | < 0.1 | 0.04 | < 0.1 |
| Truck-related businesses | 0.11 | 0.1 | 0.03 | < 0.1 | 0.03 | < 0.1 |
| **Total** | **85.91** | **100.0** | **87.01** | **100.0** | **94.50** | **100.0** |

**Table 2-3.** As in **Table 2-2**, but for DPM emissions.

| **Source Category** | **2017** | | **2024** | | **2029** | |
|---|---|---|---|---|---|---|
| | **tpy** | **%** | **tpy** | **%** | **tpy** | **%** |
| **Highway** | **2.12** | **8.9** | **0.30** | **1.4** | **0.27** | **1.1** |
| Non-Trucks | 0.19 | 0.8 | 0.07 | 0.3 | 0.05 | 0.2 |
| LHDT | 0.09 | 0.4 | 0.07 | 0.3 | 0.06 | 0.2 |
| MHDT/HHDT | 1.84 | 7.7 | 0.16 | 0.8 | 0.16 | 0.7 |
| **Surface Streets** | **2.07** | **8.6** | **0.18** | **0.9** | **0.16** | **0.7** |
| Non-Trucks | 0.09 | 0.4 | 0.03 | 0.1 | 0.02 | 0.1 |
| LHDT | 0.09 | 0.4 | 0.07 | 0.3 | 0.06 | 0.3 |
| MHDT/HHDT | 1.88 | 7.9 | 0.08 | 0.4 | 0.08 | 0.3 |
| **Port** | **15.87** | **66.4** | **17.15** | **80.8** | **20.01** | **84.0** |
| OGV – maneuvering | 3.84 | 16.1 | 5.57 | 26.2 | 7.10 | 29.8 |
| OGV – berthing | 4.31 | 18.0 | 5.24 | 24.7 | 6.61 | 27.8 |
| Dredging | 1.16 | 4.9 | 0.79 | 3.7 | 0.58 | 2.4 |
| Assist Tugs | 3.94 | 16.5 | 3.16 | 14.9 | 3.06 | 12.8 |
| Bunkering (tugs, pumps) | 0.28 | 1.2 | 0.26 | 1.2 | 0.24 | 1.0 |
| CHE | 1.58 | 6.6 | 1.74 | 8.2 | 2.01 | 8.4 |
| Port Trucks | 0.50 | 2.1 | 0.12 | 0.6 | 0.12 | 0.5 |
| Railyard – OGRE | 0.08 | 0.3 | 0.08 | 0.4 | 0.09 | 0.4 |
| Railyard – BNSF | 0.18 | 0.8 | 0.19 | 0.9 | 0.20 | 0.9 |
| **Rail** | **2.20** | **8.6** | **1.96** | **9.3** | **1.73** | **7.2** |
| Locomotives | 1.09 | 4.5 | 0.74 | 3.5 | 0.45 | 1.9 |
| Railyard – UP | 1.11 | 4.6 | 1.22 | 5.8 | 1.27 | 5.3 |
| **Permitted** | **0.30** | **1.2** | **0.30** | **1.4** | **0.31** | **1.3** |
| CA Waste (10th Street) | 0.00 | 0.0 | - | - | - | - |
| California Cereal | 0.00 | 0.0 | - | - | - | - |
| CASS | 0.00 | 0.0 | - | - | - | - |
| Dynegy | < 0.01 | < 0.1 | 0.00 | 0.0 | 0.00 | 0.0 |
| EBMUD | 0.09 | 0.4 | 0.09 | 0.4 | 0.10 | 0.4 |
| Pinnacle Ag Services | 0.00 | 0.0 | - | - | - | - |
| Sierra Pacific | 0.00 | 0.0 | - | - | - | - |
| Other | 0.21 | 0.8 | 0.21 | 1.0 | 0.21 | 0.9 |
| **Other** | **1.36** | **5.7** | **1.33** | **6.2** | **1.35** | **5.7** |
| Ferry/Excursion vessels | 0.93 | 3.9 | 0.92 | 4.4 | 0.95 | 4.0 |
| Schnitzer Steel – OGV | 0.30 | 1.3 | 0.37 | 1.8 | 0.37 | 1.6 |
| Schnitzer Steel – trucks | 0.01 | < 0.1 | < 0.01 | < 0.1 | < 0.01 | < 0.1 |
| Truck-related businesses | 0.12 | 0.5 | 0.03 | 0.1 | 0.03 | 0.1 |
| **Total** | **23.91** | **100.0** | **21.22** | **100.0** | **23.81** | **100.0** |

**Table 2-4.** As in **Table 2-2**, but for cancer risk-weighted TAC emissions (including DPM).

| Source Category | 2017 | | 2024 | | 2029 | |
|---|---|---|---|---|---|---|
| | CRW tpy | % | CRW tpy | % | CRW tpy | % |
| **Highway** | **1,791** | **9.4** | **332** | **2.0** | **291** | **1.5** |
| Non-Trucks | 331 | 1.7 | 159 | 0.9 | 125 | 0.7 |
| LHDT | 69 | 0.4 | 52 | 0.3 | 45 | 0.2 |
| MHDT/HHDT | 1,392 | 7.3 | 120 | 0.7 | 121 | 0.6 |
| **Surface Streets** | **1,692** | **8.9** | **204** | **1.2** | **176** | **0.9** |
| Non-Trucks | 183 | 1.0 | 87 | 0.5 | 68 | 0.4 |
| LHDT | 76 | 0.4 | 57 | 0.3 | 49 | 0.3 |
| MHDT/HHDT | 1,434 | 7.5 | 60 | 0.4 | 59 | 0.3 |
| **Port** | **11,831** | **62.0** | **12,769** | **75.4** | **14,901** | **78.4** |
| OGV – maneuvering | 2,859 | 15.0 | 4,145 | 24.5 | 5,289 | 27.8 |
| OGV – berthing | 3,212 | 16.9 | 3,901 | 23.0 | 4,922 | 25.9 |
| Dredging | 864 | 4.5 | 592 | 3.5 | 430 | 2.3 |
| Assist Tugs | 2,932 | 15.4 | 2,355 | 13.9 | 2,278 | 12.0 |
| Bunkering (tugs, pumps) | 209 | 1.1 | 190 | 1.1 | 179 | 0.9 |
| CHE | 1,177 | 6.2 | 1,293 | 7.6 | 1,494 | 7.9 |
| Port Trucks | 372 | 2.0 | 88 | 0.5 | 93 | 0.5 |
| Railyard – OGRE | 57 | 0.3 | 62 | 0.4 | 66 | 0.3 |
| Railyard – BNSF | 136 | 0.7 | 143 | 0.8 | 151 | 0.8 |
| **Rail** | **1,637** | **8.6** | **1,462** | **8.6** | **1,285** | **6.8** |
| Locomotives | 810 | 4.3 | 554 | 3.3 | 338 | 1.8 |
| Railyard – UP | 826 | 4.3 | 909 | 5.4 | 946 | 5.0 |
| **Permitted** | **1,101** | **5.8** | **1,185** | **7.0** | **1,341** | **7.1** |
| CA Waste (10th Street) | - | - | - | - | - | - |
| California Cereal | < 1 | < 0.1 | < 1 | < 0.1 | < 1 | < 0.1 |
| CASS | < 1 | < 0.1 | < 1 | < 0.1 | < 1 | < 0.1 |
| Dynegy | 1 | < 0.1 | - | - | - | - |
| EBMUD | 110 | 0.6 | 117 | 0.7 | 123 | 0.6 |
| Pinnacle Ag Services | - | - | - | - | - | - |
| Schnitzer Steel – stationary | 823 | 4.3 | 900 | 5.3 | 1,050 | 5.5 |
| Sierra Pacific | - | - | - | - | - | - |
| Other | 168 | 0.9 | 167 | 1.0 | 168 | 0.9 |
| **Other** | **1,016** | **5.3** | **987** | **5.8** | **1,003** | **5.3** |
| Ferry/Excursion vessels | 695 | 3.6 | 688 | 4.1 | 706 | 3.7 |
| Schnitzer Steel – OGV | 225 | 1.2 | 277 | 1.6 | 277 | 1.5 |
| Schnitzer Steel – trucks | 8 | < 0.1 | 0 | 0.0 | 0 | 0.0 |
| Truck-related businesses | 87 | 0.5 | 21 | 0.1 | 20 | 0.1 |
| **Total** | **19,054** | **100.0** | **16,939** | **100.0** | **18,997** | **100.0** |

**Table 2-5.** $PM_{2.5}$ emissions by Source Category within the Source Domain based on regional-scale emissions inventory (not included in community-scale bottom-up emissions inventory). Percentage (%) of emissions are reported as a total of the entire inventory.

| Source Category | 2017 | | 2024 | | 2029 | |
|---|---|---|---|---|---|---|
| | tpy | % | tpy | % | tpy | % |
| **Area** | **30.40** | **70.0** | **33.83** | **74.3** | **36.06** | **74.9** |
| Commercial cooking | 20.63 | 47.5 | 23.90 | 52.5 | 26.08 | 54.2 |
| Food and agriculture | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Fuel combustion – residential | 6.93 | 16.0 | 6.99 | 15.4 | 6.98 | 14.5 |
| Fuel combustion – Commercial/industrial | 2.30 | 5.3 | 2.39 | 5.2 | 2.44 | 5.1 |
| Industrial processes | 0.03 | 0.1 | 0.03 | 0.1 | 0.04 | 0.1 |
| Solvent use | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Consumer products | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Other | 0.50 | 1.2 | 0.52 | 1.1 | 0.53 | 1.1 |
| **Non-road** | **13.00** | **30.0** | **11.71** | **25.7** | **12.08** | **25.1** |
| Construction – equipment | 4.10 | 9.5 | 2.39 | 5.3 | 2.18 | 4.5 |
| Construction – dust | 6.74 | 15.5 | 7.70 | 16.9 | 8.40 | 17.5 |
| Commercial/industrial equipment | 1.17 | 2.7 | 0.97 | 2.1 | 0.92 | 1.9 |
| Lawn and garden equipment | 0.12 | 0.3 | 0.13 | 0.3 | 0.13 | 0.3 |
| TRUs | 0.24 | 0.5 | 0.07 | 0.2 | 0.05 | 0.1 |
| Other | 0.63 | 1.4 | 0.46 | 1.0 | 0.39 | 0.8 |
| **Total** | **43.40** | **100.0** | **45.54** | **100.0** | **48.13** | **100.0** |

**Table 2-6.** As in **Table 2-5**, but for DPM emissions.

| Source Category | 2017 | | 2024 | | 2029 | |
|---|---|---|---|---|---|---|
| | tpy | % | tpy | % | tpy | % |
| **Area** | **0.00** | **0.0** | **0.00** | **0.0** | **0.00** | **0.0** |
| Commercial cooking | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Food and agriculture | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Fuel combustion – residential | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Fuel combustion – Commercial/industrial | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Industrial processes | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Solvent use | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Consumer products | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| Other | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| **Non-road** | **4.12** | **100.0** | **1.72** | **100.0** | **1.23** | **100.0** |
| Construction – equipment | 3.33 | 80.8 | 1.42 | 82.4 | 1.07 | 87.0 |
| Commercial/industrial equipment | 0.51 | 12.5 | 0.21 | 12.1 | 0.09 | 7.1 |
| Lawn and garden equipment | 0.02 | 0.5 | 0.02 | 1.2 | 0.02 | 1.7 |
| TRUs | 0.26 | 6.2 | 0.07 | 4.3 | 0.05 | 4.2 |
| Other | 0.00 | 0.0 | 0.00 | 0.0 | 0.00 | 0.0 |
| **Total** | **4.12** | **100.0** | **1.72** | **100.0** | **1.23** | **100.0** |

**Table 2-7.** As in **Table 2-5**, but for cancer risk-weighted TAC emissions (including DPM).

| Source Category | 2017 | | 2024 | | 2029 | |
|---|---|---|---|---|---|---|
| | CRW tpy | % | CRW tpy | % | CRW tpy | % |
| **Area** | **413** | **11.0** | **439** | **22.4** | **460** | **28.8** |
| Commercial cooking | 9 | 0.2 | 10 | 0.5 | 11 | 0.7 |
| Food and agriculture | 13 | 0.4 | 13 | 0.7 | 13 | 0.8 |
| Fuel combustion – residential | 18 | 0.5 | 16 | 0.8 | 16 | 1.0 |
| Fuel combustion – Commercial/industrial | 17 | 0.5 | 18 | 0.9 | 18 | 1.1 |
| Industrial processes | 176 | 4.7 | 192 | 9.8 | 205 | 12.8 |
| Solvent use | 125 | 3.3 | 135 | 6.9 | 142 | 8.9 |
| Consumer products | 41 | 1.1 | 44 | 2.3 | 46 | 2.9 |
| Other | 13 | 0.4 | 11 | 0.6 | 10 | 0.6 |
| **Non-road** | **3,358** | **89.0** | **1,523** | **77.6** | **1,138** | **71.2** |
| Construction – equipment | 2,501 | 66.3 | 1,074 | 54.8 | 814 | 51.0 |
| Construction – dust | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Commercial/industrial equipment | 436 | 11.6 | 205 | 10.5 | 117 | 7.3 |
| Lawn and garden equipment | 79 | 2.1 | 77 | 3.9 | 78 | 4.9 |
| TRUs | 192 | 5.1 | 57 | 2.9 | 40 | 2.5 |
| Other | 151 | 4.0 | 109 | 5.5 | 88 | 5.5 |
| **Total** | **3,771** | **100.0** | **1,962** | **100.0** | **1,599** | **100.0** |

Total emissions from the community-scale bottom-up and top-down emissions inventories can be summed to obtain the grand total of emissions in West Oakland (**Figure 2-3**, **Table 2-8**). In summary:

- **$PM_{2.5}$:** total emissions increase in future years, as both the bottom-up and top-down portion (i.e., not included for dispersion modeling) increases over time. The overall increase by 2024 is approximately +2.57% (**Table 2-8**), mainly due to a projected increase in emissions from Port-related sources (**Table 2-2**). According to the District's analysis presented herein, the portion of $PM_{2.5}$ emissions represented by the bottom-up emissions inventory is nearly constant from the base year to future years (~ 66%).

- **DPM:** total emissions decrease by 2024 (-18.17%) and then increase by 2029, towards 2017 levels (-10.67%). Emissions from categories that were not included decrease over time; accordingly, a greater proportion of the total emissions inventory for DPM is represented in the total emissions inventory in future years (**Table 2-8**).

- **Cancer risk-weighted TACs:** changes in emissions in future years are similar to those for DPM: total emissions decrease by 2024 but increase to 2029, though 2029 emissions remain below the base year (-9.77%), and the estimated portion of the inventory that was not modeled decreases in future years.

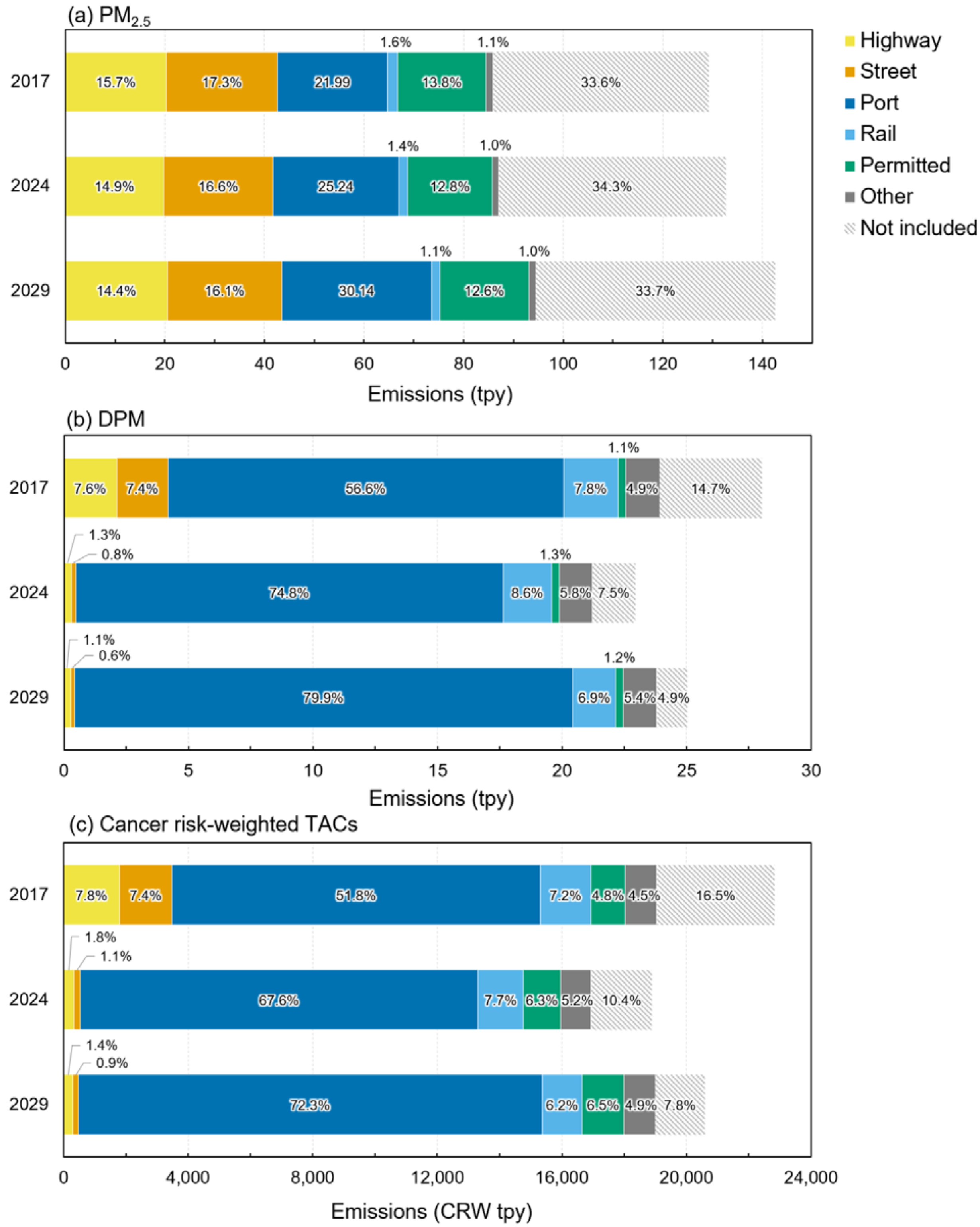


**Figure 2-3.** Emissions of (a) $PM_{2.5}$, (b) DPM, and (c) cancer risk-weighted TACs by source category for the 2017 base year and future year (2024, 2029) for West Oakland. Emissions that were "Not included" in the community-scale modeling (top-down, "not modeled") and analysis are also shown; the absolute length of the horizontal bars represents the total emissions estimated in West Oakland (sum of bottom-up and top-down).

**Table 2-8.** Summary of $PM_{2.5}$ (tpy), DPM (tpy), and cancer risk-weighted (CRW) TAC (CRW tpy) emissions in West Oakland. Business-as-usual conditions are assumed for future years (2024, 2029). All percent changes (% change) are relative to the base year (2017). The percent modeled ("% modeled") is equal to the "Bottom-up" value divided by the "Total" value, multiplied by 100.

| Pollutant | Year | Bottom-up (modeled) | % change | Top-down (not modeled) | % change | Total | % change | % modeled |
|---|---|---|---|---|---|---|---|---|
| **$PM_{2.5}$** | 2017 | 85.91 | – | 43.40 | – | 129.31 | – | 66.4 |
| | 2024 | 87.09 | +1.38 | 45.54 | +4.94 | 132.63 | +2.57 | 65.7 |
| | 2029 | 94.50 | +10.00 | 48.13 | +10.91 | 142.63 | +10.31 | 66.3 |
| **DPM** | 2017 | 23.91 | – | 4.12 | – | 28.03 | – | 85.3 |
| | 2024 | 21.22 | -11.28 | 1.72 | -58.17 | 22.94 | -18.17 | 92.5 |
| | 2029 | 23.81 | -0.43 | 1.23 | -70.14 | 25.04 | -10.67 | 95.1 |
| **CRW TACs** | 2017 | 19,054 | – | 3,371 | – | 22,825 | – | 83.5 |
| | 2024 | 16,939 | -11.10 | 1,962 | -17.20 | 18,900 | -17.20 | 89.6 |
| | 2029 | 18,997 | -0.30 | 1,599 | -57.61 | 20,596 | -9.77 | 92.2 |

## 2.2 Permitted Stationary Sources

Permitted stationary sources can be categorized using one or more systems of codes that describe a facility's primary activity, specific processes, and/or industry classification:

- **Standard Industrial Classification (SIC):** The SIC system was developed in the 1930s by the U.S. Office of Management and Budget to help classify facilities under the appropriate industrial group, and to help government agencies collect and analyze data in a uniform manner. An SIC code consists of four digits, where the first two digits describe the major line of business contributing the majority of revenue, the third digit identifies the subgroup of the establishment, and the fourth digit identifies the specific industry sector in which the establishment operates.

- **North American Industry Classification System (NAICS):** The NAICS[3] has since replaced the SIC system. NAICS codes consist of six digits that allow for more flexibility to expand and include industry sectors operating in the U.S., Canada, and Mexico.

- **Source Classification Code (SCC):** An SCC is used by the U.S. Environmental Protection Agency (EPA) to classify different types of activities that generate emissions. Each SCC represents a unique source category-specific process or function that can emit more than one air pollutant. For example, the same SCC can be applied to a combustion boiler used to generate energy for an electricity generating facility or for a pulp and paper manufacturer. The SCCs are used as a primary identifying data element in national and state level databases, such as EPA's National Emissions Inventory (NEI) and CARB's California Emissions Inventory Development and Reporting System (CEIDARS) database.

[3] https://www.naics.com/search/.

The District typically assigns an SIC and/or a NAICS code to each permitted facility in the Bay Area. Together, these codes describe a facility's process and industry. Compliant with CEIDARS reporting requirements, the District also assigns SIC and SCC code pairs for each permitted source by using a crosswalk that connects the SIC and/or NAICS codes to SCCs. Every three years, the District develops an emissions inventory that includes GCFs for future years for each source category by SIC. The GFs take into account the expected increase in throughput by category, predicted growth profile from CARB, total population growth profile and employment growth by sectors from Association of Bay Area Government (ABAG) projections, and economic considerations. The growth is offset by CFs required under existing and upcoming regulations adopted by the District, local, state, or federal agencies and projected reductions through incentive funding.

To forecast emissions from permitted stationary sources, the District used the GCFs that were submitted to CARB as part of its emissions inventory submission for 2011 (Bay Area Air Quality Management District 2014). Adjustments were made to the profiles using ABAG's 2013 projections for employment and population. The 2017 base year emissions were multiplied by the GCFs for 2024 and 2029 by SCC. The same GCFs were applied to industries with the same SCC except if differing fuel types were used (e.g., diesel fuel versus gasoline). In a few cases, the District used GCFs for area sources developed by CARB based on SCC. For facilities where only emissions were available for 2016 (as noted in Part I Section 2.2), GCFs were adjusted using 2016 as the base year. Permitted sources where emission factors or facility operations had significantly changed in 2019 were accordingly grown using 2019 as the base year. Standby generators used solely for emergency situations were the only source where no GFs or CFs were applied.

To forecast emissions from permitted sources at Schnitzer Steel, the District used the SIC-based GCFs on the 2017 base year emissions; two Venturi Scrubbers were installed during this year at the facility to abate emissions from the shredder and in-feed conveyor, which are accounted for in the base year emissions inventory.

## 2.3 On-Road Mobile Sources

Emissions from on-road mobile sources were forecasted based GFs and emissions factors in future years from CARB's most recent version of the EMission FACtors (EMFAC) model, EMFAC2017 (California Air Resources Board 2017b), and the Caltrans-EMFAC2017 (CT-EMFAC2017) model (California Department of Transportation 2019), and additional CFs to account for emissions reductions from regulations adopted since the release of EMFAC2017 (December 22, 2017). The methodology, data requirements, and data sources used for developing future year emissions inventories are described in the following sections.

### 2.3.1 Travel Activity

Future-year travel activity is needed to estimate future-year emissions from on-road mobile sources. Ideally, the local metropolitan planning organization (MPO) should provide future activity levels simulated by a travel demand model (TDM) to reflect the best understanding and prediction of traffic volume and congestion levels. In this analysis, the future-year (2024, 2029) activity data was not available from the local MPO. Given that the road network and travel activity data for the base year were also obtained elsewhere (Citilabs), a simplified approach was used to project the travel activity from the 2017 base year to the future years using GFs derived from total vehicle miles traveled (VMT) data from EMFAC2017. It was therefore assumed that no changes in roadway conditions, fleet mix (by vehicle category), vehicle speed, and diurnal volume profile would occur in future years. However, changes in fleet average vehicle weight ($W_{fleet}$) were incorporated (which is used to calculate road dust emission factors): while the fleet mix by vehicle categories (Non-Truck, Truck 1, Non POAK-Truck 2, POAK) was kept constant,[4] the underlying composition of each vehicle category in EMFAC2017 varies in future years, which causes small changes in overall fleet average vehicle weight.

The GFs were derived from the total VMT of Alameda County in EMFAC2017 following:

$$GF_{FY} = \frac{VMT_{FY}}{VMT_{BY}}$$

where

| | | |
|---|---|---|
| $GF_{FY}$ | = | growth factor for future year $FY$ (unitless) |
| $VMT_x$ | = | total fleet VMT for year $x$ (BY or FY) from EMFAC2017 (mi) |

In this analysis, $BY = 2017$, and $FY \in \{2024, 2029\}$. For each roadway link, the year-specific GF was then multiplied by the hourly VMT (or vehicle hours traveled [VHT]) for each vehicle category and day type (weekday, weekend) to develop future-year travel activity. The GFs applied to the base year activity levels were 1.078 (+7.8% growth) for 2024, and 1.133 (+13.3% growth) for 2029. The GFs were the same for all vehicle categories and roadway types.

### 2.3.2 Emission Factors

EMFAC2017 estimates operational emission factors from 2000 to 2050, where changes in emission factors over time result from vehicle fleet turnover and emissions benefits from state and federal laws, regulations, and legislative actions that were adopted as of December 2017 (California Air Resources Board 2018a).

In this analysis, emission factors for the future years were calculated for each vehicle category, emission process (running exhaust, running loss, tire wear, and brake wear only), and pollutant using the EMFAC2017 and CT-EMFAC2017 emission factors, following the same approach as described in Part I Section 2.3.3. However, the resulting emission factors do not account for additional emissions benefits from regulations adopted after the release of EMFAC2017; these were applied to total forecasted emissions, as discussed in Section 2.3.3.

For re-entrained road dust emission factors, the future year emission factors were calculated as described in Part I Section 2.3.3, using the updated fleet average vehicle weight and by assuming no changes in road conditions (e.g., silt loading), vehicle category fleet mix, and meteorology (precipitation).

[4] Total VMT was used to derive the growth rate, rather than VMT by vehicle category. This was to ensure that the fleet mix of vehicle categories remained constant in future years.

### 2.3.3 Additional Control Factors

EMFAC2017 generates emission factors that already take into account future CFs. However, at the time of this analysis, there were three statewide regulations implemented by CARB after the release of EMFAC2017 that must be accounted for in BAU future-year emissions inventories (**Table 2-9**). Additional emission benefits (reductions) from these regulations should affect operational emission processes only. To reflect these additional benefits, the CFs were applied to total emissions estimated in future years. For each regulation ($R$), the CFs were derived by pollutant ($p$), process ($P$), and vehicle type ($VT$) for a given future year following:

$$CF(p, P, FY, VT)_R = \frac{E_{regulated}\ (p, P, FY, VT)}{E_{baseline}\ (p, P, FY, VT)}$$

where $E_{baseline}$ are the baseline emissions, and $E_{regulated}$ are the regulated emissions estimated by CARB in the rulemaking process.[5]

The CFs were then weighted by the emissions[6] from the EMFAC2017 web database[7] to obtain the control factors by vehicle category, which could then be applied directly to emissions by vehicle category from the 2017 base year inventory (Non-Truck, Truck 1, non-POAK-Truck 2, POAK).

A caveat of these CFs is that the baseline and regulated emissions from CARB are not specific to the West Oakland community. As a result, the CFs are derived based on statewide or San Francisco Bay Area-specific emissions (see **Table 2-9**).

### 2.3.4 Emissions

The travel activity (**Section 2.3.1**) and emission factors (**Section 2.3.2**) were combined to estimate future-year emissions following the same approach described in Part I Section 2.3.4. Where applicable, additional CFs (**Section 2.3.3**) were applied to obtain the adjusted emissions for BAU conditions:

$$E(p, P, FY, VC) = E(p, P, FY, VC)' \cdot \prod_r CF(p, P, FY, VC)_R$$

where the emissions ($E$) are for a particular pollutant ($p$), process ($P$), future year ($FY$), and vehicle category ($VC$). The prime ($'$) indicates the emissions before the additional adjustment using the CF for all regulations. This emissions adjustment assumes that all regulations are independent, and that their impacts are linear and additive.

[5] Based on information provided to the District by CARB on June 7, 2019.
[6] Emissions were obtained for the area to which the regulation applied (i.e., statewide or area-wide, as noted in **Table 2-6**).
[7] https://www.arb.ca.gov/emfac/2017/.

**Table 2-9.** Regulations for on-road mobile sources approved after the release of EMFAC2017. Truck 2 includes POAK and Non-POAK-Truck 2 vehicles.* Process indicates only the emission processes that are affected in this emissions inventory (CARB's regulations may apply to other emission processes; see References); idling is for extended idling events only.

| Program | Region | Vehicle | Pollutant | Process | Reference |
|---|---|---|---|---|---|
| Amendments to Heavy-Duty Vehicle Inspection Program and Periodic Smoke Inspection Program | Statewide | Diesel: Truck 2 | DPM<br>$PM_{10}$<br>$PM_{2.5}$ | running<br>idling | California Air Resources Board (2019a), California Air Resources Board (2018c). See also [1]. |
| Amendments to California Emission Control System Warranty Regulations and Maintenance Provisions for 2022 and Subsequent Model Year On-Road Heavy- Duty Diesel Vehicles with Gross Vehicle weight Ratings Greater Than 14,000 Pounds and Heavy-Duty Diesel Engines in such Vehicles | Statewide | Diesel: Truck 2, school bus, other bus, motorhomes | DPM<br>$PM_{10}$<br>$PM_{2.5}$<br>$NO_x$ | running<br>idling | California Air Resources Board (2018d). See also [2]. |
| Innovative Clean Transit (ICT) | San Francisco Bay Area | Urban buses | DPM<br>$PM_{10}$<br>$PM_{2.5}$<br>$NO_x$ | running | California Air Resources Board (2018b). See also [3]. |

* see Part I Table 2-6 for a definition of these vehicle types.
[1] https://ww2.arb.ca.gov/rulemaking/2018/heavy-duty-vehicle-inspection-program-and-periodic-smoke-inspection-program.
[2] https://ww2.arb.ca.gov/rulemaking/2018/hd-warranty-2018.
[3] https://ww3.arb.ca.gov/msprog/ict/background_materials.htm.

## 2.4 Truck-Related Businesses

### 2.4.1 Surveyed Businesses

In this analysis, emissions from surveyed truck-related businesses include only idling exhaust while the vehicle is on the business premises. Emissions in future years from truck-related businesses surveyed in West Oakland were estimated, where:

(1) activity (truck trips per day at each facility) from the base year survey was adjusted by using a GF developed using the San Francisco Bay Area's Metropolitan Transportation Commission (MTC) Plan Bay Area 2040[8] projections for "Manufacturing, Wholesale and Transportation Jobs" in Oakland;
(2) idling exhaust emission factors by vehicle type in future years were taken from EMFAC2017 and CT-EMFAC2017; and
(3) total emissions were adjusted by additional CFs, where applicable (as described in **Section 2.3.3**).

For (1), the projected number of jobs are available every five years, from 2010 to 2040 (inclusive). In this dataset, the base year is 2010, where data are based on 2010 Census counts. Data were linearly interpolated between years to obtain the number of jobs in the analysis future years (2024, 2029). The Plan Bay Area 2040 data indicated that jobs in the transportation section are forecasted to slightly decrease in future years (GF of 0.98 in 2024, 0.97 in 2029); emission factors are also expected to decrease (due to fleet turnover, new regulations, etc.). Assuming BAU conditions, vehicle activity in future years was assumed to remain constant, with 15 min of idling per truck trip.

### 2.4.2 Schnitzer Steel

Total emissions from trucks operating at Schnitzer Steel include emissions due to running exhaust, idle exhaust, tire wear, brake wear, and road dust. The District used a bottom-up approach to forecast emissions. First, the number of truck trips per year was projected based on the observed trend in number of truck trips between 2017 and 2018 up to the current permitted limit (63,875 truck trips/year). No other adjustments to activity parameters (driving distance, driving speed, idling time, road type) were applied. Emission factors for future years were based on data derived from EMFAC2017 and CT-EMFAC2017 for diesel medium-heavy duty trucks (MHDT) and heavy heavy-duty trucks (HHDT). Total emissions were adjusted by the additional CFs (**Section 2.3.3**) to account for additional regulations in the future, where applicable.

[8] Data provided by MTC; see also: https://mtc.ca.gov/our-work/plans-projects/plan-bay-area-2040.

## 2.5 Ocean-Going Vessels

### 2.5.1 Port of Oakland

OGVs use propulsion engines for transiting, auxiliary engines for on-board electrical power, and small boilers to meet steam and hot water demands. Emissions from transiting, maneuvering, and berthing from OGVs were forecasted for active marine terminals at the Port in 2017 (TraPac, Nutter, Oakland International Container Terminal [OICT], and Matson). The District assumed that all marine terminals would remain active in future years, and that the spatial allocation of emissions would not change.

For OGV maneuvering emissions, GCFs were derived from the 2016 SIP dataset for propulsion engines, auxiliary engines, and boilers. The 2017 base year emissions were multiplied by the corresponding GCFs to estimate future-year emissions. For berthing, future-year emissions estimates were provided directly from CARB (personal communication, 12 July, 2019).[9]

### 2.5.2 Schnitzer Steel

Schnitzer Steel receives only bulk carriers calling for scrap metal, and operates its own berth. Emissions from assist tugs (used to assist OGV movements upon arrival and departure) are included in the total OGV emissions.

For the 2017 base year emissions, the District used the current permit limit of 26 ship calls/year. The District is currently modifying the permit at the request of Schnitzer Steel to increase the annual permitted ship calls to 32 ship calls/year. Future emissions for 2024 and 2029 were estimated following the same methodology used to estimate the base year emissions except that 32 ship calls/year were used instead ($GF = 1.231$, or +23.1%). This also includes an increase in the number of assist tugs; total emissions reflect the total from OGVs and assist tugs. Without any supplemental data, no CFs were applied to estimate future-year emissions.

## 2.6 Commercial Harbor Crafts

### 2.6.1 Operation and Maintenance Dredging and Disposal

Future emissions for operation and maintenance (O&M) dredging and disposal activities were estimated using GCFs from the 2016 SIP dataset; the 2017 base year emissions were multiplied by the corresponding GCFs to estimate future-year emissions. This estimate generally assumes that the same amount of material will be dredged in future years.

### 2.6.2 Assist Tugs

Tug boats are used to assist cargo vessel movements upon arrival, berthing, and departure from the Port, and to tow or push a wide variety of barges and other equipment. The 2017 base year

[9] These emissions are consistent with the current draft OGV at-berth inventory (California Air Resources Board 2019b; the final version will be publicly posted 60 days before the CARB Board hearing for the At-Berth Regulation Amendment).

emissions were estimated based on the activity of the five companies operating tugs: AMNAV, Foss Maritime, Starlight Marine, Crowley, and BayDelta.

Between 2017 and 2019, the District incentivized repowers (Tier 1 to Tier 3) of two tugs frequently serving the Port, reducing emissions in the Source Domain. These tugs would have needed upgrades to come into compliance with CARB's regulation for Commercial Harbor Crafts[10] by 2022, when CHCs will be required to have engines of model year 2007 or newer; the incentive funding resulted in reduced emissions in advance of the regulation. Following guidance from CARB, BAU emissions from assist tugs in 2024 were estimated by subtracting the emission reductions due to repowers from the 2017 base year emissions. For 2029, emissions were estimated by developing a GCF from the 2016 SIP dataset from 2024 to 2029, and applying that factor to the 2024 emissions.

### 2.6.3 Bunkering Barges

Future-year emissions from bunkering barges were forecasted separately for the barge main engine, auxiliary engine, and pumps as CARB's 2016 SIP dataset includes projected emissions for these separate emissions sources. The 2017 base year emissions were multiplied by the corresponding GCFs to estimate future-year emissions.

## 2.7 Cargo Handling Equipment

Cargo handling equipment (CHE) is primarily used to move shipping containers between marine vessels and trucks or between trains and trucks. As such, the types of CHE at the Port are limited to yard tractors, on-road yard tractors, rubber-tired gantry (RTG) cranes, top or side handlers (materials handling equipment), and forklifts.[11]

In the 2017 base year emissions inventory, total emissions from CHE were allocated to each equipment type based on the 2017 Port Inventory (Ramboll 2018). The 2017 base year emissions were multiplied by the corresponding GCFs from the 2016 SIP dataset to estimate future-year emissions.

## 2.8 Port Trucks at Terminals

Port trucks operating at terminals transport containers between marine terminals (TraPac, Nutter, OICT, Matson), freeway interchanges (Maritime Street/West Grand Street, 7th Street, and Adeline Street), which are the only access points to the Port property, and nearby railyards (BNSF, UP).

Emissions from Port Trucks operating at terminals in 2017 were based on the 2017 Port Inventory (Ramboll 2018). These emissions were expressed as totals by general emissions process: "driving" and idling. For $PM_{10}$ and $PM_{2.5}$, driving emissions include running exhaust, tire wear, and brake

[10] For more information, see: https://ww2.arb.ca.gov/our-work/programs/commercial-harbor-craft.

[11] Other off-road equipment, such as sweepers, bulldozers, backhoes, excavators, and other off-road equipment, were not included as part of the CHE category since they are used at the Port for facility maintenance and construction instead.

wear emissions; for other pollutants, driving emissions are running exhaust emissions only. Road dust emissions were also estimated by the District for PM and included in the 2017 base year inventory for West Oakland (see Part I Section 2.8 for a description of the methodology).

Future-year emissions can be estimated by multiplying the total 2017 base year emissions by the fractional change in activity (GF, i.e., projected number of truck tips) and the fractional change in emission factors (CF[12]) for the vehicle category (represented as T7 POAK in EMFAC2017 Alameda County) to a given future year. Emission factors vary by emission process; therefore, total emissions must be disaggregated by emission process to estimate future-year emissions. The proportion of emissions by process in turn vary by terminal type (marine or railyard) and operation (in-terminal, or on-route to terminal). The process of disaggregating the total base year emissions are presented in **Figure 2-4**, and described below.

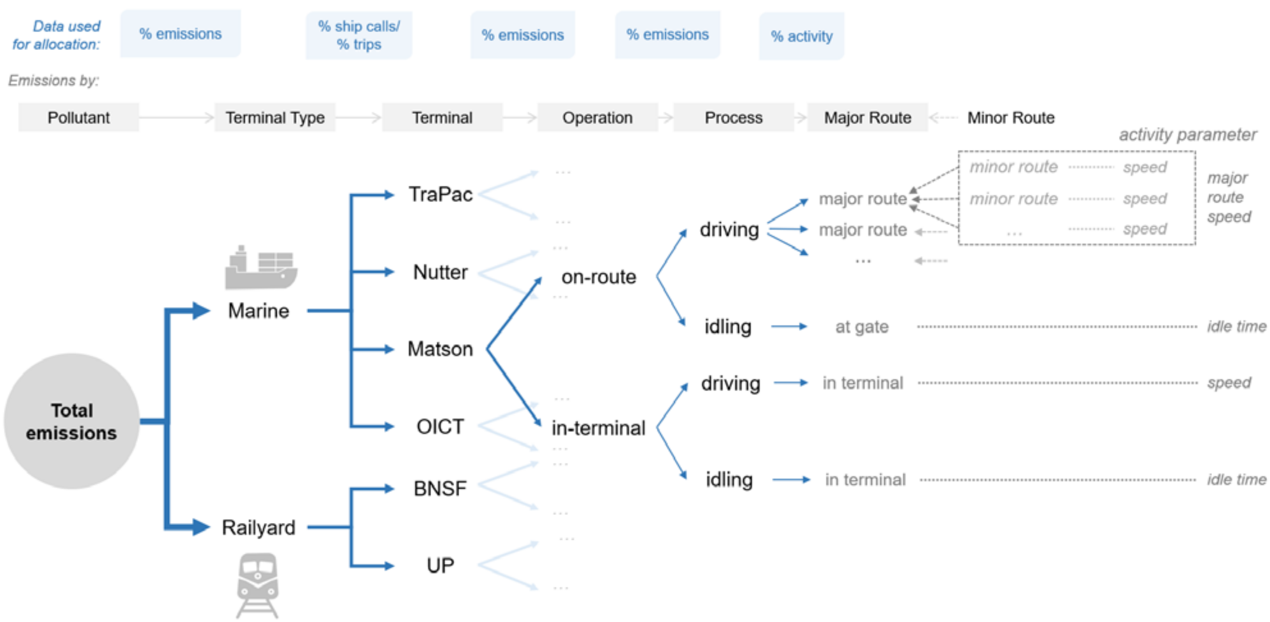


**Figure 2-4.** Illustration of process used to allocation total emissions from Port Trucks at terminals to specific locations and emissions processes. Only the disaggregation for the Matson marine terminal is illustrated for simplicity; analogous disaggregation schemes were used for all other terminals (not shown). The subsequent data used (blue rectangles) to obtain the aggregation level of emissions data (grey rectangles) are indicated. To develop the future year emission inventories, base year emissions were disaggregated to the Major Route level.

[12] When emission factors are aggregated over a portion of the fleet (e.g., for vehicle types within categories, or over model years for a particular vehicle type), this generally represents a combined growth and control factor, as the population of specific vehicle types change over time, as well as the emission factors of newer vehicles.

(1) Based on information provided by Ramboll (Till Stoeckenius, Ramboll, personal communications, 25 February, 2019, and 12 June, 2019), total emissions by pollutant were first allocated to terminal type (marine, railyard) (e.g., Part I Table 2-25).

(2) Emissions were spatially allocated to terminals:
   (a) For marine terminals, Port Truck emissions were further assigned to each terminal based on the proportion of ship calls made to each terminal in 2017.
   (b) For railyards, it was assumed that two-thirds (66.66%) of Port Trucks travelling to railyards went to the UP railyard, while the remaining one-third (33.33%) went to the BNSF railyard, consistent with the 2017 Port Inventory.

(3) Emissions by terminal were allocated to general emission processes (driving and idling) and operation based on information provided by Ramboll (Till Stoeckenius, Ramboll, personal communications, 12 June, 2019).

(4) Emissions were then allocated to Major Route, where:
   (a) For on-route driving to marine terminals, a Major Route represents the terminal-freeway interchange access point pair (e.g., TraPac–7th Street). Each Major Route can be made up of one or more Minor Routes, which associate a specific berth within the terminal to the access point (e.g., TraPac/Berth 32–7th Street). Emissions from Major Routes were allocated using the percentage of truck trips from each terminal to each access point (Ramboll (2018) Table 5-3).
   (b) For on-route idling (at gate) and in-terminal driving and idling, the process and Major Route are a one-to-one mapping (**Figure 2-4**; i.e., there are no associated Minor Routes).

Fleet volume information was not available by Minor Route, therefore the lowest level of aggregation of the Port Truck emissions was by Major Route by process, operation, and specific terminal.

However, a complication arises when disaggregating PM emissions; as aforementioned, PM emissions were reported by Ramboll (2018) as idling exhaust ($IDLEX$) and total driving emissions ($drive$), which is the total of running exhaust ($RUNEX$), tire wear ($PMTW$), and brake wear ($PMBW$). Therefore, the driving emissions must be further disaggregated into these three emissions processes. Since $RUNEX$ emissions are speed-dependent (**Figure 2-5**), an average travel speed by Major Route was derived by taking the average of all average travel speeds on associated Minor Routes (Ramboll 2018, Table 5-4; **Table 2-10**).

Since PM emissions from $RUNEX$, $PMTW$, and $PMBW$ are all proportional to VMT, the total of these emissions by Major Route can be derived using the proportion of emission factors taken from EMFAC2017 (2017 Alameda County):[13]

[13] These may not exactly correspond to the emission factors used by Ramboll (2018), but the proportion of emission factors should be similar.

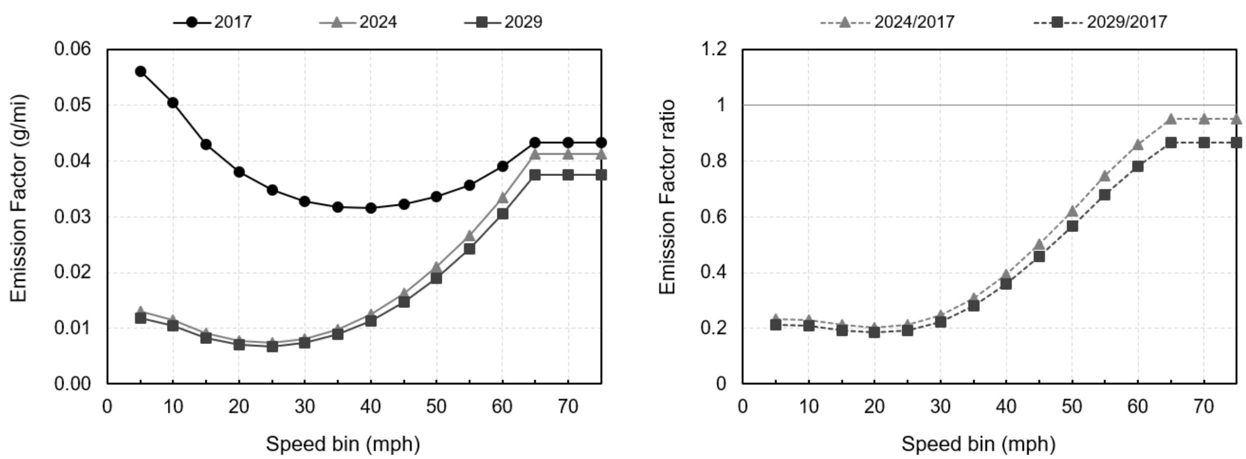


**Figure 2-5.** EMFAC2017 running exhaust emission factors for Port Trucks (T7 POAK, 2017 Alameda County), (left) by speed, and (right) as a ratio of future year (2024, 2029) emission factors to base year (2017) emission factors by speed bin.

**Table 2-10.** Method used to derive average Major Route travel speed. Speed bins are defined as in EMFAC2017.

| Terminal type | Operation | Speed Data (Major Route) |
|---|---|---|
| Marine | On route | Length-weighted average speed of all associated Minor Routes (Ramboll 2018, Table 5-4).* |
| | In terminal | 13.5 mph (10 mph speed bin, Ramboll 2018, Table 5-5). |
| Railyard | On route | Length-weighted average speed from all Minor Routes from all marine terminals to railyard (Ramboll 2018, Table 5-4).* |
| | In terminal | 13.5 mph (10 mph speed bin, Ramboll 2018, Table 5-5). |

* Ideally, the weighted average travel speed would be weighted by the fleet volume among Minor Routes; this data was not available.

$$E_{RUNEX} = E_{drive} \cdot \frac{EF_{RUNEX}(s)}{EF_{drive}}$$

$$E_{PMTW} = E_{drive} \cdot \frac{EF_{PMTW}}{EF_{drive}}$$

$$E_{PMBW} = E_{drive} \cdot \frac{EF_{PMBW}}{EF_{drive}}$$

where

| | | |
|---|---|---|
| $E_p$ | = | base year PM emissions, where $p \in \{RUNEX, PMTW, PMBW, drive\}$, and $drive = RUNEX + PMTW + PMBW$ (g) ($E_{drive}$ from Ramboll 2018) |
| $EF_p$ | = | emission factor from EMFAC2017 (2017 Alameda County) (g/mi) |
| $s$ | = | average travel speed bin on Major Route (used to determine $EF_{RUNEX}$ from EMFAC2017 only; **Figure 2-5**) |

Finally, as described above, a change in emissions from base year to future year can be estimated by using the fractional change of emission factors by emission process, and projected changes in activity:

$$E_{FY} = (E_{BY} \cdot GF_{FY} \cdot CF_{FY}) \cdot \prod_{r} CF_{R,FY}$$

$$CF_{FY} = \frac{EF_{FY}}{EF_{BY}}$$

where

| | | |
|---|---|---|
| $E_{FY}$ | = | emissions of pollutant in future year $FY$ (g) |
| $E_{BY}$ | = | emission of pollutant in base year $BY$ (g) |
| $GF_{FY}$ | = | growth factor of pollutant from $BY$ to $FY$ (unitless) (1.05 per year, compounded) |
| $CF_{FY}$ | = | control factor of pollutant from $BY$ to $FY$, expressed as the ratio of future-year emission factor to base year emission factor for process $p \in \{RUNEX,\ PMTW,\ PMBW,\ IDLEX\}$ (unitless) |
| $CF_{R,FY}$ | = | additional control factors (as described in **Section 2.3.3**) (unitless) |

In this analysis, the GF was taken as the projected increase in container ship activity at the Port (+5.0% per year, compounded; California Air Resources Board 2019b).[14]

[14] The +5.0% growth rate is based on the projected container ship activity in Appendix C (p. 67), approximated to 2029 only. Projections for all container ship sizes are identical.

## 2.9 Locomotives (Rail Lines)

### 2.9.1 Freight Haul Lines

BNSF and UP are the two major freight rail carriers that transport goods to and from the Bay Area. To forecast emissions, the District multiplied the 2017 base year emissions by the corresponding GCFs derived from the 2016 SIP dataset.[15]

### 2.9.2 Passenger Rail Lines

Passenger rail in West Oakland includes locomotives traveling on the Amtrak Capital Corridor, California Zephyr, Coastal Starlight, and San Joaquin lines. To forecast emissions, the District used emission estimates from California Air Resources Board (2017a); GCFs were derived using the same methods as those based on the 2016 SIP data, where future-year emissions are divided by the base year emissions. The 2017 base year emissions were multiplied by corresponding GCFs by process (exhaust and idling) to obtain estimates of future-year emissions.

## 2.10 Railyards

### 2.10.1 BNSF

The BNSF railyard is a near-dock transfer point, where emissions from locomotives come from both line-haul operations and switching operations (switchers). To forecast emissions, the 2017 base year emissions were multiplied by corresponding GCFs derived from the 2016 SIP dataset to obtain estimates of future-year emissions by locomotive type.

### 2.10.2 OGRE

OGRE is a Class III, Surface Transportation Board-certified short line rail company, exclusively serving non-marine facilities on the Army Base. Only switchers operate in this yard. Future-year emissions were estimated by multiplying the 2017 base year emissions were by corresponding GCFs derived from the 2016 SIP dataset for switchers only.

### 2.10.3 UP

The UP Oakland Railyard is a cargo handling facility that facilitates intermodal transport and locomotive service and repair. For the 2017 base year emissions, UP provided the District with total emissions estimates associated with several source categories: railyard operation from switchers, line-hauls locomotives, service and testing of locomotives, transport refrigeration units

[15] These GCFs are consistent with those available from CARB's sector-specific inventories (California Air Resources Board 2017a), available at: https://ww3.arb.ca.gov/msei/ordiesel.htm.

(TRUs) and refrigeration cars ("reefer cars"), and CHE. Through communications with UP, an updated emissions allocation profile by equipment type was developed,[16] as shown in **Table 2-11**.

**Table 2-11.** Percentage of PM emissions by source category at UP railyard for 2017 base year.

| Source Category | % total emissions |
|---|---|
| Haul line freight and service/repairs | 2.4 |
| Switchers | 76.4 |
| TRUs/Reefer cars | 2.0 |
| CHE | 19.2 |
| **Total** | **100.0** |

Consistent with other emissions sources in this analysis, the District used GCFs derived from the 2016 SIP inventory provided by CARB to estimate future-year emissions line-haul freight locomotives (Class I), switchers, and CHE; emissions associated with TRUs and reefer cars were not provided by CARB in the 2016 SIP dataset and thus were accounted for and projected with the freight locomotive category. Future-year emissions were estimated by multiplying the 2017 base year emissions were by corresponding GCFs.

## 2.11 Commuter Ferries and Excursion Vessels

Without detailed information regarding potential future increase in ferry service or fleet turnover, emissions for commuter ferries and excursion vessels were forecasted using GCFs from the 2016 SIP dataset. Emissions from navigating were forecasted by engine type: main engine, and auxiliary engine. Emissions from berthing are due to operations of the auxiliary engine only. The 2017 base year emissions were multiplied by the corresponding GCFs to estimate future-year emissions.

[16] UP found that the allocation of total DPM to source categories from CARB's health risk assessment of the UP railyard (California Air Resources Board 2008b) was no longer applicable to current operating conditions, and the emissions have significantly declined from several of the source categories.

# 3. Air Dispersion Modeling

A community-scale modeling approach was used to quantify the local impacts from emissions sources on air pollutant concentrations in West Oakland. Dispersion factors were generated using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) system (Cimorelli *et al.* 2004) with a single year of representative meteorological data. Dispersion models use a time-averaged, simplified representation of turbulent atmospheric dispersion to approximate how pollutants are transported and diluted. Year-specific emissions inventories were convolved with dispersion factors to obtain year-specific air pollutant concentrations for the West Oakland community.

Generally, the same air pollutant dispersion model and configuration from the base year analysis (Part I Section 3) were used for assessing potential air pollutant concentrations in the West Oakland community in future years. That is, AERMOD (version 18081, dated March 22, 2018) was used to perform dispersion modeling using unit emission rates to represent the emissions from the sources accounted for in the community-scale emissions inventory (**Section 2**). A full description of the modeling approach is detailed in Part I; a summary of the model configuration and modeling procedure are summarized in **Table 3-1**.

Because meteorological data in 2014 was determined to be generally representative of meteorological conditions in West Oakland, the dataset was also used for future-year dispersion modeling. No changes were made to these emission rate profiles; it was assumed that the diurnal and/or seasonal patterns of the emissions sources will be unchanged in future years. The District also assumed that all emissions sources remained in the same geographical location, with the same physical characteristics.[17] For simplicity, no future background concentrations were estimated.[18]

To summarize, the same modeling approach for the base year analysis was used for the future year analysis; the only difference in the subsequent results are due to the changes in the strength of emissions. This approach allows direct comparisons between resulting pollutant concentrations and source apportionment results from base year to future years.

[17] This assumption may not hold for certain large emissions sources (see **Section 6**).

[18] Background concentrations can be estimated using a modeling platform that combines regional-scale meteorological fields, emissions inventories, and photochemical transport modeling. This approach was used to derive background pollutant concentrations in West Oakland for the 2017 base year analysis (see Part I Section 3.6). Background concentrations are meant to provide a reasonable estimate of expected pollutant concentration and cancer risk levels in the absence of any local (West Oakland) emissions. Due to time and resource limitations, background concentrations were not developed for future years; however, proposed mitigation actions and targets do not depend on such estimates.

**Table 3-1.** Summary of AERMOD configuration for air dispersion modeling for the future year simulations.

| Component | Setting/Data |
|---|---|
| **Meteorological data** | • Data period: January 1, 2014, through December 31, 2014.<br>• Surface data from Oakland Sewage Treatment Plant station (OST) (+37.826º N, –122.299º W)<br>• Upper-air data from Oakland International Airport station (KOAK) (+37.744408º N, –122.223510º W); soundings available twice daily. |
| **Model configuration** | • Default regulatory model options.<br>• No wet or dry deposition.<br>• No building downwash effects.<br>• Accounted for elevated terrain.<br>• Annual simulation used to produce average annual daily dispersion factors at Receptor locations. |
| **Sources** | • Used AERMOD point, area, or volume (single or adjacent) sources to represent emissions from sources within the community-scale emissions inventory.<br>• Each source configured with geographic location, physical characteristics (e.g., stack height), and emissions characteristics.<br>• Unit emission rates used, where temporal changes in the rate were scaled using the emissions or activity profile of the source. |
| **Receptors** | • Receptors placed every 20 m in the *x* and *y* directions within the Receptor Domain (a subset of the modeling domain used to spatially constrain receptors so that they are located in areas where the population could be exposed).<br>• Receptors configured as “flagpole receptors”, placed at 1.8 m agl (average “breathing height” of adults).<br>• Receptors removed if intersecting a volume source exclusion zone (EZ); results imputed to these locations in a post-processing step. |
| **Background concentration** | • No background pollutant concentrations estimated for future years. |

# 4. Analysis Methods

The same analysis methods used for the base year emissions inventory and dispersion modeling, as described in Part I, were applied to the future year emissions inventories and modeling. In particular, the same inhalation slope factors and sensitivity factors outlined by the Office of Environmental Health Hazard Assessment (OEHHA), dose and cancer risk equations, and spatial aggregation methods were used. Pollutant concentrations, cancer risk, and graphics can thus easily be compared between analysis years.

# 5. Results

Annual average local $PM_{2.5}$, DPM, and cancer risk results derived from dispersion modeling are presented in this section in a series of maps and tables; results are presented for the 2024 emissions scenario (2024 BAU) only. Additionally, a source apportionment is performed where information is provided on the relative contributions of the source categories described in previous sections: permitted stationary sources, on-road mobile sources (by road type and vehicle category), Port-related sources (e.g., OGVs, CHE), locomotives on rail lines and at railyards, and other sources (e.g., truck-related businesses).

## 5.1 $PM_{2.5}$ Concentrations

Based on combined AERMOD modeling results, the annual average $PM_{2.5}$ concentration associated with local sources in the West Oakland was 1.74 µg/m$^3$ (averaged over the community domain; **Table 5-1**). This represents a +1.8% change (increase) from the base year average $PM_{2.5}$ concentration (1.71 µg/m$^3$). The spatial distribution and magnitude of $PM_{2.5}$ concentrations given the 2024 BAU emissions are similar to those based on 2017 base year emissions: local concentration contributions exceed 4.0 µg/m$^3$ in areas that are proximate to large emission sources and roadways (**Figure 5-1**). The local average population-weighted (residential; see Part I Section 4.2.3 for methods) $PM_{2.5}$ concentration was 1.75 µg/m$^3$.

## 5.2 DPM Concentrations

The annual average local DPM concentration associated with sources in the West Oakland community domain was 0.30 µg/m$^3$ (**Table 5-2**), which is a -23.1% change (decrease) compared to the 2017 base year results. When the local average is population-weighted, the annual average local DPM concentration decreases to 0.15 µg/m$^3$, as the highest DPM concentrations are generally near the Port rather than residential areas. This represents a -40.0% change (decrease) compared to the 2017 base year results. While the spatial distribution of local DPM concentrations are similar to those in the base year, there is a perceivable decrease in concentrations near roadways (**Figure 5-2**, *c.f.* Part I Figure 5-2).

## 5.3 Cancer Risk

The annual average excess cancer risk within the West Oakland community associated with BAU 2024 BAU emissions was 235 in-a-million (**Table 5-3**). This represents a -22% change (decrease) in excess cancer risk compared to base year emissions (303 in-a-million). The changes in the spatial distribution of excess cancer risk from the base year to 2024 BAU conditions are similar to those for DPM (**Figure 5-3**, *c.f.* **Figure 5-2**). The annual excess cancer risk is 120 in-a-million when weighted by population. Areas with highest excess cancer risk remain in areas that are proximate large emission sources, especially those that emit high levels of DPM.

**Table 5-1.** Source contributions to the annual average $PM_{2.5}$ concentrations in the West Oakland community. Port Truck contributions represent those from Port Trucks on all roads and within Port terminals.

| Source Category | 2017 | | 2024 | |
|---|---|---|---|---|
| | μg/m³ | % of total | μg/m³ | % of total |
| **Highway** | | | | |
| Non-Trucks | 0.242 | 14 | 0.255 | 15 |
| LHDT | 0.009 | 1 | 0.010 | 1 |
| MHDT/HHDT | 0.058 | 3 | 0.022 | 1 |
| Road dust | 0.103 | 6 | 0.110 | 6 |
| **Surface Streets** | | | | |
| Non-Trucks | 0.107 | 6 | 0.111 | 6 |
| LHDT | 0.005 | < 1 | 0.005 | < 1 |
| MHDT/HHDT | 0.038 | 2 | 0.012 | 1 |
| Road dust | 0.395 | 23 | 0.423 | 24 |
| **Port** | | | | |
| OGV – maneuvering | 0.023 | 1 | 0.033 | 2 |
| OGV – berthing | 0.048 | 3 | 0.063 | 4 |
| Dredging | 0.020 | 1 | 0.014 | 1 |
| Assist Tugs | 0.071 | 4 | 0.056 | 3 |
| Bunkering (tugs, pumps) | 0.005 | < 1 | 0.005 | < 1 |
| CHE | 0.027 | 2 | 0.031 | 2 |
| Port Trucks | 0.023 | 1 | 0.016 | 1 |
| Road dust | 0.043 | 3 | 0.047 | 2 |
| Railyard – OGRE | 0.004 | < 1 | 0.005 | < 1 |
| Railyard – BNSF | 0.009 | 1 | 0.005 | 1 |
| **Rail** | | | | |
| Locomotives | 0.026 | 2 | 0.019 | 1 |
| Railyard – UP | 0.057 | 3 | 0.062 | 4 |
| **Permitted** | | | | |
| CA Waste (10th Street) | 0.029 | 2 | 0.032 | 2 |
| California Cereal | 0.034 | 2 | 0.037 | 2 |
| CASS | 0.005 | < 1 | 0.005 | < 1 |
| Dynegy | 0.001 | < 1 | 0.001 | < 1 |
| EBMUD | 0.056 | 3 | 0.060 | 3 |
| Pinnacle Ag Services | 0.095 | 6 | 0.104 | 6 |
| Schnitzer Steel – stationary | 0.090 | 5 | 0.096 | 6 |
| Sierra Pacific | 0.054 | 3 | 0.059 | 3 |
| Other | 0.022 | 1 | 0.022 | 1 |
| **Other** | | | | |
| Ferry/Excursion vessels | 0.006 | < 1 | 0.006 | < 1 |
| Schnitzer Steel – OGV | 0.002 | < 1 | 0.003 | < 1 |
| Schnitzer Steel – trucks | 0.001 | < 1 | 0.001 | < 1 |
| Truck-related businesses | 0.002 | < 1 | 0.001 | < 1 |
| **Total** | **1.710** | **100** | **1.736** | **100** |
| **Total population-weighted** | **1.732** | | **1.745** | |

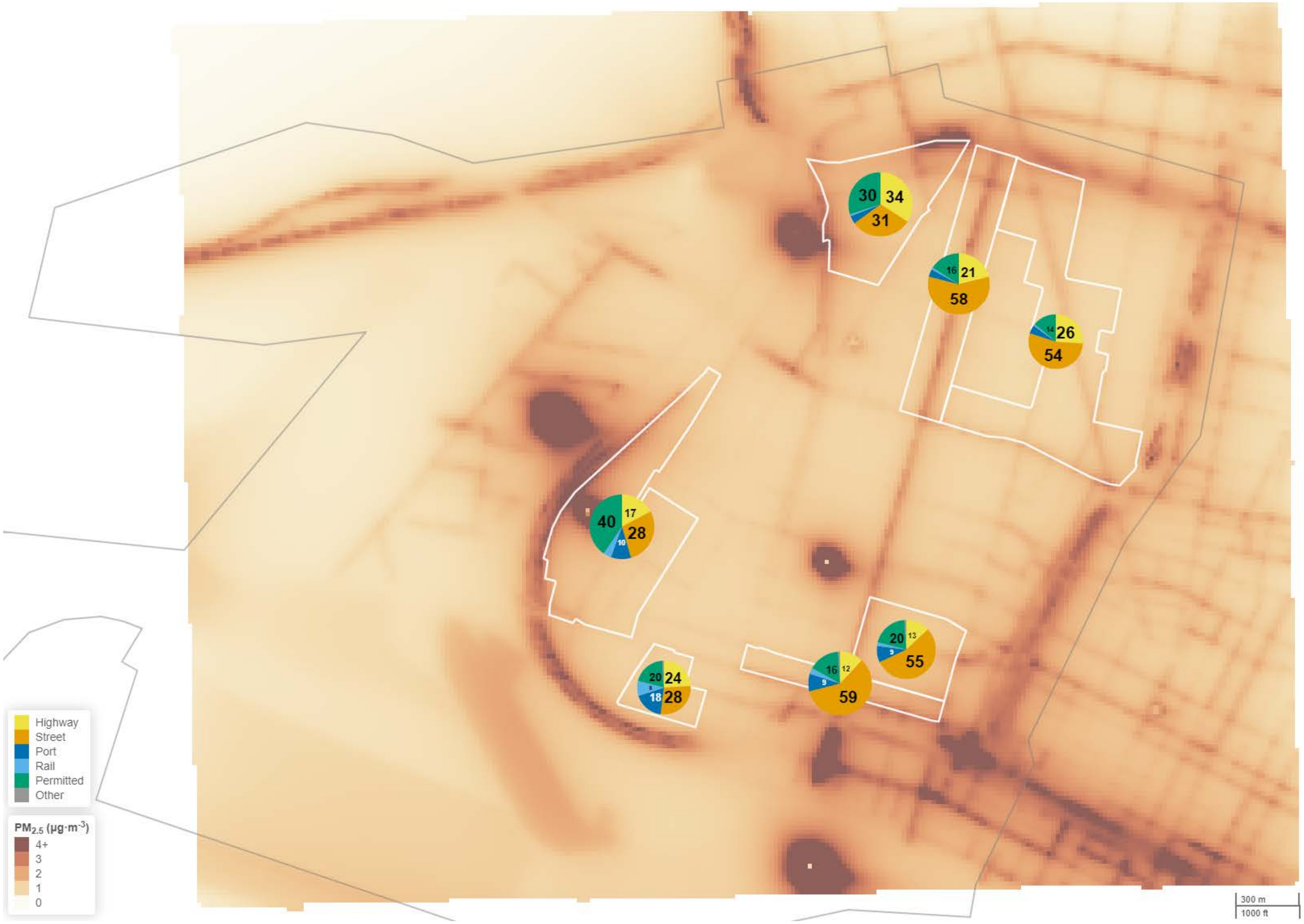


**Figure 5-1.** Annual average $PM_{2.5}$ concentrations associated with modeled local sources in the West Oakland Receptor Domain (colored extents) for 2024 BAU. Pie charts indicate the percentage of concentrations contributed from specific Source Categories in each zone (white polygons, Part I Figure 4-1); the size of the pie chart indicates the total magnitude of the concentration. The grey line indicates West Oakland Community Boundary. Outlines of other geographical features (roadways, etc.) are omitted.

**Table 5-2.** As in **Table 5-1**, but for DPM concentrations.

| Source Category | 2017 | | 2024 | |
|---|---|---|---|---|
| | **µg/m³** | **% of total** | **µg/m³** | **% of total** |
| **Highway** | | | | |
| Non-Trucks | 0.004 | 1 | 0.004 | 1 |
| LHDT | 0.002 | 1 | 0.002 | 1 |
| MHDT/HHDT | 0.043 | 11 | 0.001 | < 1 |
| **Surface Streets** | | | | |
| Non-Trucks | 0.002 | 1 | 0.001 | < 1 |
| LHDT | 0.001 | < 1 | 0.001 | < 1 |
| MHDT/HHDT | 0.029 | 8 | 0.001 | < 1 |
| **Port** | | | | |
| OGV – maneuvering | 0.023 | 6 | 0.033 | 11 |
| OGV – berthing | 0.026 | 7 | 0.032 | 11 |
| Dredging | 0.020 | 5 | 0.014 | 5 |
| Assist Tugs | 0.073 | 19 | 0.058 | 19 |
| Bunkering (tugs, pumps) | 0.005 | 1 | 0.005 | 2 |
| CHE | 0.027 | 7 | 0.031 | 10 |
| Port Trucks | 0.012 | 3 | 0.003 | 1 |
| Railyard – OGRE | 0.005 | 1 | 0.005 | 2 |
| Railyard – BNSF | 0.010 | 3 | 0.011 | 4 |
| **Rail** | | | | |
| Locomotives | 0.028 | 7 | 0.020 | 7 |
| Railyard – UP | 0.062 | 16 | 0.068 | 22 |
| **Permitted** | | | | |
| CA Waste (10th Street) | - | - | - | - |
| California Cereal | - | - | - | - |
| CASS | - | - | - | - |
| Dynegy | < 0.001 | < 1 | - | - |
| EBMUD | 0.002 | 1 | 0.002 | 1 |
| Pinnacle Ag Services | - | - | - | - |
| Schnitzer Steel – stationary | - | - | - | - |
| Sierra Pacific | - | - | - | - |
| Other | < 0.001 | < 1 | 0.001 | < 1 |
| **Other** | | | | |
| Ferry/Excursion vessels | 0.006 | 2 | 0.006 | 2 |
| Schnitzer Steel – OGV | 0.002 | 1 | 0.003 | 1 |
| Schnitzer Steel – trucks | < 0.001 | < 1 | < 0.001 | < 1 |
| Truck-related businesses | 0.002 | 1 | 0.001 | < 1 |
| **Total** | **0.385** | **100** | **0.303** | **100** |
| **Total population-weighted** | **0.247** | | **0.146** | |

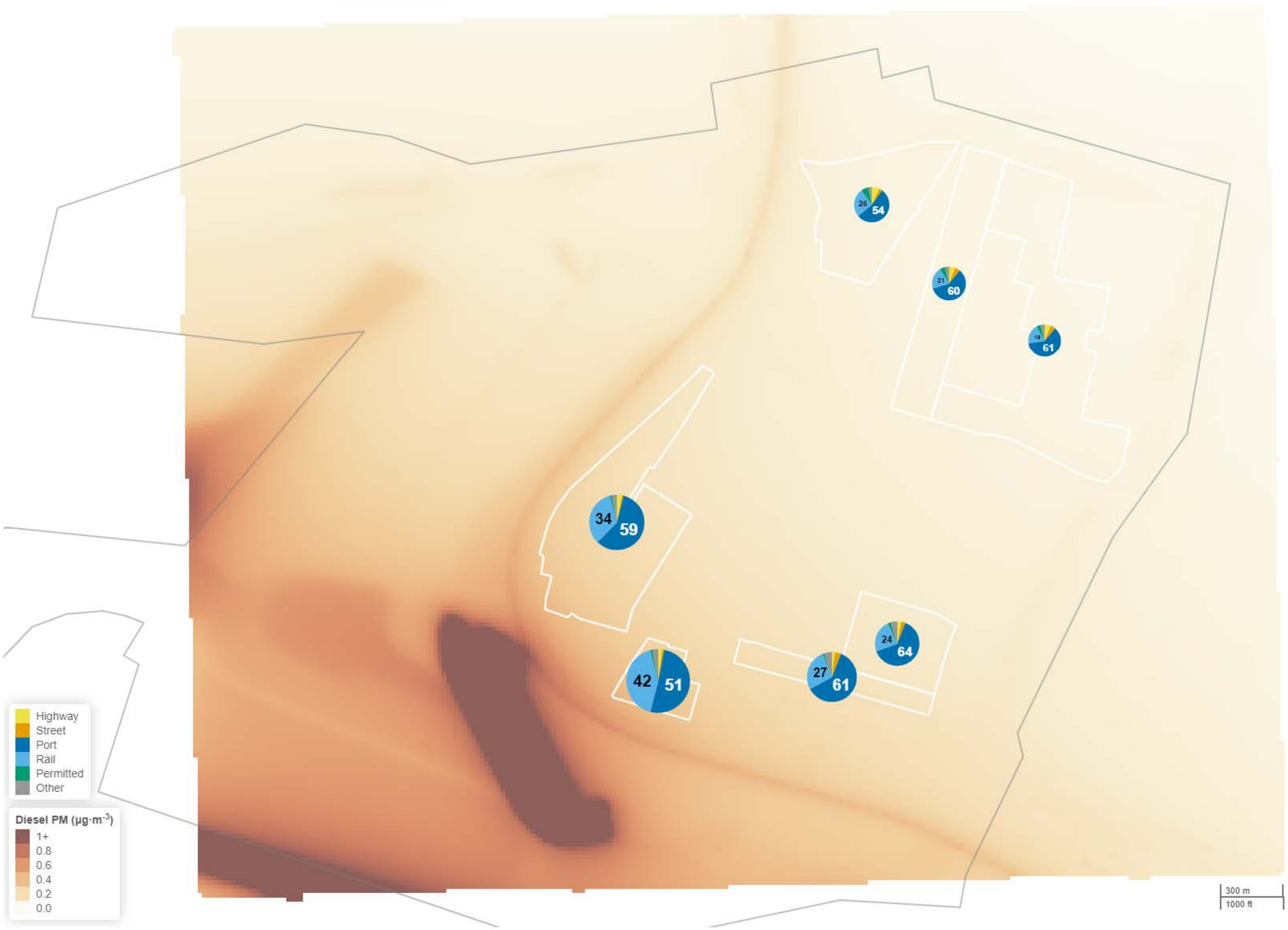


**Figure 5-2.** As in Figure 5-1, but for DPM concentrations.

**Table 5-3.** As in **Table 5-1**, but for excess cancer risk.

| **Source Category** | **2017** | | **2024** | |
|---|---|---|---|---|
| | **per million** | **% of total** | **per million** | **% of total** |
| **Highway** | | | | |
| Non-Trucks | 7 | 2 | 3 | 1 |
| LHDT | 2 | 1 | 3 | 1 |
| MHDT/HHDT | 33 | 11 | 1 | 1 |
| **Surface Streets** | | | | |
| Non-Trucks | 4 | 1 | 2 | 1 |
| LHDT | 1 | < 1 | 1 | < 1 |
| MHDT/HHDT | 22 | 7 | 1 | < 1 |
| **Port** | | | | |
| OGV – maneuvering | 17 | 6 | 25 | 10 |
| OGV – berthing | 20 | 7 | 24 | 10 |
| Dredging | 15 | 5 | 10 | 4 |
| Assist Tugs | 55 | 18 | 43 | 18 |
| Bunkering (tugs, pumps) | 4 | 1 | 4 | 1 |
| CHE | 20 | 7 | 23 | 10 |
| Port Trucks | 10 | 3 | 2 | 1 |
| Railyard – OGRE | 4 | 1 | 4 | 2 |
| Railyard – BNSF | 8 | 2 | 8 | 3 |
| **Rail** | | | | |
| Locomotives | 21 | 7 | 15 | 6 |
| Railyard – UP | 46 | 15 | 51 | 22 |
| **Permitted** | | | | |
| CA Waste (10th Street) | – | – | – | – |
| California Cereal | < 1 | < 1 | < 1 | < 1 |
| CASS | < 1 | < 1 | < 1 | < 1 |
| Dynegy | < 1 | < 1 | < 1 | < 1 |
| EBMUD | 2 | 1 | 2 | 1 |
| Pinnacle Ag Services | – | – | – | – |
| Schnitzer Steel – stationary | 5 | 2 | 6 | 3 |
| Sierra Pacific | – | – | – | – |
| Other | 2 | 1 | 3 | 1 |
| **Other** | | | | |
| Ferry/Excursion vessels | 5 | 2 | 5 | 2 |
| Schnitzer Steel – OGV | 2 | 1 | 2 | 1 |
| Schnitzer Steel – trucks | < 1 | < 1 | < 1 | < 1 |
| Truck-related businesses | 2 | 1 | < 1 | < 1 |
| **Total** | **303** | **100** | **235** | **100** |
| **Total population-weighted** | **199** | | **120** | |

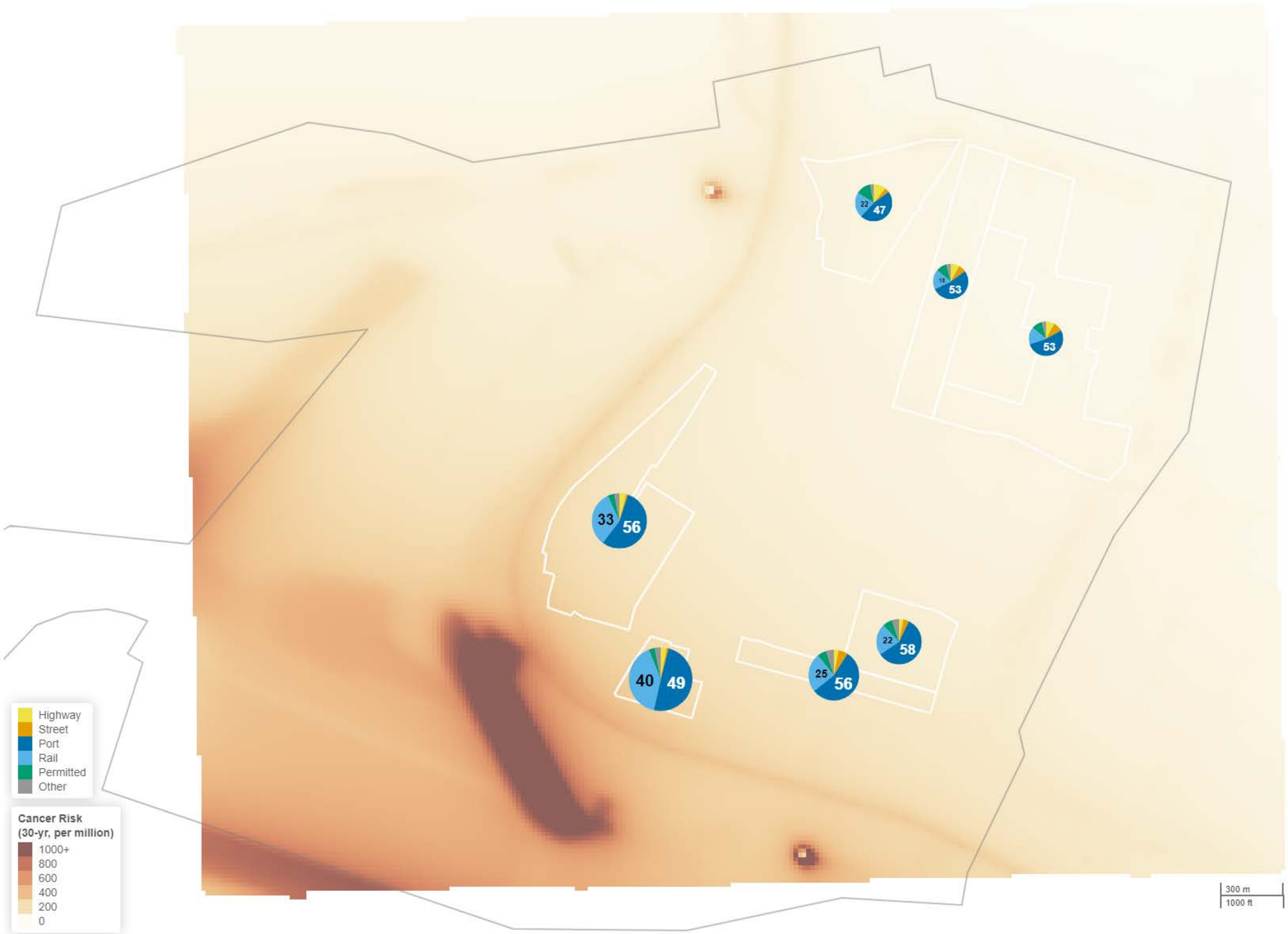


**Figure 5-3.** As in Figure 5-1, but for excess cancer risk.

## 5.4 Source Apportionment

To support a source apportionment analysis of the local modeled concentrations and cancer risk, the percentage contribution from source categories to the domain-wide averages, and by location or zone were generated, as depicted by the pie charts in **Figure 5-1**, **5-2**, and **5-3**. Source contributions to annual average $PM_{2.5}$ concentration (1.74 µg/$m^3$), annual average DPM concentration (0.30 µg/$m^3$), and excess cancer risk (235 in-a-million) are tabulated by emissions source category, and compared to the results from the base year, in **Table 5-1**, **5-2**, and **5-3**, respectively.

For 2024 BAU conditions, the main emissions sources contributing to annual average local $PM_{2.5}$ concentrations within the West Oakland community are related to on-road mobile sources, especially Non-Trucks and road dust (**Table 5-1**). Population-weighted $PM_{2.5}$ concentrations are similar across Zones (**Figure 5-4**), while the largest contributions to local $PM_{2.5}$ within these zones are also from on-road mobile sources and permitted stationary sources.

For DPM and cancer risk, the main sources that contribute to local concentrations in 2024 BAU are namely those sources related to Port and rail activities, especially OGVs (22% total, community-wide) and the UP railyard (**Table 5-2**). Compared to annual average local $PM_{2.5}$ concentrations, there is more between-Zone (spatial) variation in local contributions to annual average DPM (**Figure 5-5**) and excess cancer risk (**Figure 5-6**), where these quantities are highest in Zone 1 (Lower Bottoms/West Prescott) and Zone 2 (3rd Street), which are closest to the Port and the UP railyard, and lowest in Zone 5 (Upper Adeline), 6 (Clawson), and 7 (West Grand & San Pablo), which are on the to the north of the West Oakland community and furthest from the active terminals in the Port.

The source apportionment analysis helps to highlight the main emission sources that contribute to local air pollutant concentrations, and clarify the relationship between emissions versus impacts on local air pollution: while some emission source categories may make up a largest (smallest) portion of the overall emissions inventory, the effects on local air quality are not always greatest (smallest) at certain locations within the analysis domain.

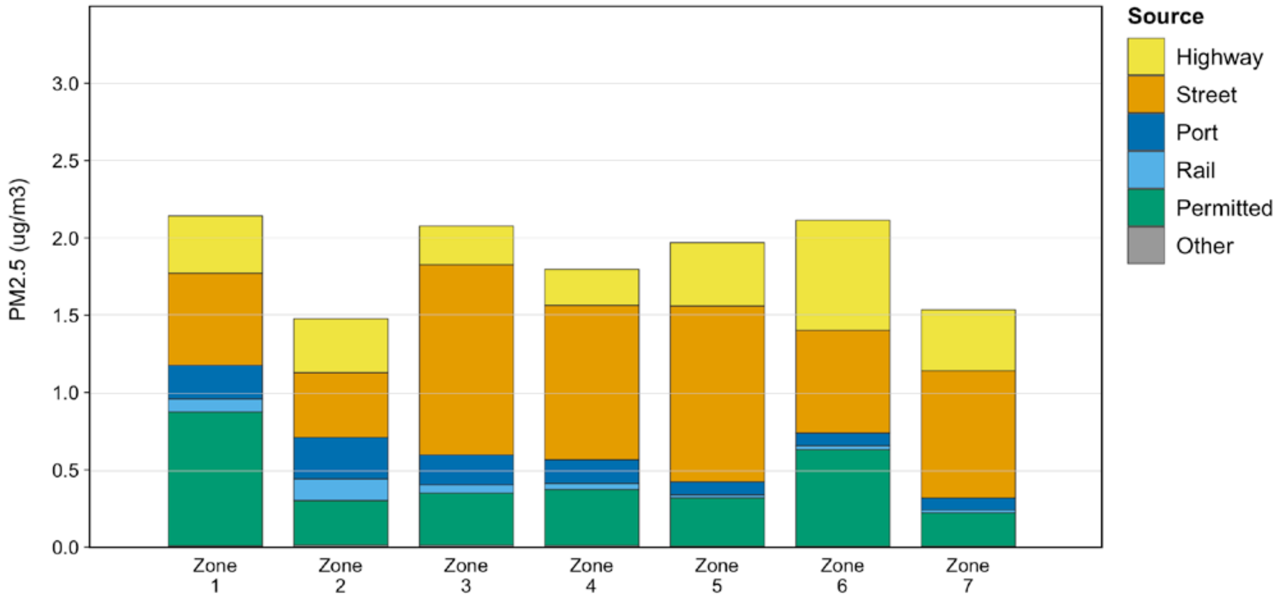


**Figure 5-4.** Source apportionment of population-weighted annual average local $PM_{2.5}$ concentrations within Zones (Part I Figure 4-1) in the West Oakland community forecasted in 2024 (BAU conditions). The values here correspond to pie charts in **Figure 5-1**.

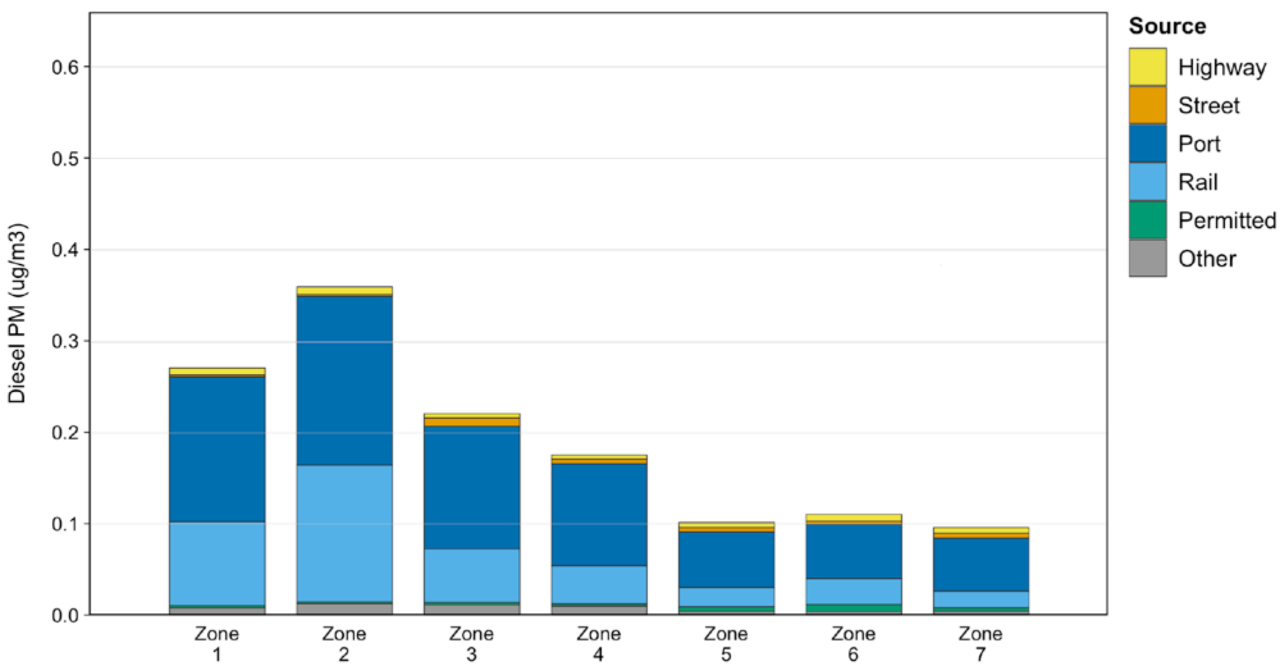


**Figure 5-5.** As in **Figure 5-4**, but for DPM (corresponding to pie charts in **Figure 5-2**).

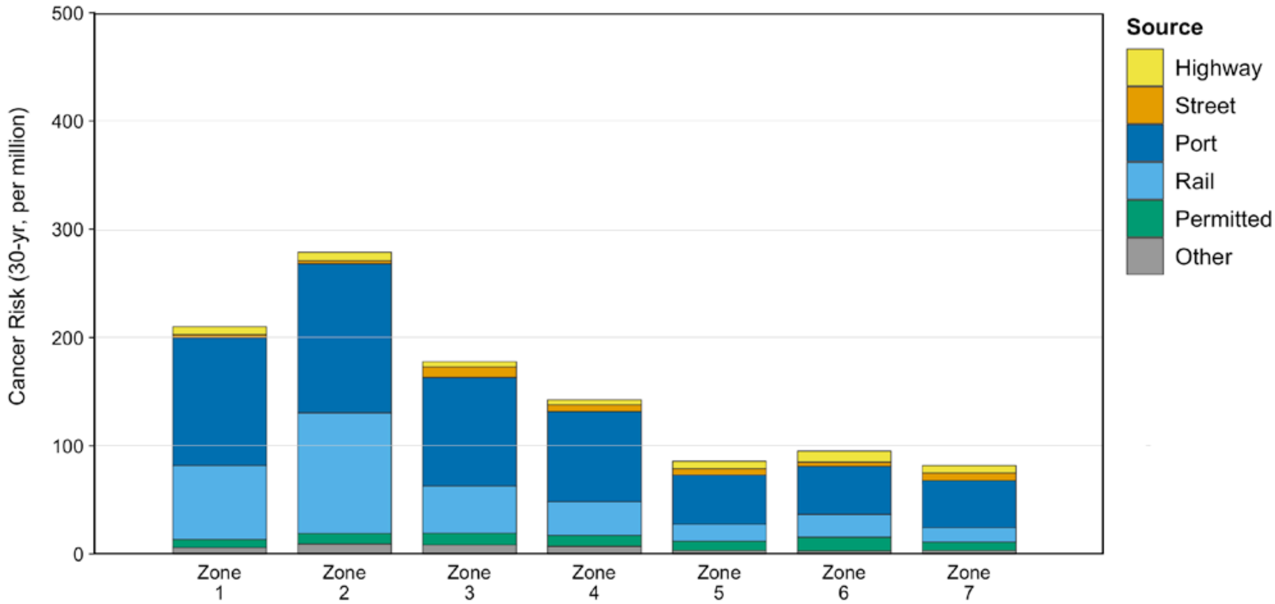


**Figure 5-6.** As in **Figure 5-4**, but for excess cancer risk (corresponding to pie charts in **Figure 5-3**).

# 6. Limitations, Uncertainties, and Future Improvements

A discussion of the limitations and uncertainties inherent in developing community-scale emissions inventories, air dispersion modeling, and risk estimation are presented in Part I Section 6. Many of these factors also apply to the future-year emissions inventories and analysis presented in this document. Here, the uncertainties related to forecasting emissions inventories are discussed. Some of the uncertainties in future-year emissions inventories related to the base year emissions inventory from which projections are made (see Part I Section 6), while others relate to predicting and understanding future trends in source-specific activity growth and emission control technologies. Such assumptions are inherent in efforts to characterize emissions and associated risk in complex settings and can result in or under- or over-predictions in concentration and risk estimates.

There are several sources of uncertainty associated with the methods used to forecast emissions that may affect the subsequent estimation of exposure concentrations and risk characterization in future years. Some of the sources of uncertainty relate to (in no particular order):

- **Emissions source configuration:** At present, the District is not aware of any specific future changes to emissions source configurations within West Oakland. Therefore, it was assumed that there would be no changes to the emissions sources in future years except for strength of emissions. This may be an over-simplification for some sources. Emissions sources may change in two ways:

    - **Physical characteristics:** This includes changes to abatement technologies installed at permitted stationary sources, stack parameters, the physical footprint of a facility or business, or the physical location (if a source moves within the Source Domain). These changes would lead to different dispersion characteristics and/or location of the emissions within the community, and therefore changes to downwind impacts.

    - **Emission profiles:** This includes changes to total operating hours of an emissions source, or changes to diurnal or seasonal profiles of the emissions. For example, total VMT was used to forecast activity of on-road mobile sources on each roadway segment, but there was no compensation for potential changes in fleet average travel speed, which could lead to different emission profile characteristics.

- **Vehicle Fleet Mix:** For future-year emissions inventories, the fleet mix, represented as the fraction of trucks by category of the total fleet volume, was kept constant (i.e., the same fleet mix that was developed for the base year emissions inventory). Fleet mix information can have significant uncertainties, and the proportion of different vehicle categories may change in the future. The fleet mix information for the base year emissions inventory was developed by the District based on field studies and vehicle telematics data platforms, rather than relying on EMFAC2017; for consistency, the District used this information for future years as well.

- **Specific emissions sources/regulations:**

  - **Regulation 11-18:** There may be additional emissions reductions that may occur due to the implementation of Regulation 11-18 that have not been quantified in the BAU emissions forecasts.

  - **Construction:** Emissions from construction equipment and construction dust were not included in the bottom-up emissions inventory; instead, the 2017 base year emissions were estimated and projected using data provided by CARB. Construction activities are highly transient, changing in scope and location from year to year. The emissions estimates, both for the base year and future years, are therefore highly uncertain. The District will continue to explore other sources of information for recent and projected construction activity in West Oakland.

  - **UP Railyard:** UP is in the process of developing a detailed, comprehensive emissions inventory for the Oakland railyard, which is expected to be completed by the end of 2019. UP expects to capture individual locomotive characteristics and movements to develop a bottom-up inventory of sources and emissions in the railyard. The District plans to use this detailed inventory in future UP emissions estimates that will address uncertainties in the spatial and temporal allocation of emissions, as well as the equipment types and quantities included. This information can then be used to improve forecasted emissions inventories.

  - **Commuter ferries:** Future-year emissions from commuter ferries were projected using only the GCFs developed from CARB's 2016 SIP dataset. These GCFs may not include specific information related to potential fleet turnover from the San Francisco Bay Area Water Emergency Transportation Authority (WETA) commuter ferry fleet that operates to and from West Oakland. WETA does currently list that some of the ferries in its fleet are scheduled to retire and/or be replaced by 2029,[19] which would lead to emissions reductions, but to the District's knowledge, none of these ferries service the routes to West Oakland. The forecasted emissions inventories also do not take into account any potential increase in service that may be implemented in future years.

- **New emissions sources:** Emissions from new emissions sources cannot be predicted or quantified, and are therefore not included in future-year emissions estimates. Emissions from new facilities (both from the construction of the facility and from subsequent operations) that are planned but that are not officially "on the books" were also not included (e.g., proposed Oakland A's stadium at Howard Terminal near Jack London Square, Oakland Bulk and Oversized Terminal).

[19] https://sanfranciscobayferry.com/sites/default/files/SFBFfleet.pdf (accessed December 2018).

- **Growth projections:** Growth projections are generally based on the best available estimates of activity trends for a specific source or related surrogate data (e.g., population). There may be several growth projections available for a specific source, which could be used to estimate the possible range of emissions in the future. The District has currently used a single set of growth projections specific to source category for the sources in the West Oakland emissions inventory, but may consider replacing or combining growth projections for certain sources in the future (e.g., for Port-related sources). This could help quantify uncertainties, and help to align growth projections for sources whose activities are closely coupled (e.g., Port Truck activity and Port-related activity projections). For example, the District may consider comparing the projected emissions estimates for Port-related sources presented in this document (which are namely based on data provided by CARB) compared to those that would be estimated by using growth projections developed by the San Francisco Bay Conservation and Development Commission (BCDC). BCDC's growth rates for the Port of Oakland may differ, especially for far-term future years; by evaluating each set of growth rates and resulting emissions, the District may be able to better assess changes in emissions and exposures that West Oakland will experience in the future. If alternative emissions projections are estimated, the District will continue to work with relevant partners and agencies (e.g., CARB) to ensure the most recent estimates of regulations and controls are incorporated.

- **Census population data:** Population-weighted air pollutant concentration and cancer risk results are dependent on the 2010 Census data. Changes in population distribution over time, as well as possible re-zoning of land, may change the location of where the majority of the population in the West Oakland community are exposed.

# 7. References

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# Appendix A – Technical Support Document

## Part III: Community Action Plan Emission Reduction Estimates

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# Community Action Plan Emission Reduction Estimates

This is a companion document to *Appendix A – Technical Support Document Part I: Base Year Emissions Inventory and Air Pollutant Dispersion Modeling* ("Part I"), and *Appendix A – Technical Support Document Part II: Business-As-Usual Future Year Emissions Inventory and Air Pollutant Dispersion Modeling* ("Part II") for the West Oakland Community Action Plan ("Action Plan") pursuant to Assembly Bill (AB) 617, jointly prepared by the Bay Area Air Quality Management District (BAAQMD, "the District") and the West Oakland Environmental Indicators Project (WOEIP). Please refer to Part I for background information, emission source descriptions, and a detailed description of the base year (2017) emissions inventory, air dispersion modeling, and pollutant and cancer risk assessment, and to Part II for a detailed description of how emissions from each source category was forecasted to future years (2024, 2029).

These emission reduction estimates can be applied to the future-year (FY) business-as-usual (BAU) emission estimates to obtain future-year "with Plan" emissions inventories; that is, the emissions inventory expected as the strategies[1] of the Action Plan are implemented.

The following tables present the estimated emission reductions of $PM_{2.5}$, DPM, and cancer risk-weighted emissions.

[1] Only for those reductions that have been quantified.

**Table 1.** Strategies with quantified emission reduction estimates from the Action Plan. The data indicates the source of information used to estimate the emission reductions. See **Table 2** for further information of strategies for on-road mobile sources.

| Source Category | Strategy | Data |
|---|---|---|
| **Highway** | | |
| Non-Trucks | Heavy-Duty Inspection and Maintenance Program<br>Advanced Clean Trucks | CARB |
| LHDT | Heavy-Duty Inspection and Maintenance Program<br>Advanced Clean Trucks | CARB |
| MHDT/HHDT | Heavy-Duty Inspection and Maintenance Program<br>Advanced Clean Trucks | CARB |
| **Surface Streets** | | |
| Non-Trucks | Heavy-Duty Inspection and Maintenance Program<br>Advanced Clean Trucks | CARB |
| LHDT | Heavy-Duty Inspection and Maintenance Program<br>Advanced Clean Trucks | CARB |
| MHDT/HHDT | Heavy-Duty Inspection and Maintenance Program<br>Advanced Clean Trucks | CARB |
| Road dust | Enhanced street sweeping program. | South Coast Air Quality Management District (1997) |
| **Port** | | |
| OGV – berthing | CARB At-Berth Regulation | CARB |
| Assist Tugs | Upgrade three vessels to Tier 3 (repowers). | Ramboll |
| Port Trucks | Heavy-Duty Inspection and Maintenance Program<br>Advanced Clean Trucks | CARB |
| **Rail** | | |
| Railyard – UP | Implemented Action Plan Strategy 46; quantified assuming upgrades to five switcher engines (to Tier 4). | District |
| **Permitted** | | |
| Schnitzer Steel – stationary | Accelerate implementation of Rule 11-18 (install a control device to reduce volatile organic emissions by at least 70% by the year 2024). | District |
| **Other** | | |
| Schnitzer Steel – trucks | Heavy-Duty Inspection and Maintenance Program<br>Advanced Clean Trucks | CARB |
| Truck-related businesses | Heavy-Duty Inspection and Maintenance Program<br>Advanced Clean Trucks | CARB |

**Table 2.** Strategies for on-road mobile sources leading to emission reductions as part of the Action Plan. Buses and motor coaches are part of the Non-Truck vehicle category. Truck 2 includes POAK and Non-POAK-Truck 2 vehicles[1] Only processes and pollutants that are impacted in this emissions inventory are listed.[2] Idling is for extended idling events only.

| **Program** | **Region** | **Authority** | **Vehicle** | **Pollutant** | **Process** | **Reference** |
|---|---|---|---|---|---|---|
| Heavy-Duty Inspection and Maintenance Program | Statewide | CARB | Diesel Truck 2, diesel buses (except urban buses), motor coaches | DPM<br>$PM_{10}$<br>$PM_{2.5}$ | running<br>idling | https://ww2.arb.ca.gov/our-work/programs/heavy-duty-inspection-and-maintenance-program. |
| Advanced Clean Trucks | Statewide | CARB | Truck 1,<br>Truck 2,<br>buses<br>(except urban buses) | DPM<br>$PM_{10}$<br>$PM_{2.5}$ | running<br>idling<br>brake wear | https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks. |
| Enhanced street sweeping program | West Oakland Community | City of Oakland | –<br>(surface street only) | $PM_{10}$<br>$PM_{2.5}$ | road dust | Proposed Strategy #54 of the West Oakland Community Action Plan |

[1] see Part I Table 2-6 for a definition of these vehicle types.

[2] CARB's regulations may apply to other emission processes and pollutants; implementation of these and other strategies may also deliver emissions reductions from other pollutants, such as oxides of nitrogen ($NO_x$) and greenhouse gases, but these benefits are not quantified in this Action Plan.

**Table 3.** Estimates of $PM_{2.5}$ emission reductions from strategies of the Action Plan. Emission reductions can also be expressed as negative changes in emissions. All changes are relative to BAU emissions of a given year. The percentage (%) represents the percentage of reductions for a given emissions source. Not all reduction estimates for each strategy have been quantified here.

| Source Category | 2024 | | 2029 | |
|---|---|---|---|---|
| | **tpy** | **%** | **tpy** | **%** |
| **Highway** | | | | |
| Non-Trucks | 0.01 | 0.1 | 0.01 | 0.1 |
| LHDT | < 0.01 | < 0.1 | 0.01 | 1.4 |
| MHDT/HHDT | 0.06 | 6.3 | 0.08 | 7.9 |
| **Surface Streets** | | | | |
| Non-Trucks | < 0.01 | 0.1 | 0.01 | 0.1 |
| LHDT | < 0.01 | < 0.1 | < 0.01 | 1.3 |
| MHDT/HHDT | 0.03 | 3.8 | 0.04 | 5.1 |
| Road dust | 1.46 | 9.2 | 1.53 | 9.2 |
| **Port** | | | | |
| OGV – berthing | 1.20 | 11.7 | 2.77 | 21.3 |
| Assist Tugs | 0.57 | 18.7 | 0.56 | 18.7 |
| Port Trucks | 0.02 | 2.9 | 0.02 | 2.8 |
| **Rail** | | | | |
| Railyard – UP | 0.35 | 30.9 | 0.37 | 31.7 |
| **Other** | | | | |
| Schnitzer Steel – trucks | < 0.01 | 0.4 | < 0.01 | 0.5 |
| Truck-related businesses | 0.01 | 37.3 | 0.01 | 42.6 |
| **Total** | **3.71** | **4.3** | **5.40** | **5.7** |

**Table 4.** As in **Table 3**, but for DPM emissions.

| **Source Category** | **2024** | | **2029** | |
|---|---|---|---|---|
| | **tpy** | **%** | **tpy** | **%** |
| **Highway** | | | | |
| Non-Trucks | < 0.01 | 0.8 | < 0.01 | 1.0 |
| LHDT | < 0.01 | < 0.1 | < 0.01 | 1.0 |
| MHDT/HHDT | 0.06 | 37.3 | 0.07 | 42.7 |
| **Surface Streets** | | | | |
| Non-Trucks | < 0.01 | 0.8 | < 0.01 | 1.0 |
| LHDT | < 0.01 | < 0.1 | < 0.01 | 1.0 |
| MHDT/HHDT | 0.03 | 37.3 | 0.03 | 42.7 |
| **Port** | | | | |
| OGV – berthing | 1.31 | 25.0 | 3.01 | 45.5 |
| Assist Tugs | 0.59 | 18.7 | 0.57 | 18.7 |
| Port Trucks | 0.02 | 17.1 | 0.02 | 17.4 |
| **Rail** | | | | |
| Railyard – UP | 0.38 | 30.9 | 0.40 | 31.7 |
| **Other** | | | | |
| Schnitzer Steel – trucks | < 0.01 | 37.3 | < 0.01 | 42.7 |
| Truck-related businesses | 0.01 | 37.3 | 0.01 | 42.6 |
| **Total** | **2.40** | **11.4** | **4.12** | **17.4** |

**Table 5.** As in **Table 3**, but for cancer risk-weighted TAC emissions.

| Source Category | 2024 | | 2029 | |
|---|---|---|---|---|
| | CRW tpy | % | CTW tpy | % |
| **Highway** | | | | |
| Non-Trucks | 0.45 | 0.3 | 0.35 | 0.3 |
| LHDT | 0.01 | < 0.1 | 0.41 | 0.9 |
| MHDT/HHDT | 44.40 | 36.9 | 51.13 | 42.2 |
| **Surface Streets** | | | | |
| Non-Trucks | 0.19 | 0.2 | 0.14 | 0.2 |
| LHDT | 0.01 | < 0.1 | 0.43 | 0.9 |
| MHDT/HHDT | 21.82 | 36.1 | 24.54 | 41.3 |
| **Port** | | | | |
| OGV – berthing | 975.14 | 25.0 | 2,241.17 | 45.5 |
| Assist Tugs | 440.94 | 18.7 | 426.56 | 18.7 |
| Port Trucks | 15.08 | 16.9 | 16.08 | 17.2 |
| **Rail** | | | | |
| Railyard – UP | 280.75 | 30.9 | 300.11 | 31.7 |
| **Permitted** | | | | |
| Schnitzer Steel – stationary | 550.53 | 61.1 | 642.04 | 61.1 |
| **Other** | | | | |
| Schnitzer Steel – trucks | 0.10 | 37.3 | 0.11 | 42.7 |
| Truck-related businesses | 8.03 | 37.3 | 8.67 | 42.6 |
| **Total** | **2,337.47** | **13.9** | **3,711.74** | **19.7** |

# References

South Coast Air Quality Management District. (1997). Revised Final Staff Report for: Proposed amended Rule 403 – Fugitive Dust and Proposed Rule 1186 – $PM_{10}$ emissions from paved and unpaved roads, and livestock operations, Appendix F: Emissions reductions estimates. 14 February, 1997.

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# Appendix B – Community Engagement Materials

## Welcome Letter

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

West Oakland Environmental Indicators Project

June 2018

Welcome and thank you for joining the West Oakland Community Action Plan Steering Committee!

On behalf of the West Oakland Environmental Indicators Project (WOEIP) and the Bay Area Air Quality Management District (Air District), we sincerely appreciate your commitment to help inform the policies and strategies to reduce air pollution in West Oakland. State Assembly Bill 617 (AB 617) provides a new community-focused approach to reduce exposure to criteria air pollutants and toxic air contaminants in communities most impacted by air pollution. As a recognized West Oakland stakeholder, your participation is essential to inform this community-based approach.

This orientation packet contains the following materials to orient steering committee members to the overall AB 617 process and to provide guidance as to what they can expect to accomplish and tackle:

- Orientation Meeting Agenda
- AB 617 Handout
- Steering Committee Partnership Agreement
- Draft Steering Committee Governing Charter (committee to adopt)
- Draft Timeline and Schedule

**Background on AB617 and Community Air Plans**

AB 617 is a State-mandated program that focuses resources through the regional Air District to help better understand, address, and mitigate local air pollution in the State's most disadvantaged communities. West Oakland—which includes the Port of Oakland, Oakland Army Base, East Bay Municipal Utility District's (EBMUD) waste treatment facility, surrounding freeways and various industrial facilities—has been selected as the first community in our Bay Area region to develop an air pollution action plan. The Action Plan can build upon many of the existing studies and community air monitoring efforts—many of which WOEIP has led—but will require a robust community stakeholder input process to gather input and formulate a collaborative plan of action. The key elements of the Action Plan will need to be completed by early 2019 in preparation for State adoption in October 2019.

**Steering Committee Responsibilities**

Steering committee meetings are planned every two-months for two-hour meetings (time and place to be determined). We ask steering committee members to commit to six meetings in addition to 2-4 community townhall meetings over the course of the year. Members who wish to be further involved may choose to participate in ad-hoc sub-committees or steering committee governance. For all formal meetings, childcare, food and interpretation can be made available. Stipends may be available for folks not paid for attendance as part of their job.

Steering committee members will be responsible for developing the proposed content of the community plan as well as disseminate information and transmit input from your representative sectors as appropriate. Prospective members need to be able and willing to review ongoing plans, studies, reports on air quality, and think critically and strategically to provide input. All educational levels and backgrounds are welcomed and any desired trainings on aspects of this planning process will be made available.

Thank you for your interests and your contributions to the health and vitality of the West Oakland community.

Sincerely,

Ms. Margaret Gordon

West Oakland Environmental Indicators Project

Brian Beveridge

David Ralston

Bay Area Air Quality Management District

Yvette DiCarlo

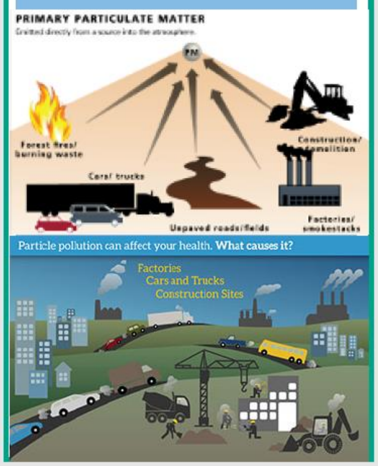
## West Oakland Air Quality Action Plan Fact Sheet

### HOW CAN OAKLAND RESIDENTS REDUCE EXPOSURE TO POOR AIR QUALITY?

**PARTICULATE MATTER (PM):**

**Very small liquid and solid particles that float in the air. These particles, which come from cars and fireplaces, can penetrate into the lungs and bloodstream and cause serious health problems.**

**Particulates smaller than 2.5 microns (1/30 the width of human hair) are linked to respiratory diseases, heart attacks, and decreased lung function. Fine PM is projected to increase throughout Oakland and will be even greater in West Oakland.**




### LOCAL RESOURCES

**California Air Resources Board (CARB)**

*Air Pollution Complaints*

1-800-952-5588

**Bay Area Air Quality Management District** *Air Pollution Complaints*

1-800-334-ODOR (1-800-334-6367)

*Daily Air Quality & Open Burn Forecasts*
1-800-HELP AIR (1-800-435-7247)

**West Oakland Environmental Indicators Project (WOEIP)**

(510) 257-5640

### WHO DO I CALL IN CASE OF AN EMERGENCY?

**Alameda County Office of Emergency Services**
925.803.7800

**Alameda County Poison Control** 1800.523.2222

**American Red Cross** 510.595.4400

**City of Oakland Fire Dispatch** 510.444.1616

**City of Oakland Police Dispatch** 510.777.3211

**City of Oakland Office of Emergency Services**
510.238.3938

**EBMUD** 510.835.3000

**PG&E** 1800.743.5000

**National Response Center (Toxic Spills)** 1800.424.8802

### AB 617: AIR QUALITY MANAGEMENT

West Oakland's
Air Quality Action Plan

This fact sheet was made possible by the
West Oakland Environmental Indicators Project


## Summary of Attendance at Steering Committee Meetings

| | Meeting Date | Meeting Time | Meeting Location | Number of Participants[1] |
|---|---|---|---|---|
| Kick-off | Friday, July 27, 2018 | 10:00 AM - 1:00 PM | Oakland City Hall, Hearing Room 3 1 Frank H Ogawa Plaza, Oakland, CA 94612 | Approximately 50 |
| 1 | Wednesday, September 5, 2018 | 6:00 PM - 8:30 PM | Alameda County Department of Public Health, 5th Floor 1000 Broadway, Oakland, CA 94607 | Approximately 50 |
| 2 | Wednesday, October 3, 2018 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 51 |
| 3 | Wednesday, November 7, 2018 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 55 |
| 4 | Wednesday, December 5, 2018 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 54 |
| 5 | Wednesday, January 9, 2019 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 54 |
| 6 | Wednesday, February 6, 2019 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 52 |
| 7 | Wednesday, March 6, 2019 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 66 |

[1] Participant counts include steering committee members, Air District and CARB staff, and members of the public.

| | **Meeting Date** | **Meeting Time** | **Meeting Location** | **Number of Participants[1]** |
|---|---|---|---|---|
| 8 | Monday, March 11, 2019 | 6:00 PM - 9:00 PM | Alameda County Department of Public Health, 5th Floor 1000 Broadway, Oakland, CA 94607 | 47 |
| 9 | Wednesday, April 3, 2019 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 51 |
| 10 | Wednesday, May 1, 2019 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 58 |
| 11 | Wednesday, June 5, 2019 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 67 |
| 12 | Wednesday, June 26, 2019 | 6:00 PM - 8:30 PM | Alameda County Department of Public Health, 5th Floor 1000 Broadway, Oakland, CA 94607 | 48 |
| 13 | Wednesday, July 10, 2019 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 48 |
| 14 | Wednesday, August 7, 2019 | 6:00 PM - 8:30 PM | West Oakland Senior Center 1724 Adeline Street, Oakland, CA 94607 | 51 |
| 15 | Saturday, August 17, 2019[2] | 10 AM to 2 PM | West Oakland Youth Center 3233 Market Street, Oakland, CA | 122 |

[2] Town Hall open house to introduce the Draft Plan to the community.

## Steering Committee Members

| West Oakland Community Action Plan Steering Committee Roster (as of June 27, 2019) | | | |
|---|---|---|---|
| **Primary Name** | **Alternate Name** | **Affiliation** | **Sector** |
| **Steering Committee Members** | | | |
| Aboudi, Bill | | AB Trucking | Business |
| Arreola, Laura | Tharpe, Amy | Port of Oakland | Government |
| Bullock, JoAnna | | Metropolitan Transportation Commission | Government |
| Chung, Bo | | Dellums Institute for Social Justice | Environmental Advocates |
| Cook, Brigitte | | Oakland City Council | Government |
| Foucre, Renata | | West Oakland Neighbors | Neighborhood Association |
| Grow, Richard | | U.S. Environmental Protection Agency | Government |
| Johnson, Barbara | | West Oakland Neighbors | Neighborhood Association |
| Katz, Andy | Johannesson, Chandra<br>Bonnarens, Maura | East Bay Municipal Utility District | Government |
| Lee, Anna | Kimi Watkins-Tartt<br>Sandi Galvez<br>Jennifer Lucky | Alameda County Public Health Department | Government |
| Lowe, Steve | | West Oakland Commerce Association | Business |
| Mac Donald, Karin | Elder, Scott | Prescott Oakland Point Neighborhood Association | Neighborhood Association |

| | | | |
|---|---|---|---|
| McGowan, Patricia | | City of Oakland | Government |
| Prier, Megan | | Urban Biofilters | Environmental Advocates |
| Rodriguez, Mercedes S. | | BayPorte Village Neighborhood Watch | Neighborhood Association |
| Scodel, Anna* | Davis, Monique* | California Air Resources Board | Government |
| Uennatornwaranggoon, Fern | Zayas, Gabriela<br>Harris, Maria | Environmental Defense Fund | Environmental Advocates |
| Zambrano, Carlos | | New Voices Are Rising | Youth |
| **Co-Leads** | | | |
| Ms. Margaret Gordon | | West Oakland Environmental Indicators Project | Environmental Advocates |
| Brian Beveridge | | West Oakland Environmental Indicators Project | Environmental Advocates |
| Elizabeth Yura | | Bay Area Air Quality Management District | Government |
| Yvette DiCarlo | | Bay Area Air Quality Management District | Government |
| **Consultant Team** | | | |
| Anuja Mendiratta | | Philanthropic + Nonprofit Consulting | Consultant |
| Marybelle Nzegwu Tobias | | Environmental Justice Solutions | Consultant |
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# Appendix C – Steering Committee Charter and Participation Agreement

## WEST OAKLAND COMMUNITY AIR ACTION PLAN
## STEERING COMMITTEE CHARTER AND PARTICIPATION AGREEMENT

Amended August 29, 2018

**1. Mission Statement**

Assembly Bill 617 (Garcia, C., Chapter 136, Statutes of 2017) is a State-mandated program that uses a community-based approach to reduce local air pollution in communities around the State that continue to experience disproportionate impacts from air pollution. West Oakland— which includes the Port of Oakland, Oakland Army Base, East Bay Municipal Utility District's (EBMUD) waste treatment facility, surrounding freeways and various industrial facilities—is the region's initial focus under the AB 617 program to develop an action plan to reduce air pollution and exposure in the West Oakland community.

The steering committee will be responsible for advising the development of the community plan as well as disseminate information and transmit input from your representative sectors as appropriate. The key elements of the West Oakland Community Air Action Plan (Plan) will need to be completed by early 2019 in preparation for State adoption in October 2019.

**2. Committee Objectives**

The West Oakland Community Air Action Plan Steering Committee is a special committee that will serve for the designated purpose outlined in the mission statement. Committee objectives include identifying the West Oakland community boundary, identifying areas of concern for air pollution sources and sensitive receptor sites, reviewing existing plans, studies and reports on air quality to provide strategic input towards Plan development. Committee objectives also include disseminating and soliciting information with community stakeholders for which the committee members represent. The goal is for the Plan to be adopted by the Bay Area Air Quality Management District Board by October 2019. Upon adoption of the Plan, the steering committee may elect to continue to meet quarterly to support and provide guidance on implementation, and develop progress reports.

## 3. Membership

*Criteria for Community Steering Committee Membership*

To ensure the Plan focuses on the impacts to people and businesses within the defined study area, steering committee membership is limited to residents or businesses with street addresses within the West Oakland study area. Additional members may include city/county officials, land use planning agencies, transportation agencies and local health departments. Interested stakeholders, and larger representation groups such as regional associations, are encouraged to participate as non-voting members at all open meetings.

The official roster will contain one primary name for each affiliation to be represented on the committee. One alternate name can substitute for the primary member if the primary member is unable to attend a meeting. However, only one member from each affiliation will be allowed to deliberate at meetings to reach consensus. The committee meetings are open to the public and additional members may be added to the roster if agreed upon by the West Oakland Environmental Indicators Project and the Bay Area Air Quality Management District who will serve as co-leads of the Steering Committee.

## 4. Roles and Responsibilities

*Community Steering Committee Members*

Steering committee members will be responsible for assisting Air District and WOEIP staff in identifying all air pollution issues and sources of air pollution in the West Oakland community and the development of the West Oakland Community Air Action Plan. Committee members may be asked to review local community plans, health impact studies, and air quality data to assist in developing the Plan. Committee members will help develop emission reduction goals or targets that will be used to evaluate the success of the Plan in reducing emissions and exposure.

Steering committee members are expected to attend a minimum of ten committee meetings (in their entirety) and to participate in 2-4 community townhall meetings throughout the course of the year prior to the Plan adoption.

Steering Committee members who participate in this process are expected to sign the West Oakland Air Action Plan Committee Participation Agreement (Page 5 of this Charter) which outlines the expected conduct of all Steering Committee members.

*Co-leads*

The West Oakland Environmental Indicators Projects and Bay Area Air Quality Management District serve as partnering co-leads for the development of the West Oakland Community Steering Committee. As co-leads, they will be responsible for providing necessary background materials for committee members, developing meeting agendas, coordination with the meeting facilitator and establishing and maintaining a community website for Steering Committee activities. Co-leads will also be responsible for providing technical support and other relevant technical assessment information to the Committee.

*Facilitator*

A professional and impartial facilitator will be used for moderating the steering committee meetings and for helping the committee reach consensus on issues.

## 5. Standard Committee Meeting Procedures

*Deliberation and Consensus*

A professional and impartial facilitator(s) will be employed to support the steering committee in the overall organization, order and focus of the meeting, resolve conflicts and help reach consensus to ensure the goals and objectives of this charter are met. Achieving full consensus of the steering committee may not always be possible. In the event of an impasse, the co-leads shall be the final decision-makers, carefully weighing the consequences of any decision where there is a lack of consensus. If the co-leads cannot agree, then the action in question will not proceed. Community Steering Committee members who do not agree with a majority consensus on a decision may submit a minority position statement.

*Member Participation*

Only one member from each affiliation may participate as part of the steering committee deliberative process in any individual meeting. If the primary member is unable to attend, the designated alternate on the steering committee roster may attend in their absence and deliberate on the primary member's behalf.

If a primary member or their alternate is not able to attend a scheduled meeting, they may submit written comments for consideration on relevant agenda topics to the Committee chair or the co-leads prior to the scheduled meeting. Written communications may inform, but not substitute, for being physically present during deliberations of the committee. If a primary member or their alternate has not attended three consecutive steering committee meetings, their membership may be revoked as determined by the co-leads.

*Open Meetings*

All meetings are open to the general public and will provide a formal opportunity for members of the public to provide their perspective on the development of the Plan. Stakeholder input is welcome and encouraged.

*Meeting Schedule and Agendas*

Steering committee members are expected to attend monthly meetings. Upon consensus agreement of the committee, meeting schedules may be adjusted with adequate advance notice. Agenda topics will be developed by the co-leads and will include the time, date, duration, location and topics to be discussed. Individual committee members may request relevant items be added to an agenda at least one week prior to the schedule meeting.

*Subcommittees*

Members who wish to be further involved may choose to participate in ad-hoc sub-committees such as technical assessment, community surveys and outreach or other relevant topics. Subcommittees would meet every other month between full steering committee meetings and will report back their findings and/or recommendations at the next full steering committee.

**6. Accessibility/Accommodation**

The steering committee meetings and other outreach events associated with the committee must be held at facilities that can accommodate members covered by the Americans with Disabilities Act. Language interpretation services will be provided as needed with a minimum 48-hour advance request.

**7. Dissemination of Materials**

Any materials, presentations, documents, correspondence or other written communications generated or disseminated by the committee, or on behalf of the committee or its members, must be approved by the co-leads prior to release. All final correspondence will include the logos of West Oakland Environmental Indicators Project and Bay Area Air Quality Management District.

**8. Website**

A website will be developed and maintained by the co-leads to provide information to the community on the Steering Committee actions and development of the Plan.

## Participation Agreement

By signing below, I agree to abide by all conditions of the West Oakland Community Air Action Plan Steering Committee Charter. I also agree to the following principles, goals and expected conduct to demonstrate how agencies, communities and other stakeholders working in concert can achieve meaningful improvements in public health for the West Oakland community:

- Adopt and support the principles of ensuring healthy air in West Oakland:
    - Our goal is to remedy persistent air pollution problems and excessive local health risk exposures to people who live, work and play in and around West Oakland. We are committed to working collectively and cooperatively with all stakeholders within the community—local residents, businesses and organizations, youth groups, schools, local, regional and State governments, health agencies and faith-based organizations—to ensure all represented parties are heard and can agree on an outcome that protects public health.
- Provide strategic guidance, vision, and oversight including:
    - Informing the development of the West Oakland Community Air Action Plan
    - Using data to inform strategy development analysis
    - Tracking progress of the work using agreed-upon indicators at Steering Committee and subcommittee levels
    - Identifying fair, effective and feasible goals to bring about reduced health risk in West Oakland.
- Provide leadership and accountability by:
    - Identifying obstacles to achieving the goal and develop solutions to overcome them. Considering how my own organization or those in my network can align to the common goals and principles of the Steering Committee
    - Serving as a vocal champion of the collective impact effort in the community
    - To work towards consensus while recognizing that not everyone will agree on every issue and to resolve conflicts in a positive, swift and constructive manner.
- Play an active role by:
    - Participating in-person at the regularly scheduled meetings
    - Reviewing pre-read materials prior to meetings and coming prepared for engaged discussion, active listening, and respectful dialogue
    - Committing to monthly Steering Committee meetings and a few hours of preparation in between. Attending occasional community town hall meetings to share the work of the Steering Committee.

Printed Name: ________________________________________Date: _____________________________

Signature: ___________________________________________________________________________

# Appendix D – Strategies and Implementation Background

## GOVERNMENT COLLABORATION

This Plan requires collaboration among government agencies. This section of Appendix D describes agencies and their recent planning activities. As noted in Chapter 1, the Steering Committee reviewed past and ongoing planning efforts while creating this Plan, and the Plan builds on these existing efforts. Past plans seek to bring jobs, retail, and services to the community; to address blighted properties and incompatible land uses; to improve transit, bike, and pedestrian access; to increase mixed-use development; to preserve the existing housing stock; to increase the supply of affordable housing; and to reduce the community's exposure to diesel PM and other air pollutants.

### Air District

The Air District is the regional agency responsible for assuring clean air in the nine counties that surround the San Francisco Bay (except in northeastern Solano and northern Sonoma counties). The Air District writes and implements air quality plans, adopts and enforces regulations to control air pollution from stationary sources, offers incentives to government, businesses, and individuals to voluntarily reduce air pollution, engages with communities and provides technical and policy guidance regarding air quality, and manages the Spare the Air program.

The Air District's current air quality management plan is the 2017 Clean Air Plan: Spare the Air, Cool the Climate. The Plan provides a regional strategy to protect public health and protect the climate. To protect public health, the plan describes how the Air District will continue our progress toward attaining all state and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. To protect the climate, the plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious greenhouse gas (GHG) reduction targets for 2030 and 2050, and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets.

The 2017 Plan includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants; to reduce emissions of methane and other "super-GHGs" that are potent climate pollutants in the near-term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

### City of Oakland

The City of Oakland is the local agency responsible for land-use and transportation decisions. The City Council makes land-use decisions by adopting general and specific plans, zoning regulations, and certifying environmental reports for land-use projects, such as housing, commercial, and industrial developments. The West Oakland Specific Plan is an example of a land-use plan that the City has adopted. The West Oakland Truck Management Plan is an example of a measure required by an environmental report on a land-use development project and an example of City transportation authority. For the Plan, the City of Oakland will implement strategies that address air pollution impacts from land use and transportation.

The City and Port of Oakland approved the West Oakland Truck Management Plan in April 2019. The goal of the Plan is to reduce the effects of transport trucks on local streets in West Oakland. The Plan reflects extensive outreach and input from the West Oakland residential and business community. In the Plan, the City and Port commit to ten strategies. The strategies commit to improving safety at street intersections near the Port; updating truck routes, truck prohibited streets, truck parking regulations and signage; conducting targeted traffic enforcement spot-checks and parking enforcement; improved training for issuing parking tickets; and considering increasing truck parking fines.

The West Oakland Specific Plan (2014) seeks to build on the existing vitality, cultural and social diversity, industry and transportation assets in West Oakland, while creating a community with clean industries, living-wage jobs, successful small businesses, mixed-use transit-oriented development and mixed-income housing, where environmental quality and community health are improved. Developed in partnership by the City, affected property owners, and adjacent business and residential communities, the Plan is a tool for developing commercial and industrial enterprises in West Oakland.

### Metropolitan Transportation Commission (MTC)

The Metropolitan Transportation Commission (MTC) is the regional agency responsible for transportation planning, financing, and coordinating for the nine-county San Francisco Bay Area. The San Francisco Bay Area Goods Movement Plan and MTC Resolution No. 4244: Goods Movement Investment Strategy are examples of MTC's effort to plan, finance, and coordinate transportation in the Bay Area. For the Plan, MTC will help implement Strategies that address air pollution from mobile sources such as heavy-duty trucks and light-duty vehicles that travel through West Oakland and on the surrounding roadways and freeways, and air pollution from Port and Port tenant goods movement activities, for example through electric vehicle charging infrastructure, and improved bicycling and pedestrian infrastructure.

In 2016, MTC adopted the San Francisco Bay Area Goods Movement Plan. In 2018, the Commission passed MTC Resolution No. 4244: Goods Movement Investment Strategy. The Strategy addresses the Plan's freight movement impacts in communities like West Oakland. By adopting the Strategy, MTC made a commitment to work with the Air District, the Alameda County Transportation Commission, the Port of Oakland, and public health and environmental groups to reduce the impacts of pollution on communities from freight activities. The Strategy includes a list of potential projects to protect communities from air pollution.

The Strategy will direct \$3.8 billion over 10 years to 20 different projects in the Bay Area, with a strong focus on Interstate Corridors and the Port of Oakland in Alameda County. Approximately \$1.2 billion of this investment will be directed to Rail Strategy projects and \$350 million will be directed to Community Protection projects which will reduce emissions from equipment, facilities, and vehicles in communities that are heavily impacted by goods movement activities such as West Oakland. Over 50% of the funds will come from state and regional sources while the remaining funds will come from federal, local, and other sources. In the near term, it is probable that financial support for the Community Protection projects will come from SB 1 – Trade Corridors funds and will come from future bridge toll increases in later years (Regional Measure 3).

### Port of Oakland

The Port of Oakland is the local agency responsible for managing the Oakland Seaport, Oakland International Airport, and Jack London Square. Under the Charter of the City of Oakland (the "Charter"), the Board of Port Commissioners (the "Port Board") is the legislative body of the City having complete and exclusive power and duty to control the Port Area, as defined in the Charter, and has the power and duty to adopt and enforce general rules and regulation necessary for port purposes and harbor development and in carrying out the powers of the Port. To carry out its powers and duties, the Port Board has the "complete and exclusive powers" with respect to the Port Area, including, among other things, the power to sue and defend; to take charge of and control all waterfront properties, including certain tidelands in the Port Area granted to the City in trust by the State of California; to acquire and hold property rights, leases, easements and personal property; to enter into contracts; and to exercise the right of eminent domain. The Port Area includes all the waterfront properties and lands adjacent thereto, including trust lands granted to the City by the State of California. The Port is not a typical public agency. As an enterprise department of the City of Oakland, the Port of Oakland does not collect tax revenues for itself, but instead must generate revenue to be self-supporting.

In 2009, the Port of Oakland adopted the Maritime Air Quality Improvement Plan (MAQIP) to guide their response to community concerns over existing exposure to pollution and proposed development at the Port, rule-making by CARB to control emissions from marine vessels, drayage trucks and other port-based engines, and the publication of a health risk assessment of the West Oakland area by CARB and Air District showing very high cancer risk levels due to exposure to diesel PM.

The MAQIP committed the Port and its tenants to an 85% reduction in diesel PM emissions by 2020. In 2018, the Port reconvened the Task Force to update the MAQIP and to identify issues for seaport air quality planning beyond the Year 2020.[3] This work resulted in the adoption of the Seaport Air Quality 2020 and Beyond Plan in 2019.

The Seaport Air Quality 2020 and Beyond Plan is an example of the Port's effort to manage operations and air pollution from the Port. The Port of Oakland's Board directed Port staff to submit an Agenda Report to the Board by June 1, 2020, on Port-related strategies and/or

[3] Port of Oakland, "Project Statement: Maritime Air Quality Improvement Plan: 2018 Update and Planning for '2020 and Beyond'," February 21, 2018

implementing actions that are legally required or that, in the Port's judgment, may meet the 2020 and Beyond Plan feasibility criteria (Table D-2), as a result of the final West Oakland Community Air Action Plan prepared pursuant to AB 617 and any potential related updates to the 2020 and Beyond Plan For the Plan, the Port will implement strategies that address air pollution from Port and Port tenant activities, such as the movement of inbound and outbound freight on cargo equipment, port trucks, locomotives, and ocean-going ships and harbor craft in the San Francisco Bay. The goals of the Plan are to keep the Port competitive, financially sustainable, and a source of jobs and economic development; minimize air pollution from Port activities; build partnerships among Port, tenants, government agencies, community organizers, and other stakeholders; and provide meaningful stakeholder engagement. The Plan commits to deploying certain levels of zero-emission trucks, cargo handling equipment, and other equipment by certain deadlines. In response to advocacy by community members, the Air District and others, the Port Commissioners adopted the 2020 and Beyond Plan in 2019 with the condition that the Port would review and incorporate applicable measures from this Community Action Plan.

### Alameda County Public Health Department

The Alameda County Public Health Department is the county department responsible for providing public health services. The Health Department delivers services such as access to quality medical care services, disease prevention education and control, community education and outreach, and health policy development. The Healthy Development Guidelines is an example of the policy work that the Public Health Department delivers. For the Plan, the Public Health Department will implement strategies such as those that help the community access health services and educate the community about health risks, treatment, and prevention.

The Healthy Development Guidelines (2018), developed in collaboration with the City of Oakland and East Oakland Building Healthy Communities, is a reference tool of current and potential policies in the City of Oakland. The policies address a broad range of health and equity-related issues, including preventing human exposure to air pollution.

### California Air Resources Board (CARB)

CARB is the state agency responsible for controlling emissions from mobile sources and consumer products (except where federal law preempts CARB's authority), controlling toxic emissions from mobile and stationary sources, controlling greenhouse gases from mobile and stationary sources, developing fuel specifications, and coordinating State-level air quality planning strategies with other agencies. CARB is also responsible for establishing the state's air quality standards to protect human health.

AB 617 directs CARB to work with local air districts in California to address the disproportionate air quality and health challenges in communities like West Oakland. For the Plan, CARB will adopt and enforce regulations for mobile sources such as heavy-duty trucks and light-duty vehicles that travel through West Oakland and on the surrounding roadways and freeways, and sources at the Port of Oakland, such as cargo equipment, port trucks, locomotives, and ocean-going ships and harbor craft in the San Francisco Bay.

CARB staff develop, and the CARB board considers and adopts, regulatory programs designed to reduce emissions to protect public health, achieve air quality standards, reduce greenhouse gas emissions, and reduce exposure to toxic air contaminants. CARB establishes regulatory requirements for cleaner technologies (both zero and near-zero emissions) and their deployment into the fleet, for cleaner fuels, and to ensure in-use performance. CARB's regulatory programs are broad, impacting mobile sources and multiple points within product supply chains from manufacturers to distributors, retailers, and end-users. CARB's regulations affect cars, trucks, ships, off-road equipment, consumer products, fuels, and stationary sources.

One of CARB's important and relevant regulatory authorities is to adopt measures to reduce emissions of toxic air contaminants from mobile sources, known as Airborne Toxic Control Measures (ATCM).[4] These regulatory measures include emissions limits, process requirements, and/or specify low emission technology. Much of the progress to-date in improving air quality in West Oakland is due to compliance with CARB's existing diesel PM ATCMs and new engine standards. CARB is proposing a suite of amendments to existing ATCMs and adoption of new programs to further reduce emissions of diesel PM. CARB's schedule for their programs dealing with many of the main sources of diesel PM emissions in West Oakland is shown in Figure D-1.

[4] California Health and Safety Code § 39650 et seq.

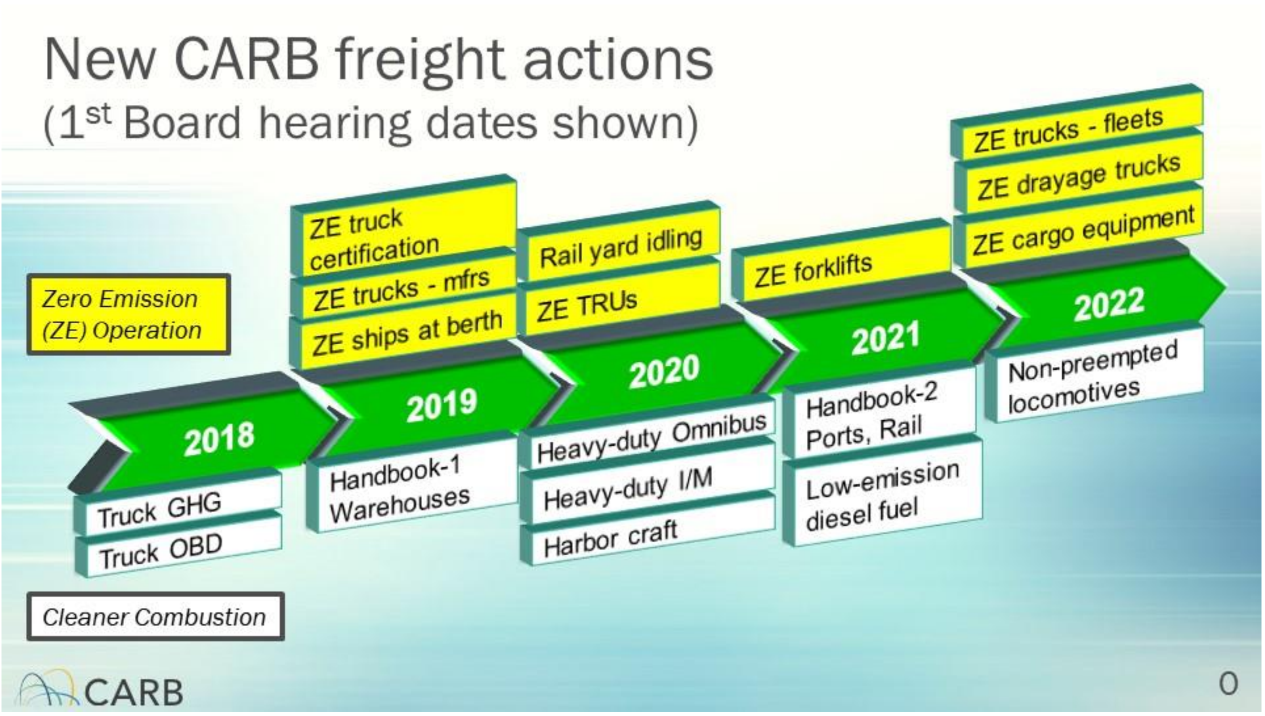


*Figure D-1. CARB Freight Actions Benefiting West Oakland. Presented to the BAAQMD Board of Directors on May 1, 2019.*

Additionally, CARB has pursued agreements with industry that result in voluntary adoption of the cleanest technologies or practices and provide assurance that emissions reductions will be realized. CARB's agreement with the Union Pacific Railroad Company and BNSF Railway Company to accelerate introduction of cleaner locomotives in the South Coast Air Basin is an example of such a voluntary agreement.

Most of the CARB Strategies included in the Plan will require CARB to consider and to adopt new or amended regulations. Prior to starting formal regulatory proceeding, CARB staff will be undertaking studies of some of these Strategies. For instance, given the community concerns with truck idling, CARB will work with the West Oakland community and the Steering Committee to collect data to better understand idling activity. CARB, with technical assistance from the Air District, will integrate the community-level activity data with updated emissions data to evaluate whether the current idling regulations provide adequate health protection. As shown in Figure D-1 above, CARB will consider regulations requiring zero-emission drayage trucks and cargo-handling equipment in 2022. It is unclear at this time if the regulations will begin requiring phase-in of the zero-emission equipment and trucks prior to 2025.

### Alameda County Transportation Commission

The Alameda County Transportation Commission is the county agency responsible for managing the county's one-cent transportation sales tax funds and funding transportation projects and programs. The Alameda CTC is responsible for delivering the County's bicycle, pedestrian, highway improvements, road, and transit projects. For the Plan, the Alameda CTC will implement transportation-related Plan Strategies, including those that advocate for improved bicycling and pedestrian infrastructure in West Oakland.

### California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) is the state agency responsible for maintaining and improving state highways and transportation projects. For the Plan, Caltrans will implement Plan Strategies such as studies to determine the feasibility of vegetative biofilters between the Prescott neighborhood and Interstate 880 and work with WOEIP and the Air District to address air quality issues from truck parking leases on Caltrans right-of-way.

## INCENTIVE FUNDING

Listed below are brief descriptions of current ongoing funding opportunities. Figure D-2 presents a matrix of air quality incentive funding programs and the types of projects the program will fund. Table D-1 presents a sample of emissions reduction projects that will reduce emissions in West Oakland. The Air District is funding these projects through existing incentive programs.

| **Air District administered incentive programs** |
|---|

**Carl Moyer Program** - The Bay Area Air Quality Management District (Air District) has participated in the Carl Moyer Program (CMP), in cooperation with the CARB, since the program began in fiscal year 1998-1999. The CMP provides grants to public and private entities to reduce emissions of oxides of nitrogen (NOx), reactive organic gases (ROG) and particulate matter (PM) from existing heavy-duty engines by either replacing or retrofitting them. Eligible heavy-duty diesel engine applications include on-road trucks and buses, off-road equipment, marine vessels, locomotives, and stationary agricultural pump engines.
www.baaqmd.gov/moyer

Assembly Bill 923 (AB 923 - Firebaugh), enacted in 2004 (codified as Health and Safety Code (HSC) Section 44225), authorized local air districts to increase their motor vehicle registration surcharge up to an additional $2 per vehicle. The revenues from the additional $2 surcharge are deposited in the Air District's Mobile Source Incentive Fund (MSIF). AB 923 stipulates that air districts may use the revenues generated by the additional $2 surcharge for projects eligible under the CMP.

**Community Health Protection Grant Program** - In 2017, Assembly Bill (AB) 617 directed CARB, in conjunction with local air districts to establish the Community Air Protection Program. AB 617 provides a new community-focused action framework to improve air quality and reduce exposure to criteria air pollutants and toxic air contaminants in communities most impacted by air pollution. In advance of the development of the Community Air Protection Program, the Governor and legislature established an early action component to AB 617 to use existing incentive programs to get immediate emission reductions in the communities most affected by air pollution. AB 134 appropriated $250 million from the Greenhouse Gas Reduction Fund

(GGRF) to reduce mobile source emissions including criteria pollutants, toxic air contaminants, and greenhouse gases in those communities. The Bay Area has been allocated $50 million of these funds for emission reduction projects. These funds will be used to implement projects under the CMP, and optionally on-road truck replacements under the Proposition 1B Goods Movement Emission Reduction Program.

In 2018, Senate Bill (SB) 856 appropriated an additional $245 million in incentives to reduce emissions from both mobile and stationary sources. The Air District will receive about $40 million of these funds for Bay Area projects. Mobile sources will follow the Carl Moyer Program and Proposition 1B Goods Movement Emission Reduction Program guidelines like Program Year 1. Funding will also be available for stationary source projects as defined by CARB Community Air Protection Grant Program guidelines and other programs/projects consistent with the actions identified in the applicable AB 617 community emission reduction program. www.baaqmd.gov/ab617grants

**Transportation Fund for Clean Air** - In 1991, the California State Legislature authorized the Air District to impose a $4 surcharge on motor vehicles registered within the nine-county Bay Area to fund projects that reduce on-road motor vehicle emissions within the Air District's jurisdiction. The statutory authority for the Transportation Fund for Clean Air (TFCA) and requirements of the program are set forth in the HSC Sections 44241 and 44242. Sixty percent of TFCA funds are awarded by the Air District to eligible projects and programs implemented directly by the Air District (e.g., Spare the Air, electric vehicle charging station program) and to a program referred to as the TFCA Regional Fund. Each year, the Board allocates funding and adopts policies and evaluation criteria that govern the expenditure of TFCA funding. The primary Air District administered incentive programs include:

- Trip reduction projects - www.baaqmd.gov/PTR
- Public electric vehicle charging stations - www.baaqmd.gov/charge
- Light & Medium Duty zero-emission vehicles - www.baaqmd.gov/cleanfleets
- Electronic bicycle lockers – www.baaqmd.gov/funding-and-incentives/public-agencies/bike-racks-and-lockers
- Bikeways, roads, lanes, paths – www.baaqmd.gov/bikeways

**VW Environmental Mitigation Trust** - CARB has been designated as Lead Agency to act on the State's behalf in implementing California's allocation of the VW Environmental Mitigation Trust (VW Trust). On May 25, 2018, the ARB approved the Beneficiary Mitigation Plan (Plan) which, through the VW Trust, will provide about $423 million for projects in California to mitigate the excess nitrogen oxide (NOx) emissions caused by VW's use of illegal defeat devices in certain diesel vehicles. The VW Trust funding will provide funding opportunities for settlement specified eligible actions that are focused mostly on "scrap and replace" projects for the heavy-duty sector, including on-road freight trucks, transit and shuttle buses, school buses, forklifts and port cargo-handling equipment, commercial marine vessels, and freight switcher locomotives. CARB staff estimates the Plan's funding actions in aggregate will reduce about 10,000 tons of NOx statewide over a 10-year period. https://ww2.arb.ca.gov/our-work/programs/volkswagen-environmental-mitigation-trust-california

**Climate Tech Finance -** The Air District's Climate Tech Finance program offers subsidized financing and technical guidance to spur the adoption of emerging technologies that reduce greenhouse gas emissions. The Air District also provides engineering evaluation and technical assistance to borrowers to evaluate proposed projects. This program is being offered through a partnership with the California Infrastructure and Economic Development Bank (IBank). www.baaqmd.gov/ctf

## Other incentive programs

**U.S. EPA Diesel Emission Reduction Act** - The United States Environmental Protection Agency (U.S. EPA) Clean Diesel Program provides support for projects that protect human health and improve air quality by reducing harmful emissions from diesel engines. This program includes grants and rebates funded under the Diesel Emissions Reduction Act (DERA). Funding is typically available annually on a competitive basis. The Air District has successfully implemented several DERA grants over the past decade. https://www.epa.gov/cleandiesel/clean-diesel-national-grants

**CARB Low Carbon Transportation Program** - The Low Carbon Transportation Program is part of California Climate Investments, a statewide program that puts billions of Cap-and-Trade dollars to work reducing GHG emissions, strengthening the economy, and improving public health and the environment—particularly in disadvantaged communities. CARB's Low Carbon Transportation Program is designed to accelerate the transition to advanced technology low carbon freight and passenger transportation with a priority on providing health and economic benefits to California's most disadvantaged communities. These investments support the state's climate change, air quality, ZEV deployment, and petroleum reduction goals. https://www.arb.ca.gov/msprog/aqip/fundplan/fundplan.htm

**CARB Clean Vehicle Rebate Project** - The Clean Vehicle Rebate Project (CVRP) promotes clean vehicle adoption in California by offering rebates of up to $7,000 for the purchase or lease of new, eligible zero-emission vehicles, including electric, plug-in hybrid electric and fuel cell vehicles. The Center for Sustainable Energy (CSE) administers CVRP throughout the state for CARB. https://cleanvehiclerebate.org/eng

**CARB Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)** - The Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) and Low NOx Engine Incentives was formed by CARB as a result of the Air Quality Improvement Program (AQIP) following the passing of the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (AB 118, Statutes of 2007, Chapter 750). AQIP offers funding for projects and initiatives focused on supporting the development and deployment of the advanced technologies needed to meet California's longer-term, post-2020 air quality goals. The fuel efficiency and zero- to low-emission benefits of zero-emission, hybrid, and natural gas vehicle technologies provide a strong public health benefit by reducing harmful greenhouse gas (GHG) and criteria emissions. https://www.californiahvip.org/

| Incentive Programs ↓ / Equipment / Project Type → | Heavy-duty vehicles (trucks, buses, school buses, shuttles) | Light-duty/ passenger vehicles | Trip reduction program | Transportation programs/ projects | Marine vessels | Locomotives | Agriculture equipment | Industrial/ Port/ Cargo handling equipment | Construction equipment | Portable engines | Supporting Infrastructure (charging/fueling) | Bikeways, raods, lanes, paths, lockers | Stationary sources | Fireplaces and wood stoves |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carl Moyer Program (CMP) | • | | | | • | • | • | • | • | • | • | | | |
| Community Health Protection Grant Program | • | | | | • | • | • | • | • | • | • | | • | |
| Transportation Fund for Clean Air | • | • | • | • | | | | | | | • | • | | |
| Volkswagen (VW) Settlement Funds | • | | | | • | • | | • | • | | • | | | |
| Clean cars for all | | • | | | | | | | | | | | | |
| Vehicle buyback program (VBB) | | • | | | | | | | | | | | | |
| FARMER Program | • | | | | | | • | | | | | | | |
| Woodsmoke rebate program | | | | | | | | | | | | | | • |
| Climate Tech Finance | | | | | | | | | | | | | • | |
| CARB Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) | • | | | | | | | | | | | | | |
| CARB Clean Vehicle Rebate Project (CVRP) | | • | | | | | | | | | | | | |
| CARB Low Carbon Transportation Program | • | | | | • | • | • | • | • | | • | | | |
| CA Energy Commission (CEC) funding opportunities | • | | | | | | | | | | • | | | |
| CA State Transportation Agency | • | | | | | • | | | | | • | | | |
| U.S. Environmental Protection Agency's (EPA) Diesel Emissions Reduction Act (DERA) Program | • | | | | • | • | • | • | • | | • | | | |
| Federal Highway Administration's (FHWA) Congestion Mitigation and Air Quality Program (CMAQ) | | | • | | | | | | | | | • | | |
| Federal Transit Authority (FTA) | • | | | | | | | | | | | | | |
| Pacific Gas & Electric (PG&E) Funds | | | | | | | | | | | • | | | |

| | |
|---|---|
| Air District administered funding sources | • |
| Non-Air District funding sources | • |

*Figure D-2. Incentive Programs*

*Table D-1: A sample of upcoming emissions reduction projects*

| **Project** | **Grantee Name** | **Incentive Funds Awarded** | **Grantee Contribution** | **Total Project Cost** | **PM2.5 Emissions Reduced (tpy)** |
|---|---|---|---|---|---|
| One switcher locomotive | Oakland Global Rail Enterprise | $1,080,500 | $1,139,500 | $2,220,000 | 0.040 |
| Two main engines in a tugboat (Sandra Hugh) | Amnav Maritime Corporation | $743,000 | $743,656 | $ 1,486,656 | 1.130 |
| Two main engines in a tugboat (Revolution) | Amnav Maritime Corporation | $743,000 | $743,656 | $ 1,486,656 | 1.130 |
| Two auxiliary engines in a tugboat (Sandra Hugh) | Amnav Maritime Corporation | $134,000 | $16,068 | $150,068 | 0.019 |
| Two auxiliary engines in a tugboat (Revolution) | Amnav Maritime Corporation | $134,000 | $16,068 | $150,068 | 0.019 |
| 13 hybrid cranes | SSA Terminals | $5,011,500 | $885,183 | $ 5,896,683 | 0.166 |
| On-road | Alameda-Contra Costa Transit District | $1,011,000 | $5,464,000 | $ 6,475,000 | 0.002 |
| Two main and two auxiliary engines in a tugboat (Z-3) | Harley Marine Services, Inc. Vessel: Z-Three | $1,613,500 | $186,943 | $1,800,443 | 0.364 |
| Two main and two auxiliary engines in a tugboat (Z-5) | Harley Marine Services, Inc. Vessel Z-Four | $1,613,500 | $186,943 | $1,800,443 | 0.364 |
| Two main and two auxiliary engines in a tugboat | Harley Marine Services, Inc. Vessel Z-Five | $1,613,500 | $186,943 | $1,800,443 | 0.364 |
| **Totals** | | **$13,697,500** | **$9,568,960** | **$23,266,460** | **3.598** |

# Appendix E – Enforcement Support Document

## LIST OF PERMITTED FACILITIES IN WEST OAKLAND

| Name | Address | City | Zip Code | Permit Type | Source Type |
|---|---|---|---|---|---|
| AAA San Pablo Fuel Inc. | 3420 San Pablo Avenue | Oakland | 94608 | Air District | Gas Station |
| Acorn Restoration | 2914 Poplar Street | Oakland | 94608 | Air District | Paint Operation |
| Alameda County Public Works Agency | 3455 Ettie Street | Oakland | 94608 | Air District | Emergency Generator |
| Amber Flooring Inc | 3441 Louise Street | Oakland | 94608 | Air District | Paint Operation |
| Amtrak | 120 Magnolia Street | Oakland | 94607 | Air District | Emergency Generator |
| Aramark Uniform Services | 330 Chestnut Street | Oakland | 94607 | Air District | Boiler |
| Bart Gas & Food | 1395 7th Street | Oakland | 94607 | Air District | Gas Station |
| Berkeley Millwork & Furniture Co | 2279 Poplar Street | Oakland | 94607 | Air District | Paint Operation |
| Berkeley Repertory Theatre | 2526 Wood Street | Oakland | 94607 | Air District | Paint Operation |
| BNSF Intermodal | 333 Maritime Street | Oakland | 94607 | Air District | Gas Station |
| BNSF Railway Co | 333 Maritime Street | Oakland | 94607 | Air District | Emergency Generator |
| Bolero Co | 2905 Union Street | Oakland | 94608 | Air District | Auto Body |
| California Cereal Products Inc | 1267 14th Street | Oakland | 94607 | Air District | Food Processing |
| California Finest Body & Frame | 1415 18th Street | Oakland | 94607 | Air District | Auto Body |
| California Hotel | 3501 San Pablo Avenue | Oakland | 94608 | Air District | Emergency Generator |
| California Waste Solutions - Wood Street | 3300 Wood Street | Oakland | 94607 | Air District | Recycling Plant |
| California Waste Solutions-10St Street | 1820 10th Street | Oakland | 94607 | Air District | Recycling Plant |
| Caltrans | 200 Burma Road | Oakland | 94607 | Air District | Emergency Generator |
| Caltrans - East Bay Yard | Burma Road | Oakland | 94608 | Air District | Gas Station |
| CalTrans SFOBB Maintenance Complex | 200 Burma Road | Oakland | 94607 | Air District | Gas Station |
| CASS Inc | 2730 Peralta Street | Oakland | 94607 | Air District | Metal Facility |
| Cathedral Gardens Oakland | 638 21st Street | Oakland | 94612 | Air District | Emergency Generator |
| Central Concrete Supply A U S Concrete Company | 2400 Peralta Street | Oakland | 94607 | Air District | Cement Plant |
| Chevron SS #9-4800 | 1700 Castro Street | Oakland | 94612 | Air District | Gas Station |
| City of Oakland Envr Scvs Division | 1605 Martin Luther King Jr Way | Oakland | 94612 | Air District | Emergency Generator |
| City of Oakland Envr Scvs Division | 14th & Mandela Way | Oakland | 94607 | Air District | Emergency Generator |
| City of Oakland Fire Station 1 | 1605 Martin Luther King Way | Oakland | 94612 | Air District | Gas Station |
| Clear Channel Outdoor | 2857 Hannah Street | Oakland | 94608 | Air District | Gas Station |
| Clear Channel Outdoor | 2865 Hannah Street | Oakland | 94608 | Air District | Paint Operation |
| Color Folio Design | 1467 Park Avenue | Emeryville | 94608 | Air District | Paint Operation |
| ConGlobal Industries | 555A Maritime Street | Oakland | 94607 | Air District | Auto Body |

| Name | Address | City | Zip Code | Permit Type | Source Type |
|---|---|---|---|---|---|
| Continental Auto Body | 1355 Park Ave | Emeryville | 94608 | Air District | Auto Body |
| Coolport LLC | 575 Maritime Street | Oakland | 94607 | Air District | Emergency Generator |
| Custom Wood Finishing | 2311 Adeline Street | Oakland | 94607 | Air District | Emergency Generator |
| Department of Transportation | Toll Operations Bldg, SF-Oakland Bay Bridge | Oakland | 94608 | Air District | Emergency Generator |
| Digital 720 2nd LLC | 720 2nd Street | Oakland | 94607 | Air District | Emergency Generator |
| Dynegy Oakland LLC | 50 Martin Luther King Jr Way | Oakland | 94607 | Title V | Power Plant |
| East Bay Municipal Utility District | 1100 21st Street | Oakland | 94607 | Air District | Emergency Generator |
| East Bay Municipal Utility District | 1200 21st Street | Oakland | 94607 | Air District | Paint Operation |
| East Bay Municipal Utility District | 2144 Poplar Street | Oakland | 94607 | Air District | Gas Station |
| East Bay Municipal Utility District PSK | 2101 7th Street | Oakland | 94607 | Air District | Emergency Generator |
| East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Title V | Sewage Treatment |
| Englund Studio | 1850 Campbell Street | Oakland | 94607 | Air District | Paint Operation |
| ExxonMobil c/o Acton Mickelson Environmental | 909 Ferry Street (Port of Berth 23 | Oakland | 94607 | Air District | Soil Vapor Extraction |
| Four Barrel Coffee Co | 325 Martin Luther King Way | Oakland | 94607 | Air District | Coffee Roaster |
| Global Power Group, Inc | 3938 Horton Street | Emeryville | 94608 | Air District | Emergency Generator |
| Harold's Auto Body & Paint Shop | 2126 Market Street | Oakland | 94607 | Air District | Auto Body |
| HC Fine Finishes | 1231 24th Street | Oakland | 94607 | Air District | Spray Booth |
| High End Custom and Collision | 1649 28th Street | Oakland | 94608 | Air District | Auto Body |
| Hustead's Collision Center Inc | 2915 Market Street | Oakland | 94608 | Air District | Auto Body |
| J and O Tire | 2236 Poplar Street | Oakland | 94607 | Air District | Gas Station |
| Market Street Shell #135692 | 610 Market Street | Oakland | 94607 | Air District | Gas Station |
| MetroPCS California/Florida Inc | 720 2nd Street | Oakland | 94607 | Air District | Emergency Generator |
| Mobile SS#63049 | 3400 San Pablo Avenue | Oakland | 94608 | Air District | Gas Station |
| Mr Espresso | 696 3rd Street | Oakland | 94607 | Air District | Coffee Roaster |
| Nor-Cal Metal Fabricators | 1121 3rd Street | Oakland | 94607 | Air District | Sandblasting |
| Oakland Unified School District | 1011 Union Street | Oakland | 94607 | Air District | Emergency Generator |
| OFD Fire Station #3 | 1445 14th Street | Oakland | 94607 | Air District | Gas Station |
| Pacific Gas and Electric | 689 2nd Street | Oakland | 94607 | Air District | Emergency Generator |
| Pinnacle Ag Services | 2440 W 14th Street | Oakland | 94607 | Air District | Emergency Generator |
| Port of Oakland | 651 Maritime Street | Oakland | 94607 | Air District | Gas Station |
| Port of Oakland | 651 Maritime Street | Oakland | 94607 | Air District | Emergency Generator |
| Port of Oakland | 1599 Maritime Street | Oakland | 94607 | Air District | Emergency Generator |
| Prologis | 2420 West 21st Street | Oakland | 94607 | Air District | Emergency Generator |

| Name | Address | City | Zip Code | Permit Type | Source Type |
|---|---|---|---|---|---|
| PS Printing LLC | 2861 Mandela Parkway | Oakland | 94608 | Air District | Print Shop |
| Quality Body and Fender | 2510 Martin Luther King Way | Oakland | 94612 | Air District | Auto Body |
| Radio Mirchi | Pole Plaza AHN 18, Pole #110141241 | Oakland | 94608 | Air District | Emergency Generator |
| Redline Import - Auto Collision | 2300 Market Street #C | Oakland | 94607 | Air District | Auto Body |
| Rino Pacific | 1107 5th Street | Oakland | 94607 | Air District | Gas Station |
| Safety-Kleen Systems Inc | 400 Market Street | Oakland | 94607 | Air District | Soil Vapor Extraction |
| San Francisco Bay Bridge Toll Plaza | Bay Bridge East | Oakland | 94607 | Air District | Emergency Generator |
| San Pablo Auto Body | 2926 San Pablo Avenue | Oakland | 94612 | Air District | Auto Body |
| Sausal Corporation | Bay Bridge Toll Plaza | Oakland | 94608 | Air District | Gas Station |
| Schnitzer Steel Products Company | Adeline Street, Foot of | Oakland | 94607 | Air District | Metal Facility |
| SFPP, L P | Bay Street, off 7th Street | Oakland | 94666 | Air District | Fuel Storage |
| Sierra Pacific | 3213 Wood Street | Oakland | 94608 | Air District | Cement Plant |
| Solstice Press | 113 Filbert Street | Oakland | 94607 | Air District | Print Shop |
| SPRINT | 114 Brush Street | Oakland | 94607 | Air District | Emergency Generator |
| SPRINT | 1075 7th Street | Oakland | 94607 | Air District | Emergency Generator |
| SSA Terminals (Oakland) LLC | 1999 Middle Harbor Road | Oakland | 94607 | Air District | Emergency Generator |
| SSA Terminals-Oakland LLC | 1999 Middle Harbor Road | Oakland | 94607 | Air District | Gas Station |
| Stanford Cleaners | 2134 Market Street | Oakland | 94607 | Air District | Dry Cleaning |
| State of CA - Caltrans | Oak Bay Bridge, E Side, Toll Plaza | Oakland | 94608 | Air District | Gas Station |
| Tam's Auto Body | 2300 Market Street Suite B | Oakland | 94607 | Air District | Auto Body |
| Target Corporation Store #T2767 | 1555 40th Street | Oakland | 94608 | Air District | Emergency Generator |
| T-fuels Inc dba Grand Arco AMPM-C Kim | 889 W Grand Avenue | Oakland | 94607 | Air District | Gas Station |
| The Home Depot (Store #0627) | 3838 Hollis Street | Emeryville | 94608 | Air District | Emergency Generator |
| T-Mobile | 720 2nd Street | Oakland | 94607 | Air District | Emergency Generator |
| Trapac | 2800 7th Street | Oakland | 94607 | Air District | Gas Station |
| Union Pacific Railroad | 1400 Middle Harbor Road | Oakland | 94607 | Air District | Emergency Generator |
| Union Pacific Railroad | 1400 Middle Harbor Road | Oakland | 94607 | Air District | Gas Station |
| US Postal Service - Building Maintenance | 1675 7th Street | Oakland | 94615 | Air District | Emergency Generator |
| Verizon Wireless (Alameda Perm) | 114 Brush Street | Oakland | 94607 | Air District | Emergency Generator |
| Verizon Wireless (Bay Bridge East) | 107 Burma Road | Oakland | 94617 | Air District | Emergency Generator |
| Viridis Fuels | 2040 Wake Avenue | Oakland | 94607 | Air District | Boiler |
| Watermark Bayside, LLC dba Bayside Park | 1440 40th Street | Emeryville | 94608 | Air District | Emergency Generator |

## LIST OF COMPLAINTS RECEIVED IN WEST OAKLAND (JANUARY 2016 – DECEMBER 2018)

| Complaint Number | Complaint Type | Date Received | Alleged Site | Address | City | Description | Pertinent Information |
|---|---|---|---|---|---|---|---|
| 226887 | Odor | 6/8/2016 | Ant's Body Shop | 2300 Market Street | Oakland | paint fumes | |
| 231961 | Gas Station | 6/26/2017 | Arco | 899 West Grand Ave | Oakland | no latches | |
| 232755 | Dust | 9/14/2017 | Blue Bottle Coffee | 300 Webster | Oakland | Heavy dust | |
| 226026 | Smoke | 4/21/2016 | Business | 291 3rd St | Oakland | heavy black | Intermittent smoke but very heavy |
| 234011 | Odor | 1/9/2018 | Cafe Tartine | 55 Harrison St | Oakland | burnt | |
| 234046 | Dust | 1/16/2018 | Cafe Tartine | 55 Harrison St | Oakland | particulate matter | |
| 232628 | Smoke | 9/5/2017 | California Cereal Products | 1267 14th St | Oakland | black | |
| 224468 | Odor | 2/4/2016 | California Waste Solutions | 1820 10th Street | Oakland | | |
| 224473 | Odor | 2/4/2016 | California Waste Solutions | 1820 10th Street | Oakland | garbage | |
| 224474 | Odor | 2/4/2016 | California Waste Solutions | 1820 10th Street | Oakland | garbage | |
| 224476 | Odor | 2/4/2016 | California Waste Solutions | 1820 10th Street | Oakland | dead fish | |
| 224477 | Odor | 2/4/2016 | California Waste Solutions | 1820 10th Street | Oakland | nauseating | |
| 224491 | Odor | 2/5/2016 | California Waste Solutions | 1820 10th Street | Oakland | | |
| 224580 | Odor | 2/9/2016 | California Waste Solutions | 1820 10th Street | Oakland | sour garbage | |
| 224581 | Odor | 2/9/2016 | California Waste Solutions | 1820 10th Street | Oakland | unbearable | |
| 224604 | Odor | 2/10/2016 | California Waste Solutions | 1820 10th Street | Oakland | | smelled at wood street |
| 226378 | Odor | 5/5/2016 | California Waste Solutions | 1820 10th Street | Oakland | | |
| 231970 | Idling Commercial Vehicle | 6/27/2017 | California Waste Solutions | 1820 10th Street | Oakland | trucks | |
| 235203 | Odor | 4/22/2018 | California Waste Solutions | 10th ST/Pine St | Oakland | burning plastic | |
| 228920 | Odor | 11/23/2016 | Construction | 311 Burma Rd | Oakland | Burning/ smoke | |

| Complaint Number | Complaint Type | Date Received | Alleged Site | Address | City | Description | Pertinent Information |
|---|---|---|---|---|---|---|---|
| 231960 | Odor | 6/26/2017 | Construction | 11th St & Frontage Rd | Oakland | fumes | Complained by leaving VM with our Public Info office |
| 227331 | Asbestos | 7/28/2016 | Construction Site | 1919 Market St | Oakland | dust everywhere | |
| 227488 | Asbestos | 8/17/2016 | Construction Site | 1919 Market St | Oakland | no containment | |
| 227741 | Dust | 9/14/2016 | Construction Site | 1919 Market St | Oakland | | |
| 231574 | Dust | 5/13/2017 | Construction Site | Frontage Rd/14th St | Oakland | not watering down | |
| 231950 | Odor | 6/24/2017 | Construction Site | Frontage Rd/14th St | Oakland | exhaust | |
| 232676 | Dust | 9/7/2017 | Construction Site | West St/West Grand St | Oakland | not watering down | |
| 232695 | Dust | 9/8/2017 | Construction Site | Filbert St/Myrtle St | Oakland | not watering down | |
| 235995 | Dust | 6/25/2018 | Construction Site | 17th St & Campbell St | Oakland | | |
| 224172 | Odor | 1/8/2016 | Custom Alloy | 2730 Peralta Street | Oakland | | |
| 224220 | Odor | 1/13/2016 | Custom Alloy | 2730 Peralta Street | Oakland | | |
| 225587 | Odor | 3/26/2016 | Custom Alloy | 2730 Peralta Street | Oakland | disgusting | |
| 225892 | Odor | 4/16/2016 | Custom Alloy | 2730 Peralta Street | Oakland | burning metal | |
| 227017 | Odor | 6/27/2016 | Custom Alloy | 2730 Peralta Street | Oakland | metallic | |
| 227585 | Odor | 8/28/2016 | Custom Alloy | 2730 Peralta Street | Oakland | burning metal | |
| 227590 | Odor | 8/29/2016 | Custom Alloy | 2730 Peralta Street | Oakland | burning metal | |
| 227607 | Odor | 8/30/2016 | Custom Alloy | 2730 Peralta Street | Oakland | metallic/chlorine | |
| 227786 | Odor | 9/17/2016 | Custom Alloy | 2730 Peralta Street | Oakland | metallic | |
| 228421 | Odor | 10/10/2016 | Custom Alloy | 2730 Peralta Street | Oakland | burnt metal | |
| 231225 | Odor | 4/23/2017 | Custom Alloy | 2730 Peralta Street | Oakland | | |
| 231331 | Odor | 4/30/2017 | Custom Alloy | 2730 Peralta Street | Oakland | | |
| 231597 | Odor | 5/16/2017 | Custom Alloy | 2730 Peralta Street | Oakland | metallic | |
| 232240 | Odor | 7/28/2017 | Custom Alloy | 2730 Peralta Street | Oakland | bad | |
| 232242 | Odor | 7/28/2017 | Custom Alloy | 2730 Peralta Street | Oakland | burning smell | had also noticed the odor this morning |
| 232362 | Odor | 8/6/2017 | Custom Alloy | 2730 Peralta Street | Oakland | burning metal | |
| 232814 | Odor | 9/24/2017 | Custom Alloy | 2730 Peralta Street | Oakland | melting metal | |
| 233114 | Odor | 10/20/2017 | Custom Alloy | 2730 Peralta Street | Oakland | metal | |
| 233749 | Odor | 12/10/2017 | Custom Alloy | 2730 Peralta Street | Oakland | burning metal | |
| 233837 | Odor | 12/17/2017 | Custom Alloy | 2730 Peralta Street | Oakland | melting | |
| 234800 | Odor | 3/28/2018 | Custom Alloy | 2730 Peralta St | Oakland | burning metal | |
| 235174 | Odor | 4/19/2018 | Custom Alloy | 2730 Peralta Street | Oakland | acrid/burnt plastic | |

| Complaint Number | Complaint Type | Date Received | Alleged Site | Address | City | Description | Pertinent Information |
|---|---|---|---|---|---|---|---|
| 235186 | Odor | 4/20/2018 | Custom Alloy | 2730 Peralta | Oakland | chlorine, bleach | |
| 235202 | Odor | 4/22/2018 | Custom Alloy | 2730 Peralta Street | Oakland | chlorine | |
| 235242 | Odor | 4/25/2018 | Custom Alloy | 2730 Peralta Street | Oakland | burning metal | |
| 235265 | Odor | 4/27/2018 | Custom Alloy | 2730 Peralta Street | Oakland | plastic/chlorine | |
| 235271 | Odor | 4/28/2018 | Custom Alloy | 2730 Peralta Street | Oakland | burning metal | |
| 235276 | Odor | 4/29/2018 | Custom Alloy | 2730 Peralta Street | Oakland | chemical | THERE ARE WHITE CLOUDS OF SMOKE THAT SMELL LIKE CHLORINE COMING FROM RECYCLE PLANT |
| 235283 | Odor | 4/30/2018 | Custom Alloy | 2730 Peralta | Oakland | burnt circuit boards | occurs in the afternoon; 3-7pm; if c doesn't answer call again |
| 235682 | Odor | 5/29/2018 | Custom Alloy | 2730 Peralta Street | Oakland | CHLORINE BITTER CHEM | |
| 235709 | Odor | 5/31/2018 | Custom Alloy | 2730 Peralta Street | Oakland | burning metal | |
| 235715 | Odor | 6/1/2018 | Custom Alloy | 2730 Peralta | Oakland | burnt plastic | |
| 235777 | Odor | 6/4/2018 | Custom Alloy | 2430 Peralta St | Oakland | burning metal | burning metal odor - burning after 7p when not supposed to |
| 236312 | Odor | 7/13/2018 | Custom Alloy | 2730 Peralta Street | Oakland | chemical | |
| 236378 | Odor | 7/18/2018 | Custom Alloy | 2730 Peralta | Oakland | burnt chlorine | |
| 236592 | Odor | 7/25/2018 | Custom Alloy | 2730 Peralta Street | Oakland | | |
| 237249 | Odor | 9/8/2018 | Custom Alloy | 2730 Peralta Street | Oakland | bad | |
| 237629 | Odor | 10/4/2018 | Custom Alloy | 2730 Peralta Street | Oakland | burning plastic | |
| 237631 | Odor | 10/4/2018 | Custom Alloy | 2730 Peralta Street | Oakland | acrid | |
| 237752 | Odor | 10/15/2018 | Custom Alloy | 2730 Peralta Street | Oakland | chemical | |
| 231968 | Idling Commercial Vehicle | 6/27/2017 | Garbage Trucks | Pine & 11th St | Oakland | many trucks | |
| 238505 | Odor | 11/27/2018 | Jack Truck Repair | 2226 Myrtle St | Oakland | repair fumes | |
| 233148 | Odor | 10/23/2017 | Jac's Truck Repair | West Ave | Oakland | exhaust | |

| Complaint Number | Complaint Type | Date Received | Alleged Site | Address | City | Description | Pertinent Information |
|---|---|---|---|---|---|---|---|
| 231949 | Odor | 6/24/2017 | LJP Construction Services | 121 Pine St | Oakland | chemical | |
| 226900 | Asbestos | 6/9/2016 | MFD | 392 11th Street | Oakland | construction | improper removal and containment |
| 227159 | Asbestos | 7/7/2016 | MFD | 7 Embarcadero West Unit 202 | Oakland | improper removal | no containment and when asked the contractor said they didn't need to |
| 228039 | Odor | 9/26/2016 | MFD | 2407 Adeline Street | Oakland | noxious | spraying foam on roof / noxious odor |
| 224267 | Odor | 1/19/2016 | NONE | NONE | Oakland | bad | |
| 224475 | Odor | 2/4/2016 | NONE | NONE | Oakland | | |
| 224492 | Odor | 2/5/2016 | NONE | NONE | Oakland | bad dairy | |
| 225033 | Odor | 2/25/2016 | NONE | NONE | Oakland | chemical | |
| 227730 | Odor | 9/12/2016 | NONE | NONE | Oakland | burning bread | smells it mostly in the morning but smells it again now at Laney College |
| 228152 | Odor | 9/28/2016 | NONE | NONE | Oakland | bad plastic | |
| 229220 | Odor | 12/22/2016 | NONE | Fallon St/7th St | Oakland | burnt metal | |
| 229477 | Odor | 1/9/2017 | NONE | NONE | Oakland | burning | |
| 229710 | Odor | 1/28/2017 | NONE | NONE | Oakland | clorox | says smell is coming from Warehouses on 3rd/Center St, Oakland |
| 229857 | Odor | 2/6/2017 | NONE | 3rd St / Center St | Oakland | clorox | |
| 229912 | Odor | 2/13/2017 | NONE | NONE | Oakland | clorox | 1448 3rd and Center St |
| 230255 | Odor | 2/27/2017 | NONE | NONE | Oakland | burning | |
| 230876 | Odor | 3/24/2017 | NONE | NONE | Oakland | bleach | |
| 232232 | Odor | 7/27/2017 | NONE | NONE | Oakland | burning pot handles | |
| 232537 | Odor | 8/28/2017 | NONE | 3rd St / Center St | Oakland | Chemicals | |
| 232581 | Odor | 8/31/2017 | NONE | NONE | Oakland | chemical like | She had stated odor is coming from the west of her... |
| 232661 | Dust | 9/6/2017 | NONE | 15th and Center | Oakland | Dust from construction | |
| 232732 | Dust | 9/11/2017 | NONE | 305 Center St | Oakland | Dust & gas odors | |
| 233219 | Odor | 10/25/2017 | NONE | NONE | Oakland | bleach | |

| Complaint Number | Complaint Type | Date Received | Alleged Site | Address | City | Description | Pertinent Information |
|---|---|---|---|---|---|---|---|
| 234005 | Odor | 1/9/2018 | NONE | 3rd St / Center St | Oakland | Chemical smell | |
| 234018 | Odor | 1/10/2018 | NONE | 3rd St / Center St | Oakland | | |
| 234024 | Odor | 1/11/2018 | NONE | NONE | Oakland | chlorine/ bleach | |
| 235033 | Odor | 4/9/2018 | NONE | 3rd St / Center St | Oakland | bleach | Complaint #68 Chemical or bleach odor from a warehouse across the street coming into apt |
| 235685 | Dust | 5/30/2018 | NONE | 1600 block 10th St | Oakland | white | |
| 235687 | Soot | 5/30/2018 | NONE | NONE | Oakland | | |
| 235991 | Dust | 6/25/2018 | NONE | Wood St / 17th St | Oakland | demo no watering | |
| 236297 | Odor | 7/13/2018 | NONE | W Grand Ave & Linden St | Oakland | sulphur | |
| 237527 | Odor | 9/26/2018 | NONE | Adeline St & 24th St | Oakland | burning | |
| 237672 | Dust | 10/8/2018 | NONE | NONE | Oakland | black dust | |
| 238281 | Odor | 11/5/2018 | NONE | 3rd St / Center St | Oakland | chemical burning | |
| 232143 | Asbestos | 7/19/2017 | Old American Steel Factory | 1900 Mandela Parkway | Oakland | poss illegal removal | Workers on scene in rear warehouse tearing down walls, no containment, fans blowing dust all around |
| 225769 | Odor | 4/7/2016 | Parking Lot | 351 Mandela Pkwy | Oakland | paint solvent | |
| 233942 | Dust | 1/2/2018 | Pipe Spy | 1108 26th St | Oakland | soil/ concrete | from excavated soil/concrete |
| 235243 | Dust | 4/25/2018 | Road Construction | Peralta St/9th St | Oakland | dust | |
| 235776 | Smoke | 6/4/2018 | Schnitzer Steel | 1101 Embarcadero West | Oakland | black | Black smoke - big fire. Concerned about our health and potential respiratory issues. |

| Complaint Number | Complaint Type | Date Received | Alleged Site | Address | City | Description | Pertinent Information |
|---|---|---|---|---|---|---|---|
| 1116959 | Wood Smoke | 8/24/2016 | SFD | 1425 Myrtle St | Oakland | Heavy - cannot see through smoke | Outside backyard fire or firepit; Fire next door to complainant, ashes left uncleaned, property built in 1940, concerned ab out asbestos and airborne inhalation |
| 234568 | Dust | 3/7/2018 | SFD | 1480 8th St | Oakland | construction | lots of dust, odor and debris from a basement renovation of this residence |
| WSC408951 | Wood Smoke | 9/3/2018 | SFD | 1618 12th St | Oakland | White smoke - can partially see through smoke | neighbor burning backyard, wood toxins, garbage |
| WSC409806 | Wood Smoke | 11/17/2018 | SFD | 1131 Wood St | Oakland | White smoke - can partially see through smoke | Backyard fire pit, burning on no burn day |
| 236563 | Odor | 7/25/2018 | Smart Foodservice Warehouse Stores | 400 Oak St | Oakland | diesel, gas | generator runs midday, everyday for about 2 hours |
| 232800 | Idling Port Truck | 9/21/2017 | Trapac Terminal | 2800 7th St | Oakland | Idling trucks | Trucks are seen lined up and idled for hours at a time |
| 225034 | Odor | 2/25/2016 | Unknown Business | 1448 3rd St | Oakland | smoke | Caller from City of Oakland Admin.. reporting loads of smoke coming from businesses yard |
| 224433 | Odor | 2/2/2016 | Warehouse | 1448 3rd Street | Oakland | skunk | |
| 227679 | Dust | 9/7/2016 | Warehouse | 1919 Market St | Oakland | not watering down | No containment, dust & debris flying all over neighborhood ... tearing down part of the building |
| 229618 | Odor | 1/23/2017 | Warehouse | 1448 3rd Street | Oakland | chlorox | |

| Complaint Number | Complaint Type | Date Received | Alleged Site | Address | City | Description | Pertinent Information |
|---|---|---|---|---|---|---|---|
| 237830 | Odor | 10/17/2018 | West Oakland Bart Station | 1451 7th St | Oakland | burning tires | |
| 234990 | Odor | 4/10/2018 | Warehouse | 3rd St/Center St | Oakland | bleach | |
| 229843 | Odor | 2/3/2017 | Yang Auto Repair | 1101 7th ST | Oakland | Spray paint | sometimes can even smell it til 10pm (smelled it last night and again this morning) |

## LIST OF NOTICES OF VIOLATIONS ISSUED IN WEST OAKLAND (JANUARY 2016 – DECEMBER 2018)

| NOV Number | Regulation | Type | Date Issued | Site | Address | City | Zip | Status |
|---|---|---|---|---|---|---|---|---|
| A54387 | Rule 11-2-401 | Administrative Requirement | 2/4/2016 | Asbestos Management Group of California | 3438 Helen Street | Oakland | 94607 | Closed |
| A56003 | Rule 11-2-401 | Administrative Requirement | 7/29/2016 | Construction Site | 1919 Market St | Oakland | 94607 | Closed |
| A56005 | Rule 11-2-303 | Operational Requirement | 9/8/2016 | Construction Site | 1919 Market St | Oakland | 94607 | Closed |
| A56006 | Rule 11-2-401 | Administrative Requirement | 9/8/2016 | Construction Site | 1919 Market St | Oakland | 94607 | Closed |
| A56333 | Rule 2-1-302 | Administrative Requirement | 12/5/2016 | Department of Transportation | Toll Operations Bldg, SF-Oakland Ba | Oakland | 94608 | Closed |
| A56328 | Rule 2-6-307 | Operational Requirement | 7/1/2016 | East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Closed |
| A56330 | Rule 2-6-307 | Operational Requirement | 9/27/2016 | East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Closed |
| A56331 | Rule 2-6-307 | Operational Requirement | 9/27/2016 | East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Closed |
| A56332 | Rule 2-6-307 | Operational Requirement | 12/2/2016 | East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Closed |
| A56334 | Rule 2-6-307 | Operational Requirement | 2/7/2017 | East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Closed |
| A56391 | Rule 2-6-307 | Operational Requirement | 8/22/2017 | East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Pending |
| A56067 | Rule 2-1-307 | Operational Requirement | 4/26/2018 | East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Pending |
| A58247 | Rule 8-7-302 | Operational Requirement | 7/12/2018 | East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Closed |
| A56070 | Rule 2-1-307 | Operational Requirement | 9/17/2018 | East Bay Municipal Utility District | 2020 Wake Avenue | Oakland | 94607 | Pending |
| A56329 | Rule 2-1-301 | Administrative Requirement | 8/29/2016 | Pinnacle Ag Services | 2440 W 14th Street | Oakland | 94607 | Closed |
| A56686 | Rule 2-1-302 | Administrative Requirement | 11/8/2016 | San Pablo Auto Body | 2926 San Pablo Ave | Oakland | 94608 | Pending |
| A56389 | Rule 2-1-307 | Operational Requirement | 7/24/2017 | Schnitzer Steel Products Company | Adeline St, Foot of | Oakland | 94607 | Closed |
| A56069 | Rule 5-301, Rule 6-4-301 & 501 | Administrative & Operational Requirement | 8/24/2018 | Schnitzer Steel Products Company | Adeline St, Foot of | Oakland | 94607 | Pending |
| A58204 | Rule 11-2-401 | Administrative Requirement | 5/3/2018 | Silverado Contractors | 2855 Mandela Parkway | Oakland | 94608 | Closed |
| A58487 | Rule 11-2-401 | Administrative Requirement | 9/4/2018 | Silverado Contractors | 2855 Mandela Pkwy, 2nd Flr | Oakland | 94608 | Pending |
| A57908 | Rule 8-7-301 | Operational Requirement | 1/26/2018 | Trapac | 2800 7th Street | Oakland | 94607 | Closed |
| | | | | | | | | |
| **NTC Number** | **Regulation** | **Type** | **Date Issued** | **Site** | **Address** | **City** | **Zip** | **Status** |
| A46659 | Rule 8-7-301 | Administrative Requirement | 3/9/2018 | Mobil SS #63049 | 3400 San Pablo Ave | Oakland | 94608 | Violation Resolved |

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| Master Response # | Master Response |
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| M-1 | Please note that Draft Plan Strategy numbers between 31 and 84 have changed to reflect the addition of five new Final Plan Strategies. These new Final Plan Strategies are numbered 31-35. In the Response to Comments matrix, all Comments reference Draft Plan Strategies. Air District Responses reference both the Draft Plan Strategy numbers and the Final Plan Strategy number if the numbers have changed. |
| M-2 | The Co-leads and Steering Committee's intention is to protect and improve community health by reducing emissions and exposure to emissions. This applies to both existing community members and future community members. Most of the Plan Strategies that seek to improve air quality for existing community members will also benefit future residents. In addition, certain Final Plan Strategies, for example #2, 15, 20, 22, 76, 78, 83, and 86 are intended to reduce emissions from and/or exposure to users of new buildings, including new residential buildings. Certain Final Plan Strategies may be especially appropriate for minimizing impacts of development near the Howard Terminal site, such as #2, 20, 22, 33, 49, 50, 51, 53, 66, 68, 69, 75, 78, 83, and 86. In particular, implementation of Air District Rule 11-18 (Final Plan Strategy 69) will result in very significant reductions in emissions and risk from the Schnitzer facility, benefiting existing residents and potential future neighboring land uses. The Co-leads look forward to working with all our partners to address present conditions and avoid future negative public health outcomes. |
| M-3 | Multiple stakeholders have proposed different projections. The growth rate used in the Plan is consistent with growth factors for the At-Berth Regulation amendments CARB has proposed. |
| M-4 | Progress has made between 2005 and 2018. Much more needs to be done to address emissions and exposure experienced by the West Oakland community. Therefore, the Plan focuses on moving forward with additional emissions reductions. The Proposed Final Plan includes additional details about the role of monitoring data in Chapter 8: Tracking Progress. The role of measurements will be addressed further during the Plan implementation phase. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 1 | Arthur Dao | ACTC | [Draft Plan] Strategy #39 Alameda CTC continues to be committed to engaging with West Oakland communities, including residents and businesses, to ensure the appropriate mitigations are implemented as part of the 7th Street Grade Separation East and GoPort Freight Intelligent Transportation Systems projects are implemented. | Draft Plan Strategy #39 is now Final Plan Strategy #44. We look forward to working with ACTC and the City of Oakland to ensure the appropriate mitigations are implemented as part of the 7th Street Grade Separation East and GoPort Freight Intelligent Transportation Systems projects are implemented. |
| 2 | Arthur Dao | ACTC | [Draft Plan] Strategy #41 Alameda CTC is open to discussions with the City of Oakland and MTC regarding car sharing programs, including discussing funding opportunities through various grant programs administered by various agencies. | Draft Plan Strategy #41 is now Final Plan Strategy #46. We look forward to working with ACTC, City of Oakland, and MTC on car sharing programs during implementation. |
| 3 | Arthur Dao | ACTC | [Draft Plan] Strategy #84<br>1. Remove reference to Caltrans in the Authority column.<br>2. Revise the language to focus on early and continuous engagement with the community when Alameda CTC is planning, developing and delivering a project in West Oakland. Alameda CTC respectfully requests to replace the draft language with the revised language that follows: The Alameda County Transportation Commission will engage early with the West Oakland community, including local existing community groups, on early project planning and delivery for projects where Alameda CTC is the project sponsor to ensure new projects do not increase transportation impacts on residents. These projects will undergo appropriate project reviews to assess environmental and health impacts, and potential local benefits, and adopt mitigation measures as required so that they do not increase health inequities and address air pollution for residents most impacted by the county's freight transportation system in West Oakland. | Draft Plan Strategy #84 is now Final Plan Strategy #89. The intention of this Strategy is to prompt ACTC and Caltrans to consult with the community early and regularly in planning and transportation projects in West Oakland. We agree with the suggestion to focus on projects for which either agency is the project sponsor. Final Plan Strategy #89 has been revised to say: "The Alameda CTC and Caltrans will continually engage with the community, at a minimum through participation in quarterly meetings of the WOCAP implementation committee, on early project planning and delivery for projects in West Oakland where Alameda CTC and Caltrans is the project sponsor in order to ensure projects do not increase transportation impacts on residents. These projects will undergo appropriate reviews to assess the environmental and health impacts, and potential local benefits, and adopt associated mitigation measures so they do not result in a net increase in air pollution or health inequities for residents most impacted by the county's freight transportation system in West Oakland." |
| 4 | Craig Frucht | Agriculture Transportation Coalition, et al. | To the extent that the West Oakland Community Action Plan (WOCAP) also proposes to protect local residential areas through the separation of these incompatible land uses, we respectfully request that the Plan be sufficiently revised to ensure that the City of Oakland does not create new neighborhoods in locations which will unnecessarily expose thousands of new residents to industrial emissions and increase the conflicts between incompatible residential and industrial land uses within West Oakland. | Please see Master Response #M-2 |

| Comment # | Name | Organization | Comment | Air District Response |
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| 5 | Craig Frucht | Agriculture Transportation Coalition, et al. | The WOCAP fails to provide for are policies which will avoid the encroachment of new residential housing into existing industrial areas.<br>The creation of new housing in industrial zones and the elimination of industrial buffers would immediately escalate land use conflicts and result in substantial increases in the exposure for sensitive receptors in West Oakland and which can threaten existing jobs and businesses. These outcomes are antithetical to AB 617, CARB guidance and the stated policy outcomes and goals of the WOCAP. For this Plan to achieve its goal of minimizing proximity-based residential impacts, it must address affirmatively limit the introduction of new residential uses into areas of existing industrial operations and encroachment into the existing industrial buffer zones. | Please see Master Response #M-2 |
| 6 | Craig Frucht | Agriculture Transportation Coalition, et al. | Newly proposed residential districts at Howard Terminal and Jack London Maker District would create additional AB 617 impact zones which are unaccounted for in the WOCAP and undermine WOCAP goals. These two proposed project areas are contiguously located within the southeast corner of the currently identified WOCAP area. However, neither of these areas are currently identified in the WOCAP as Residential Zones or locations of Sensitive Receptors. As annotated with the red circles over the SE corner of the “AB 617 West Oakland” area (WOCAP Figure 2-3), these represent potential new “Zone 8” for Howard Terminal and “Zone 9” for the Jack London Maker District. [see letter] | Please see Master Response #M-2 |

| Comment # | Name | Organization | Comment | Air District Response |
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| 7 | Craig Frucht | Agriculture Transportation Coalition, et al. | The BAAQMD's models which are underlying the WOCAP have identified these as areas which are highly susceptible to additional air quality impacts. In fact, the Southeast corner of the planning area has the highest potential impacts of anywhere within the West Oakland area. As noted on the BAAQMD "Cancer Risk Draft 2019-04-23" modeling map, presented to the District Board on May 1, 2019 in advance of the WOCAP release, the area immediately upwind of Howard Terminal and the Jack London Maker District areas is the only area in which a "Modeled Impact of Local Sources on Residential Cancer Risk" of at least 1,000 per million exists in the local West Oakland modeling domain.<br><br>The existing emissions profiles for these proposed residential zones would be greater than the exposure profiles for all other existing zones. These zones would be facially out of compliance with the WOCAP goals and have estimated excess cancer risk profiles many times greater than most of the existing impact zones in West Oakland. Revised Figure 5-13 below illustrates just how far these proposed new residential zones would be out of compliance with the WOCAP goals and how they compare to the existing residential zones identified in the WOCAP.<br><br>Moreover, these risk profiles are based solely on modeled local sources of cancer risk and only those PM impacts which were included in the community scale modeling. They do not account for other PM impacts which are potentially more impactful to these new residential areas than any of the other existing neighborhoods in West Oakland. | The 2017 cancer risk map has been updated since May 1, 2019 and shows substantially different results in the southeast corner. Further the with plan scenario projects reductions in cancer risk at the zones nearest Howard Terminal and Jack London Maker District. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 8 | Craig Frucht | Agriculture Transportation Coalition, et al. | The largest local source of PM2.5 by volume in West Oakland is “Commercial cooking” with 20.63 tons per year, compared to the next highest sources of PM2.5 of “Street: Road dust” at 14.74 tpy and “Highway: Non-truck vehicles” at 12.22 tpy. (WOCAP Table 5-2) But, commercial cooking emissions are not included in the community-scale modeling. The Plan surmises that commercial cooking emissions, despite their volume, may be of less consequence to most of the residents of West Oakland “especially given that the majority of commercial cooking facilities are generally downwind of the West Oakland community.” (Appendix A, pg. A-107).<br><br>This will not necessarily be true for the proposed Howard Terminal or the Jack London Maker District. These are also the same areas of the most impactful concentration of existing emissions which are already modeled. There is no rational reason to presume that this corner of West Oakland will not also be the recipient of the emissions from currently non-modeled emissions, such as those from “commercial cooking” given that this category is the most prolific source of local PM2.5 emissions in West Oakland. | The Co-leads and the Steering Committee will take these points into consideration during Plan implementation. Note that Final Plan Strategy #87 states that both the Air District and CARB investigate incentives and potential regulations to reduce emissions from commercial cooking. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 9 | Craig Frucht | Agriculture Transportation Coalition, et al. | The WOCAP should also evaluate the impacts that the Howard Terminal and Jack London Maker District new residential developments will have on displacing and creating congestion in existing freight operations that in turn impact existing West Oakland residents and exacerbate AB 617-related concerns and issues.<br><br>Howard Terminal currently handles over 325,000 trucking transactions every year and the 3rd street overweight corridor facilitates tens of thousands of truck moves that must be handled in near proximity to the Port. When these development proposals displace these operations, it will inevitably lead to increased pressure to find additional truck parking, develop new truck, chassis, container, and equipment staging facilities, new port-supporting and industrial warehouse space, and transloading and street-turn areas. Such pressures will likely result in increased truck congestion, increased truck hours of delay, degraded levels of service on truck-intense intersections, and the resulting increased idling and emissions associated with all such introductions of unnecessary transportation inefficiencies and vehicle conflicts. The displacement of truck parking and truck services in Howard Terminal, and the existing Port-support areas and in the current industrial buffer along 3rd street west of Broadway slated for residential conversion, runs directly counter to the land use strategies proposed by the WOCAP. | Under Final Plan Strategy #26, the City and Port would work to establish permanent truck parking and staging areas. Under Final Plan Strategy #33, CARB will develop guidance to minimize community exposure related to freight facilities. |
| 10 | Craig Frucht | Agriculture Transportation Coalition, et al. | Specifically, the Howard Terminal and Jack London Maker District proposals run directly counter to WOCAP Land Use [Draft Plan] Strategies #5 and #6 and #8, which seek to minimize truck services located within the freeway boundaries and to move those activities to the Port, Army Base and its related industrial-service areas along the 3rd Street corridor, such that “any relocated businesses do not cause exposure issues at the new location.” In addition, WOCAP Land Use Strategy #26 calls specifically for a yard almost exactly along the lines of the current operations at Howard Terminal, and that this facility will be at a logistics center which is not adjacent to West Oakland residents. | Under Final Plan Strategy #26, the City and Port would work to establish permanent truck parking and staging areas. Under Final Plan Strategy #33, CARB will develop guidance to minimize community exposure related to freight facilities. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 11 | Craig Frucht | Agriculture Transportation Coalition, et al. | In addition to existing truck displacement issues, there will be new and additional local vehicle traffic going to and from these new development parcels, and this additional traffic will create additional, new truck congestion and idling emissions. These impacts have not been thoroughly analyzed yet for either of the projects. However, even the minimal nod given to the issue of new truck congestion by the Oakland A's recent AB 900/AB 734 submission to the state Office of Planning and Research (evaluation of only 7 truck intersections and presumption that the project's improvements actually decrease truck delays) highlights the challenge that should be considered as part of the WOCAP. The "Emissions from Port Truck Idling Delays Due to Project" evaluation of Howard Terminal would result in increases of at least 27 mt of CO2e annually. (A's Supplemental AB 734 Application, Exhibit A, Table OP-11) (http://www.opr.ca.gov/ceqa/docs/ab900/20190827-AB_734_OaklandAthletics_Exhibit_A-Supplemental_GHG_Memo.pdf) | Please see Master Response #M-2. Final Plan Strategy #2 references the ongoing environmental review of the Howard Terminal proposal, and Final Plan Strategy #20 calls for the City to impose transportation demand management (TDM) requirements for new development. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 12 | Craig Frucht | Agriculture Transportation Coalition, et al. | Emissions from construction were not included in the WOCAP model. The WOCAP found that because “construction activity is highly transient, changing in scope and location from year to year” it would not include these emissions due to “uncertainties with 2017 emissions estimates and the spatial distribution of construction activities in the community.” (WOCAP, Appendix A, A-108) However, they are nonetheless a significant factor for local emissions impacts directly, and when there is a large, intense multi-year project – such as that proposed at Howard Terminal - the activity is not transient, it is of a known and planned scope, and concentrated in the community. In the A’s Supplemental AB 734 Application, Table 4 [and 6] makes these emissions impacts plain. [see letter] If the A’s OPR submission can analyze the CO2e impacts of its project, there is no reason that the WOCAP emissions of interest including DPM or PM2.5 cannot be likewise estimated and projected. Since these impacts can therefore be anticipated, they should be articulated, measured and captured in the WOCAP. Otherwise, the WOCAP is proposing penalizing freight-related emissions sources doing business at marine terminals in the Port of Oakland but ignoring residential-construction related emissions sources doing business at a marine terminal in the Port of Oakland. These construction activities, especially in the heart of a working seaport, will not only displace trucking facilities but also will result in residual delays and congestion of trucks and vehicle traffic off-site and in West Oakland generally. These same residual delays will not only make it harder for port trucks to conduct business in Oakland and increase expenses, but this congestion will have even greater residual congestion impacts on the community and community air quality will suffer as well. | The Co-leads recognize the impact of construction activities on the community of West Oakland and that while individual construction projects may be temporary, the cumulative effect of multiple construction projects can be a large contributor to air pollution in West Oakland. Final Plan Strategies #22, #27, #33 #44, #89, and Further Study Measure #3 address aspects of construction. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 13 | Craig Frucht | Agriculture Transportation Coalition, et al. | Given all these factors, it is readily obvious that the creation of these new residential areas will expose thousands of potential new residents to air emissions at potentially impactful levels and render the WOCAP ineffective at reaching its goals in 2025 and 2030.<br><br>It is critical that we work to avoid developments which are antithetical to the purpose of AB 617, the stated goals of the WOCAP, and to the public health of residents and the economic health of the Northern California megaregion. We look forward to working with the BAAQMD, WOEIP, and other stakeholders to avoid these unnecessarily backward outcomes. | Please see Master Response #M-2 |
| 14 | John A. Coleman | Bay Planning Coalition | Targets within the Plan are predicated on an analysis by the California Air Resources Board that forecasts a 5% growth rate for both cargo and ship calls at the Port of Oakland, which are overinflated relative to recent trends and similar assessments done by the Bay Conservation & Development Commission (BCDC). Ultimately, this skews the focus of the plan onto different source categories, creating a false sense of where the priorities should be for emissions reductions. We recommend that the Plan should instead rely on the cargo forecasts adopted by BCDC, which assumes a 2.2% growth rate. Moreover, the Port has consistently seen a decreasing number of ship calls per year for the past 8 years, so an assumed 0% growth rate would be appropriate. | Please see Master Response #M-3 |

| Comment # | Name | Organization | Comment | Air District Response |
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| 15 | John A. Coleman | Bay Planning Coalition | The Plan has developed targets to reduce Diesel Particulate Matter (DPM), Fine Particulate Matter (PM2.5), and Cancer Risk by substantial levels by 2025 and 2030. Language on page 4-4 of the Plan conceded that "The 2025 and 2030 targets are ambitious for the...timeframes"..."[They] are reflected in the Plan Goal but should be considered too aspirational for a target with the Plan's timeframe." While we do not take issue with the ambitious targets identified in the draft plan, we do think it is problematic to make such an admission in this document for the following reasons:<br> Ambitious, infeasible targets may create a sense that the Plan is weak and/or designed to fail, rather the Plan should instill faith in the West Oakland Community and the public at large with specific measurable, and achievable goals.<br> Overly ambitious targets raise questions as to whether Plan partners and regulated parties are going to be given leniency in their role to achieve the goals, or if they are being held to unrealistic standards. The uncertainty here may make it difficult to create any kind of standard or system of accountability.<br> Since this Plan is on track to be the first AB 617 community plan in the state to be adopted, we are concerned that it will serve as a precedent for subsequent plans to set targets that are unrealistic or lack pragmatism. | We disagree that an ambitious goal sends the message that the Plan is weak. Rather, acknowledging that the goal is ambitious makes it clear that we are committed to protecting health and air quality in West Oakland and are considering a wide range of Strategies to help meet this goal and the targets. |
| 16 | John A. Coleman | Bay Planning Coalition | We recommend that the list of proposed strategies be reviewed thoroughly to identify and advance only the most cost-effective strategies that focus emissions/risk reduction efforts on sources where meaningful reductions can be achieved. This approach would be consistent with legislation and the Blueprint and could help focus the Plan on strategies that would be most effective in achieving its targets. | The Final Plan Strategies reflect the results of the technical assessment and the local knowledge of WOEIP, the Steering Committee, and members of the public who attended meetings. Effectiveness and resource needs will be considered during Plan implementation to prioritize Strategies. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 17 | John A. Coleman | Bay Planning Coalition | The 2025 and 2030 targets for Diesel Particulate Matter emissions are based on a 2017 baseline. This ultimately does not take into account the significant progress made by the Port of Oakland in preceding years; in fact, the Port reduced its emissions by 81 percent between 2005 and 2018. This progress should be recognized within the Plan and taken into consideration in any corresponding emission reduction strategies and control measures.<br>In addition, it is important that actual monitoring data be prioritized in order to assess the progress towards these goals compared to the 2017 baseline. If not, the benefits from these proposed actions will be based solely on modeling results that are not verified by actual air quality measurements. | Please see Master Response #M-4 |
| 18 | John A. Coleman | Bay Planning Coalition | The Plan has defined several key agencies with roles in the implementation of the Plan, including: BAAQMD, City of Oakland, MTC, Port of Oakland, AC Public Health Department, CARB, ACTC, CalTrans, and more. Given that each of these entities has a degree of sovereignty, it is unclear how cooperation will be encouraged or incentivized to carry out the Plan's strategies, or to what extent the entities will be held accountable. We recommend that the Plan identify funding sources for incentives, specify whether funding would be annual vs. continuous, and determine how much funding will be available. | The Plan is unique in that it has a multi-agency approach. This is consistent with the AB617 legislation and necessary to meet the goal of the Plan. Cooperation between the agencies and Steering Committee will be imperative and further addressed during Plan implementation. Funding sources also need to be further explored during implementation. |
| 19 | John A. Coleman | Bay Planning Coalition | We believe that [Draft Plan] Strategy #9, "The City of Oakland develops a plan to limit the hours that trucks can operate in the community", may result in unintended consequences. This type of limitation may ultimately cause more congestion and idling, thus resulting in heightened net emissions which is counterproductive to this goals of the Plan. We recommend that Strategy #9 be removed or better align with goals of West Oakland Truck Management Plan. | The Co-leads and the Steering Committee will work with City staff to avoid such unintended consequences. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 20 | Ed Manasse | City of Oakland | The City agrees that the recommended strategies will need to be refined and fleshed out as the Plan is implemented (as mentioned in the introduction to Chapter 6) and suggests that the Steering Committee establish a framework to continually evaluate, update and amend these strategies throughout the five-year implementation timeframe. The City is committed to a collaborative evaluation process with the community stakeholders and the state, regional and local agencies. A suggested implementation framework is in Attachment A to this letter. The City also recognizes, and recommends that the Plan address, the fact that many of these strategies lack defined funding sources for evaluation and implementation. | The Steering Committee will work with the City of Oakland to refine the Strategies and to make progress on implementation, and will review the suggested framework in Attachment A. The Co-leads recognize that additional funds need to be identified to fund the City's implementation of many of these Strategies. |
| 21 | Ed Manasse | City of Oakland | As noted in the City's comment letter to the Draft EIR sent concurrently with this letter, the term "responsible agency" has a specific meaning under the California Environmental Quality Act (CEQA), and as noted, the City is not a responsible agency under the Draft EIR. Therefore, throughout the plan, we recommend removing "responsible authority/agency" references. Specific recommended text revisions are on page 1-1, 6-1, 6-6, and 6-7 to 6-8. | On pages 6-1, 6-6, and 6-8 of the Plan, we changed "responsible agencies" to "collaborating agencies". |
| 22 | Ed Manasse | City of Oakland | Considerations for Jurisdictional Authority:<br>*Is the strategy attributed to the appropriate legal authority from another agency? For example, [Draft Plan] Strategy #7 and #53. | Draft Plan Strategy #53 is now Final Plan Strategy #58. The Steering Committee will address these questions during Plan Implementation. |
| 23 | Ed Manasse | City of Oakland | Please make these factual corrections:<br>On pages 6-15 to 6-24, Table 6-1, [Draft Plan] Strategy 72 - Please remove "Oakland" from title of the Healthy Development Guidelines ... "<br>On pages 6-15 to 6-24, Table 6-1, [Draft Plan] Strategy 83 - Please change the text to "study revising", add "or similar requirement" and remove "for conditional use permits." | Draft Plan Strategy #72 is now Final Plan Strategy #77. Removed reference to Oakland in "Healthy Development Guidelines". Draft Plan Strategy #82 is now Final Plan Strategy #88. Added "studies revising" and "or similar requirement" and removed "for conditional use permits". |
| 24 | Ed Manasse | City of Oakland | Please consider the legality of strategies - are they consistent with all relevant codes, laws, and city ordinances and policies? Examples:[Draft Plan] Strategy #7 and #78 | Draft Plan Strategy #7 and #78 are now Final Plan Strategy #7 and #83. Further work is needed during Plan implementation to address various legal and operational questions. We look forward to continuing a close relationship with the City to address these issues |

| Comment # | Name | Organization | Comment | Air District Response |
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| 25 | Ed Manasse | City of Oakland | Considerations for Effectiveness of Outcome:<br>*Determine whether the strategy will be most effective at reducing emissions<br>*Will this strategy have other implications that have not been considered?<br>*How are we measuring success for this strategy?<br>Examples: [Draft Plan] Strategy #33, #41, and #53 | Draft Plan Strategy #33, #41, and #53 are now Final Plan Strategy #38, #46, and #58. The Steering Committee will address these questions during Plan Implementation. |
| 26 | Ed Manasse | City of Oakland | Please consider the operational feasibility of strategies: Are other policies, plans or actions already adopted or underway by the City? And, is there funding for these strategies? For example, [Draft Plan] Strategies #9 and #37. | Draft Plan Strategy #9 and #37 are now Final Plan Strategy #9 and #42. Further work is needed during Plan implementation to address many operational questions. We look forward to continuing a close relationship with the City to address these issues. |
| 27 | Ditching Dirty Diesel | Ditching Dirty Diesel | A strategy should be developed to create a pollution emissions cap for West Oakland to ensure that cumulative emissions do not increase. | Local emissions reductions will be necessary to meet the Plan targets established by the Steering Committee. Draft Plan Strategy #77 is now Final Plan Strategy #82 and states "The California Office of Environmental Health Hazard Assessment, in partnership with the Steering Committee, the City of Oakland, CARB, and the Air District, studies setting a limit on West Oakland's cumulative exposure to TACs." The Co-leads will consider expanding this action to include other pollutants during the implementation phase of the Plan. |
| 28 | Ditching Dirty Diesel | Ditching Dirty Diesel | The Alameda County Transportation Commission recently set aside funding for freight-related pollution reduction strategies. A strategy should be developed that creates a mechanism to engage the steering committee in determining what to spend the funding on, and how to match this funding with other possible funding sources. | Added funding to the list of topics that the Sustainable Freight Advisory Committee will consider. ACTC will be asked to join this committee. In addition, Final Plan Strategy #89 calls for ACTC to consult regularly with the Steering Committee on transportation projects in West Oakland. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 29 | Ditching Dirty Diesel | Ditching Dirty Diesel | The Alameda County Public Health Department (ACPHD) regularly maps health rates and provides detailed spatial health analysis to support health outcome tracking and trends over time for the West Oakland Community Action Plan using data from the California State Office of Statewide Health Planning and Development (OSHPD) in the Health and Human Services Agency. OSHPD collects hospitalization, emergency department, and ambulatory care data with complete patient residence addresses and makes this available to local health departments. A strategy should be developed to utilize this data help evaluate the health goals of the Action Plan. | Added text to Chapter 8 Tracking Progress stating that the Steering Committee and Co-leads will work closely with ACPHD to collect, analyze, and report health data and to track health conditions during Plan implementation. |
| 30 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #3 Caltrans and ACTC should be added as co-authorities for this strategy. | The Air District will work closely with Caltrans, ACTC, MTC, and other transportation agencies when scoping and conducting this study. |
| 31 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #4 This strategy should contain the same caveat as [Draft Plan] Strategy #6, which is that the Air District will provide emissions data and technical support to assist the City in these efforts and to ensure that industrial uses are not relocated in already overburdened areas or will not create new overburdened areas. | The Air District will provide emissions data and technical support to assist the City with identifying locations outside of West Oakland to relocate heavier industrial businesses. |
| 32 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #7 Business licenses should also be reviewed to determine if other Best Management Practices for the control of diesel emissions from the trucks that visit the facility can be added to the licensing requirements. | The feasibility of reviewing business licenses for Best Management Practices will be investigated by the Steering Committee during Plan implementation. |
| 33 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #21 Add ACTC to the list of Authorities. | The Air District will work closely with ACTC and other agencies to create an ongoing Sustainable Freight Advisory Committee. The Co-leads will also invite ACTC to join the implementation Steering Committee. |
| 34 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #22 Add Caltrans projects to this strategy and add Caltrans to the list of Authorities. | The Co-leads will invite Caltrans to join the Sustainable Freight Advisory Committee (Final Plan Strategy #21) and the Plan implementation Steering Committee, and will work with Caltrans to address this issue. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 35 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #25 While the members of the Ditching Dirty Diesel collaborative generally support efforts to address gentrification and displacement concerns, we do not understand how this strategy intends to address potential changes in local pollution exposure by addressing these concerns. Further clarification of this strategy is needed to make this nexus clear. | Addressing the threat of gentrification may not directly improve local air quality, however, it is a concern that the Co-leads heard from the community and Steering Committee throughout the plan development process. Considering gentrification and displacement concerns will provide a framework that the Co-leads, community members, and partner agencies can use to integrate community health, including exposure to air pollutants, into decisions about land use and transportation. |
| 36 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #30 Excessive idling has already been well established as a problem and rules have been passed to address it. Rather than just study this issue more, CARB and the Port should commit to a more expanded and aggressive enforcement program | See Chapter 7, Enforcement Plan for specifics about enforcement commitments from the Air District and CARB. CARB's measures include increasing the frequency of compliance inspections with guidance from the Steering Committee; and the Air District's include updating the complaint policy, and enhancing the enforcement referral process. In addition, the Co-leads will continue to work with the Port of Oakland on this and other strategies throughout Plan implementation and implementation of the Port's Seaport 2020 and Beyond Plan. |
| 37 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #38 Rather than just study the effects of increased shipping on truck flow and congestion, the use of zero-emission trucks at the marine terminal and the impact on efficiency from hauling more loaded containers, the Port should commit to establishing actual reduction goals through strategies such as the use of incentives, increased enforcement and lease requirements. | The Co-leads support commitments from all our agency partners to commit to emission reduction goals through incentives, enforcement, and lease requirements. See Final Plan Strategies #49, #50, and #51 for incentives information, and Final Plan Strategy #21 and #24, and the Enforcement Plan (Chapter 7) for enforcement information. The Co-leads recognize the potential for commitments to cleaner vehicles to be written into lease agreement at the Port, and this is reflected in Final Plan Strategy #2, which states that the Air District will continue to engage in the environmental review process for development projects, as environmental review is a point at which commenting agencies can suggest lease restrictions as binding environmental measures to reduce emissions impacts. Final Plan Strategy #43 is designed to identify future problems and solutions stemming from the shipping industry using increasingly larger vessels. |
| 38 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #49 This strategy should focus adopting these new technologies, especially the battery-powered lawn and garden equipment, on the Oakland Unified School District and the City of Oakland landscape and maintenance departments, for which an Air District grant program for this equipment already exists. | The Steering Committee will further explore this issue during Plan implementation. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 39 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #51 This strategy should include infrastructure safety improvements, and should require adoption of a Vision Zero program and goals. | Draft Plan Strategy #51 is now Final Plan Strategy #56. The Steering Committee will explore this issue further during Plan implementation. |
| 40 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #60 Rather than just study the potential for using electric switcher engines, the Port should commit to actually employing this technology if the study shows it is feasible, using the funding identified in [Draft Plan] Strategy #46 to do so. | Draft Plan Strategy #60 is now Final Plan Strategy #65. Draft Plan Strategy #46 is now Final Plan Strategy #51 The Steering Committee will explore this issue further during Plan implementation. |
| 41 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #70 The Air District should work with the City of Oakland and the Alameda County Health Department to coordinate the development of clean air centers with the development of cooling centers, so the same facilities can provide both of these interrelated functions. | Draft Plan Strategy #70 is now Final Plan Strategy #75. The Air District intends to work closely with all regional partners and local agencies to establish clean air centers as part of our Wildfire Air Quality Response Program. This effort includes coordinating with cities and counties to scope existing facilities such cooling and warming centers, that are already equipped with air conditioning systems and may have inter-related functions as a clean air center. |
| 42 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #71 This strategy should explain how implementation of the State's Health in All Policies program will directly improve local air quality. | Draft Plan Strategy #71 is now Final Plan Strategy #76. The Health in All Policy program will not directly improve local air quality. It does provide a framework that the City of Oakland, the Port Authority, County and regional agencies can use to integrate community health, including exposure to air pollutants, into decisions about land use and transportation. |
| 43 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #72 This strategy should require that any new smoking ban needs to be done in conjunction with tenant protection policies. | Draft Plan Strategy #72 is now Final Plan Strategy #77. The Steering Committee will consider this comment further during Plan implementation. |
| 44 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #73 Because this is an overburdened area, this strategy should go beyond the state guidelines which requires air filtration for building of four floors or more, and require air filtration for all new habitable buildings. | Draft Plan Strategy #73 is now Final Plan Strategy #78. The Steering Committee will consider this issue further during plan implementation. |
| 45 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #79 This strategy should include expansion of home visiting programs to address in-home asthma triggers. | Draft Plan Strategy #79 is now Final Plan Strategy #84. The Steering Committee will consider this issue further during plan implementation. |
| 46 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #80 This strategy should be more general rather than list specific programs, and should say that the Alameda County Public Health Department, supported by the City of Oakland and AC Transit, should improve access to health care in West Oakland by increasing services and programs, reducing transportation barriers and addressing cultural competence in health care delivery. AC Transit should be added as an authority. | Draft Plan Strategy #80 is now Final Plan Strategy #85. The Steering Committee will explore this issue further during Plan implementation. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 47 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #81 This strategy should be re-worded to state that the Alameda County Health Department should develop a program to connect their medically vulnerable clients to local energy efficiency programs to provide measures in their homes that will both improve health and reduce energy usage. | Draft Plan Strategy #81 is now Final Plan Strategy #86. The Steering Committee will explore this issue further during Plan implementation. |
| 48 | Ditching Dirty Diesel | Ditching Dirty Diesel | [Draft Plan] Strategy #84 Implementation of this strategy to engage ACTC should begin immediately rather than waiting till 2022. | Draft Plan Strategy #84 is now Final Plan Strategy #89.The Proposed Final Plan implementation timeline has this work beginning in 2020. |
| 49 | Deidre Sanders | East Bay Community Energy | Beyond partnering on projects and programs EBCE can also support stakeholders' understanding of energy usage in the community on a more refined level. EBCE staff saw that the CEQA document distributed in support of the West Oakland CAP references PG&E system and regional electricity usage data to base performance measurements. We believe this data is too broadly scaled to provide the information needed to assess AB 617 energy objectives and that EBCE can support more locally scaled data needs. We look forward to discussing with the Air District and the community our ideas on how we can support the Plan. | The Co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 50 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy 14: Battery Storage - Explore development of incentive program for battery energy storage to help customers replace diesel back-up generators] | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 51 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy 17: Fuel Substitution Support - EBCE is supporting (funding) Oakland's and other EBCE member communities' exploration of ways to eliminate natural gas from the built environment | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 52 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy 18: EV Charging Infrastructure – Installation of DC fast charging infrastructure; specifically, Level 2 charging for Medium and Heavy-Duty trucks | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 53 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy 21: Freight Emissions Reductions - Explore creation of a Sustainable Freight Advisory Committee that would look at ways to help reduce area freight VMT out of and in to the Port of Oakland | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 54 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy 36: EBCE/Community Engagement (Plan Strategy 41) - Provide incentives to support community outreach efforts for workshops and other related activities | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 55 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy #41: Encourage Growth of Zero Emission Car Share Options ([Draft Plan] Strategy #46) – EBCE is currently working with the CEC to develop a 2021 CALeVIP incentive program that, If approved, will provide significant funding for car share charging infrastructure | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 56 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy 43: Community EV Education Partnership ([Draft Plan] Strategy #48) - EBCE can support outreach and sponsor customer awareness events like Ride and Drives | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 57 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy 44: EBCE Infrastructure Charging Incentives ([Draft Plan] Strategy #49) - EBCE is developing a CALeVIP incentive project that, if approved, will create incentives for EV charging infrastructure 2021-2024 | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 58 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy 48: EBCE EV Rate Design ([Draft Plan] Strategy #53) – To benefit all classes of electric vehicles that operate in West Oakland and throughout the County to ensure driving them is cheaper than vehicles using fossil fuels | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 59 | Deidre Sanders | East Bay Community Energy | [Draft Plan] Strategy 49: Supporting Clean Off-Road Equipment (CORE) Replacement ([Draft Plan] Strategy #54) - EBCE is working with external stakeholders to create incentives and technical support to align with other programs (e.g., CORE Voucher; PG&E Fleet Ready) for off-road equipment (e.g., forklifts) | The co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 60 | Deidre Sanders | East Bay Community Energy | Pg. D-1: We respectfully suggest adding the following description for EBCE under Appendix D:<br>Government Collaboration EBCE is a Joint Power Authority that includes membership from eleven (11) cities in Alameda County, and the County itself. EBCE's Board of Directors is made up of elected officials from each of its member communities, and EBCE staff closely coordinates with each of its local government partners on transportation and goods movement electrification. | The Co-leads and Steering Committee look forward to working with EBCE on these topics during implementation. |
| 61 | Deidre Sanders | East Bay Community Energy | We also believe that, as the Plan identifies PG&E as the electric power provider for Alameda County, the reference natural gas as “the primary fuel used for generating electricity in the district.” also refers to PG&E’s power sources. Please reference EBCE's electricity mix from this cite in the Plan’s assessment. https://ebce.org/wp-content/uploads/Item-11-Power-Content-Informational-Item.pdf | There is no reference to the electric power provider in the Final Plan. This reference to EBCE’s electricity mix was included in the FEIR. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 62 | Deidre Sanders | East Bay Community Energy | Additionally, EBCE respectfully requests that its Strategy comments provided for the Plan be applied to similar EIR Strategies. | The Final Plan Strategies and the EIR Strategies are the same. |
| 63 | Alexander Coate | EBMUD | [Draft Plan]Further Study Measure #4: We don't have a nitrogen removal process and don't understand the purpose of this measure. | We have updated this Further Study Measure to more broadly state "The Air District will work with CARB, EBMUD, and other agency and community partners to identify strategies and incentives to address community concerns about odors, health-related emissions, and disclosing to the community information about complaints and complaint resolutions from the EBMUD facility in the Owning Our Air plan area." |
| 64 | Alexander Coate | EBMUD | Please clarify the definition of "truck." EBMUD has facilities located in the Project Area as well as a fleet of vehicles-light, medium, and heavy duty-that must be used in the course of installing, repairing and replacing critical drinking water and wastewater infrastructure in the Project Area. It is not clear to what extent this strategy would apply to EBMUD and its vehicles which are needed in order to perform its essential public service. EBMUD' s vehicles utilize BACT and are in compliance with all existing local and state air requirements including the Heavy Duty Public and Utility Fleet Rule. Additionally, EBMUD class I-III vehicles are in compliance with all SMOG program requirements EBMUD is concerned that limiting the use of vehicles within the project area will limit EBMUD ability to respond effectively in situations here critical water and wastewater infrastructure requires repair or replacement. | Truck emissions are a key issue for the Steering Committee and contribute to air pollution and negative health outcomes in the community. The Co-leads are interested in meeting with EBMUD representatives to talk about how Air District incentive programs could help EBMUD purchase cleaner equipment for use at its facility and in West Oakland. |
| 65 | Alexander Coate | EBMUD | [Draft Plan] Strategy #67 Please add a clear reference to the specific regulation - Rule 13-4 - that the Air District is developing for this intended purpose. | The Air District does anticipate that Rule 13-4 will address reduce emissions from wastewater treatment plants and anaerobic digestion facilities |

| Comment # | Name | Organization | Comment | Air District Response |
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| 66 | Alexander Coate | EBMUD | [Draft Plan Strategy] #77 EBMUD generates some emissions during the course of providing water and wastewater services. These are related to operations that are critical to EBMUD providing reliable water and wastewater services to the people in and outside the Project Area, such as individual wastewater treatment processes, or trucks responding to locations in the Project Area to repair a broken water main or to proactively replace aging pipelines. EBMUD requests that, before adopting a cumulative exposure limit, CARB work with EBMUD to better understand water and wastewater operations to ensure that the proposed new limit will not impede EBMUD's critical services. EBMUD understands from discussion and materials provided at the July 10, 2019, Steering Committee meeting that the Air District will work with EBMUD and other stakeholders throughout the limit setting process. | Draft Plan Strategy #77 is now Final Plan Strategy #82. The Steering Committee will work with EBMUD to learn more about these issues during Plan implementation. |
| 67 | Alexander Coate | EBMUD | [Draft Plan] Further Study Measure #4: EBMUD is the only wastewater treatment plant within the West Oakland study area and currently does not have "conventional biological nitrogen removal" in its wastewater treatment processes. Therefore it would be an ineffective use of the Air District's limited resources to seek incentives to improve upon something that does not currently exist. Instead, EBMUD suggests the following language for this Further Study Measure: "The Air District will work with CARB and other agency and community partners to identify incentives for property owners within the study area to implement technologies that will improve upon existing technologies in use in order to reduce emissions targeted by the CAP." | We have updated this Further Study Measure to more broadly state "The Air District will work with CARB, EBMUD, and other agency and community partners to identify strategies and incentives to address community concerns about odors, health-related emissions, and disclosing to the community information about complaints and complaint resolutions from the EBMUD facility in the Owning Our Air plan area." |

| Comment # | Name | Organization | Comment | Air District Response |
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| 68 | Alix A Bockelman | MTC | Regarding the implementation strategies listed in Chapter 6 of the Action Plan, we support the Air District's efforts in providing financial incentives to reduce emissions from mobile sources, and find these programs to be consistent with many of the community protection elements included in MTC's Goods Movement Investment Strategy. However, we suggest the Plan could be strengthened by detailing the timing of these funding opportunities, the degree to which they will be targeted toward West Oakland, and ultimately, which entities would be best positioned to apply for them. Our concern is ensuring that the region is taking advantage of available funding opportunities, and that the various entities- including the Air District, City of Oakland, Port of Oakland, and private sector- are effectively collaborating toward a shared understanding of implementation roles and responsibilities. | Funding has been added to the list of subjects to be discussed as part of the Freight Advisory Committee described in Final Plan Strategy #21. The Steering Committee and Co-leads also will explore funding issues and interagency coordination further during Plan implementation. |
| 69 | Alix A Bockelman | MTC | With regards to land use, we encourage the Air District to make revisions to the Draft Action Plan to provide further context beyond addressing existing stationary sources. West Oakland has been identified by the City of Oakland as Priority Development Area for more than a decade, which means it is slated for significant residential and employment growth over the coming years. While mitigations are critical to ensure that existing residents can stay in place, reinvestment in this community also presents opportunities to improve the built environment and to address environmental inequities. Further growth in West Oakland can also help to reduce per capita greenhouse gas emissions, given its central location and relatively good transit accessibility- a key priority of Plan Bay Area 2050. | Added text to Chapter 6 referring to Plan Bay Area 2050 and the region's climate goals. |
| 70 | Alix A Bockelman | MTC | Action Plan page 2-3. The Action Plan should acknowledge past successes as a result of community advocacy, in particular the demolition of the Cypress Viaduct and relocation of Interstate 880 after the Loma Preita earthquake. These infrastructure investments are a first step towards addressing mid-20th century decisions, such as freeway construction that divided West Oakland and other communities of concern in our region. | We added "In 1989, the Loma-Preita earthquake damaged the Cypress Freeway. Due to the successful activism of the West Oakland community, the rebuilt freeway was relocated." to the discussion of West Oakland's history in Chapter 2. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 71 | Alix A Bockelman | MTC | [Draft Plan] Strategy #21 We generally support the creation of the Sustainable Freight Advisory Committee. We have three suggestions: 1) the Air District should take on staffing responsibilities for this committee to ensure its success; 2) the committee should consider a broader geographic scope, as the Action Plan seems to suggest it would be limited to West Oakland; and 3) the Committee should broaden its scope to serve as a venue for information sharing especially around regional and state funding opportunities and financial incentives. | We have added funding to a list of topics to discuss under Final Plan Strategy #21. Staffing responsibilities will be addressed during Plan implementation. As this Plan's scope is West Oakland, the Co-leads have designed the Freight Advisory Committee to focus just on this community. |
| 72 | Alix A Bockelman | MTC | Draft Plan Strategies 43-49 and 52 describe financial incentives that the Air District will make available to reduce mobile sources. We suggest the Air District build upon these actions by further specifying 1) how these financial incentives might be phased over the 5-year lifecycle of the Plan; 2) the degree to which these opportunities will be targeted toward West Oakland; 3) venues for information sharing and collaboration among potential proposers like the City of Oakland, Port of Oakland, and the private sector. | Draft Plan Strategies #43-49 are now Final Plan Strategies #48-54. The Steering Committee and Air District staff will refine these financial incentives further during Plan implementation. |
| 73 | William M Sloan & Tyler Welti | Venable LLP for) Oakland Athletics | The ballpark project can help implement the Action Plan’s strategies and improve conditions for West Oakland residents. As recognized in Strategy 2 of the Draft Action Plan, the A’s are evaluating the Howard Terminal site at the Port of Oakland as a potential location for a new ballpark. While the ballpark project is currently at an early stage, the A’s anticipate the project can play an important role in helping to implement the Action Plan’s strategies. Consistent with [Draft Plan] Strategy 2, the A’s look forward to continuing to work with the public, West Oakland Environmental Indicators Project, the Bay Area Air Quality Management District (BAAQMD), and other agencies and community groups during the course of review of the proposed ballpark project to identify ways the A’s can help realize the Action Plan’s emissions reduction goals. | The Co-leads look forward to working with the Oakland A's during Plan Implementation. |
| 74 | William M Sloan & Tyler Welti | (Venable LLP for) Oakland Athletics | Why does the Draft Plan exclude Schnitzer from [Draft Plan] Strategy 1, which will help relocate West Oakland’s two other recyclers away from receptors? | Relocating Schnitzer was not identified as a priority by the Steering Committee, the public that attended meetings, or by the City. Final Plan Strategy #1 is also designed to be consistent with the City's commitments made in the West Oakland Specific Plan. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 75 | William M Sloan & Tyler Welti | (Venable LLP for) Oakland Athletics | Why aren't concrete measures to reduce Schnitzer's public health impacts identified in the Draft Plan? | Draft Plan Strategy #64 is now Final Plan Strategy #69 and describes Air District Rule 11-18. Implementation of Air District Rule 11-18 will result in very significant reductions in emissions and risk from the Schnitzer facility, benefiting existing residents and potential future neighboring land uses. |
| 76 | Mike Jacob | Pacific Merchant Shipping Association | By starting the WOCAP with a 2017 baseline, the Plan does not acknowledge the dramatic and recent history of air quality improvements at the Port. These significant contributions to emissions reductions should be reflected affirmatively in the WOCAP. | Please see Master Response #M-4 |
| 77 | Mike Jacob | Pacific Merchant Shipping Association | While we disagree with the WOCAP's forecasted inventory of future emissions associated with Oceangoing Vessels, PMSA agrees with the WOCAP goal that the best way to pursue strategies for the reduction of emissions from these sources is for the local community to defer to the jurisdiction of the California Air Resources Board (CARB). In this regard, PMSA has been working closely with CARB for years in their efforts to update their existing regulations of vessels at berth and agrees with the WOCAP goal that new amendments to the existing rules for vessels at berth proceed in a manner which is consistent with CARB-adopted policies including the AB 617 Community Air Protection Blueprint, the SB 32 Scoping Plan, the SIP Mobile Source Strategy, and the Sustainable Freight Action Plan. | PMSA's support for CARB's rulemaking is noted. Based on the modeling work in the Plan, the Co-leads believe that more actions are needed to meet the goal and targets of the Plan, in addition to the work that CARB has committed to do to reduce emissions. |
| 78 | Mike Jacob | Pacific Merchant Shipping Association | PMSA agrees with the WOCAP assessment that most of the environmental exposure issues facing West Oakland are not derived from local sources, such as those at the Port, and that the marginal contributions by local sources must be taken in the regional context of emissions issues. It is obvious that many sources contribute to exposure issues and that impacts will necessarily vary by location and proximity of residential areas to industrial sources. The farther residential housing is located from industrial sources (a criteria well beyond the control of the industrial sources), the more marginal the impact on the West Oakland community. | Regional emission reduction programs will benefit West Oakland residents, but local reductions are also needed. Based on the modeling work in the Proposed Final Plan, the Co-leads believe that more actions are needed to meet the goal and targets of the Plan. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 79 | Mike Jacob | Pacific Merchant Shipping Association | Consistently, the WOCAP highlights the benefit of the existing industrial buffer zones and the value of greater distances between Port operations and residential housing in West Oakland in its examination of the raw emissions values of operations versus the residential impacts of those operations. For instance, while the WOCAP lists Ocean-going Vessels' Berthing and Maneuvering as the 1st and 2nd largest sources of DPM per year (Table 5-2), when it comes to the WOCAP evaluation of the actual Residential Impacts of these emissions, these sources drop dramatically 4th and 7th respectively (Figure 5-10). | Emission reductions from shipping or other Port-related activities may benefit different neighborhoods to differing degrees, but such reductions are a critical element of improving air quality in West Oakland. |
| 80 | Mike Jacob | Pacific Merchant Shipping Association | With respect to the need to maintain these buffers and to avoid land use incompatibility issues, PMSA is a signatory to a coalition letter submitted separately and we incorporate those comments by reference here regarding proposed residential encroachment being considered by the City of Oakland. PMSA respectfully requests that, to the extent that the purpose of the WOCAP is to reduce exposure to sensitive receptors primarily due to proximity exposures, that the Plan address the question of the creation of these new residential zones. | Please see Master Response #M-2 |
| 81 | Mike Jacob | Pacific Merchant Shipping Association | Given the obvious negative impacts which would result from allowing the residential redevelopment of Howard Terminal by the Oakland A's and related changes to the Downtown Oakland Specific Plan, which are in direct conflict with the policy goals of the WOCAP, the Plan should do everything it can to discourage the City of Oakland from replacing current industrial zoning with new residential uses that are in and amongst and closer than ever before to Port and industrial operations | Please see Master Response #M-2 |
| 82 | Mike Jacob | Pacific Merchant Shipping Association | Pg. 2-3 - "West Oakland History" & "West Oakland Today" This History and Today sections are an appropriate location to describe events from 1999 to the present in this narrative. This section is currently missing the recent history of substantial emissions reductions and significant air quality improvements occurring at the Port of Oakland. Acknowledgement of the recent history of investments in improved air quality are arguably just as, if not more, relevant to the profile of impact and context for present air quality initiatives than the other historical inputs noted here. We would request a provision which notes the air quality improvements which have occurred in the WOCAP Planning Area since 2005. | Please see Master Response #M-4 |

| Comment # | Name | Organization | Comment | Air District Response |
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| 83 | Mike Jacob | Pacific Merchant Shipping Association | Pg. 2-6 – “Population Characteristics”<br>Pg. 2-7 – “Health Conditions in West Oakland”<br><br>While beyond the immediate scope of AB 617, the WOCAP Plan does properly identify the issue of poverty in West Oakland and disparate level of unemployment as relevant to the context of public health. It is important in this planning process to recognize that just as the impacts of degraded air quality can reduce public health, poverty and unemployment can be greater predictors of and more direct corollaries with public health outcomes. To the extent that these economic factors are complicated by other demographics, employment and the alleviation of poverty become increasing relevant as some studies have found that environmental factors only contribute to 10% of public health outcomes, while socioeconomic factors are the largest at 40%. | The Final Plan acknowledges that many social and economic factors influence health outcomes. |
| 84 | Mike Jacob | Pacific Merchant Shipping Association | Expand Figure 5.5 and 5-9 a.b.c. so that the “frame” does not obscure all local sources within the planning area to facilitate evaluation of not just existing residential zones but also potential for new residential zones proximate to industrial sources. | These maps show the entirety of the receptor grid for which concentrations (impacts) are modeled. The scope of the modeled local sources to which these impacts are attributable extends beyond that receptor grid. Plan Figure 5-2 shows these modeled local sources. The modeling focused on impacts to the West Oakland community, the extent of which was determined the Co-leads. When census 2020 data become available, we will update the analysis of impacted populations. |
| 85 | Mike Jacob | Pacific Merchant Shipping Association | Pg. 5-22 – “Summary of Modeled Changes…” - “Ocean-Going Vessels”<br>Pg. 6-10 – “Diesel PM” – “Ocean-Going Vessels” Freight growth factors<br><br>The WOCAP assumption which forecasts “a 5% compound annual container ship activity growth rate between 2017 and 2030” is problematic with respect to both: 1) the rate of growth forecast and 2) forecasting OGV emissions and impacts will grow at the same rate as freight. To ensure accuracy of predictive emissions and to make sure that the WOCAP is focused on prioritizing issues only those sources necessary to achieve its goals, it is important that these forecasts be revised to advise the public of the most likely scenarios. | Please see Master Response #M-3 |

| Comment # | Name | Organization | Comment | Air District Response |
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| 86 | Mike Jacob | Pacific Merchant Shipping Association | Pg. 6-10 – "Diesel PM" – "Ocean-Going Vessels"<br><br>The emissions reductions from Ocean-Going Vessels should be captured in the WOCAP "Without Plan" projections because emissions reductions are going to continue to be achieved through state regulations that have already been enacted independent of the adoption of this Plan, and which are likely to be further amended by CARB, also independent of the adoption of this Plan. | Emission reductions from already existing regulations have been accounted for in the Without Plan scenario. Additional reductions, consistent with those estimated by CARB for the proposed At-berth regulatory amendments are additionally included in the With Plan scenario. Both are based on data from CARB. |
| 87 | Mike Jacob | Pacific Merchant Shipping Association | Development Projects in West Oakland, Including Howard Terminal – PMSA concurs with the comments of the Industry Coalition submission. | Please see Master Response #M-2 |
| 88 | Mike Jacob | Pacific Merchant Shipping Association | Study Allowing Heavy Truck Traffic on I-580 through Oakland and I-880 Truck Lanes – PMSA agrees with the recommendation to study additional truck routes to access the Port of Oakland, including the potential to open Interstate 580 to heavy-duty trucks and to designate "truck only" lanes on I-880. WOCAP should also oppose any changes to the Downtown Oakland Specific Plan that would further restrict freeway access by trucks to the Port of Oakland, including removal of I-980 or development of the 3rd Street overweight truck corridor. | PMSA's support for Final Plan Strategy #3 is noted. |
| 89 | Mike Jacob | Pacific Merchant Shipping Association | Truck Hours of Operations Limitation – PMSA disagrees with any strategy that would limit the ability of trucks serving the Port and its marine terminals from being able to expand gate hours to maximize off-hour service and minimize truck traffic and congestion in the community and throughout the region. Restricting hours of operation would likely lead to increased road and highway congestion, resulting in measurable increases in emissions. From an exposure perspective, off-peak operations may, in fact, be preferable with emissions occurring when nearby receptors are indoors and not engaged in outdoor activities. | The Co-leads and Steering Committee will study this issue further during Plan Implementation. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 90 | Mike Jacob | Pacific Merchant Shipping Association | Development Fees Imposed by the City of Oakland for Environmental Mitigation – PMSA disagrees with the imposition of any fees on freight activities at the Port of Oakland as likely legally problematic under the United States Constitution and without nexus to Port operations. In addition, without further detail as to the scope and nature of this concept, such fees would likely be violative of the City Charter and potentially of the state tidelands trust. | The Co-leads and Steering Committee will study this issue further during Plan Implementation. PMSA's opposition to imposition of fees is noted. |
| 91 | Mike Jacob | Pacific Merchant Shipping Association | Port Electrical Infrastructure Plan – PMSA agrees that greater access, reduced costs, and additional infrastructure provided to industry will remove barriers to improved utilization of electrified equipment. However, it is our experience that many of the most problematic infrastructure components in this regard often lie outside of the control of the Port itself. This Plan should consider it necessary to examine the roles and authority of the City and PG&E as well. | To remove barriers to the electrification at the Port, the Steering Committee will collaborate with the Port, the City, and PG&E during implementation. |
| 92 | Mike Jacob | Pacific Merchant Shipping Association | Sustainable Freight Advisory Committee – To the extent this is intended to be an advisory committee, PMSA views this as an unnecessary duplication of the many advisory committees already maintained by the Port, the City, and the BAAQMD which address issues of air quality and freight activities. | The Co-leads and Steering Committee will study this issue further during Plan Implementation. |
| 93 | Mike Jacob | Pacific Merchant Shipping Association | Study Off-Terminal Container Yard Development – PMSA agrees with the recommendation to study the creation of additional off-terminal container yards and to improve the ability of trucks to improve efficiency and the number of turns possible to and from the Port. | Draft Plan Strategy #38 is now Final Plan Strategy #43. Thank you for your comment. |
| 94 | Mike Jacob | Pacific Merchant Shipping Association | Financial Incentives for Tug and Barge Operators – PMSA agrees with the recommendation to provide financial incentives for the tug and barge fleet serving the Port of Oakland to subsidize their upgrades. | Draft Plan Strategy #45 is now Final Plan Strategy #50. Thank you for your comment. |
| 95 | Mike Jacob | Pacific Merchant Shipping Association | CARB Amendments to the Regulations of Vessels At Berth – PMSA agrees with the recommendation that CARB should update and amend the existing regulations for Ocean-Going Vessels while At Berth. All CARB amendments to the At Berth rule to evaluate and regulate additional vessel fleets must be consistent with the AB 617 Blueprint, the SB 32 Scoping Plan, the SIP Mobile Source Strategy, and the Sustainable Freight Action Plan. | Draft Plan Strategy #55 is now Final Plan Strategy #60. Thank you for your comment. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 96 | Mike Jacob | Pacific Merchant Shipping Association | Port of Oakland Clean Ship Program – PMSA is prepared to work with the Port of Oakland to explore the efficacy of a Clean Ship Program, however, these types of initiatives are notoriously hard to manage or to put in to practice. If the purpose of this WOCAP measure is to affirmatively proscribe and restrict vessel operations, then PMSA is opposed to this strategy measure. If the purpose of this WOCAP measure is to work to develop incentives and non-prescriptive pathways towards a higher fleet composition of newer vessels, then PMSA supports this strategy measure. | Draft Plan Strategy #58 is now Final Plan Strategy #63. The Co-leads and Steering Committee will study this issue further during Plan Implementation. |
| 97 | Mike Jacob | Pacific Merchant Shipping Association | Air District Seeks Authority in 2021 to Regulate Mobile Sources via Indirect Source Rule – PMSA opposes this strategy. The Port of Oakland, marine terminals, warehouses, and other facilities do not, will not, and should not have the capacity or ability to take responsibility for the emissions of the mobile sources who utilize their facilities. Local Air Districts likewise should not have the authority to regulate those facilities via an Indirect Source Rule. | Draft Plan Strategy #62 is now Final Plan Strategy #67. PMSA's opposition to this strategy is noted. |
| 98 | Mike Jacob | Pacific Merchant Shipping Association | Emissions Inventory, pg. A-7 – “2.1.3 Emissions Sources and Base Year”<br>With respect to the description of the size of the Port, please provide a statistic relative to some metric and provide citations. With respect to the Howard Terminal, several points: While it is not a currently active ship-to-shore marine terminal, it is not vacant and hosts numerous logistics and truck operations. It has not been subject to vacancy due to a bankruptcy. It was last subject to a marine terminal lease through 2014, when SSAT/Matson moved to the former APL terminal. Please clarify that the Oakland A’s have a non-binding tentative term sheet with the Port of Oakland but have no rights to the property which is currently undergoing preliminary environmental review. | Comments regarding Howard Terminal leases are noted. Truck businesses operating on the Howard Terminal property were included in this analysis. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 99 | Mike Jacob | Pacific Merchant Shipping Association | Emissions Inventory, pg. A-35 – "Vessel auxiliary power is primarily used when propulsion engines are not running (e.g. at berth or in anchorage outside of the Source Domain)." This is not precisely the most accurate statement. While it is true that when the main engines are not running that the vessel's auxiliary power is the main source of power for crew needs for things like lights, computers, and navigation equipment you need auxiliary engines, it would be inaccurate to conclude that auxiliary power is not used also when propulsion engines are running for those same auxiliary functions. It is just no longer the primary source of vessel power or emissions. | The analysis does not assume that auxiliary engines are not used when propulsion engines are running; the analysis used emission estimates directly from the 2017 Port inventory, which does include emissions from the auxiliary engines in both maneuvering and berthing modes. Text of the Action Plan Appendix A has been clarified. |
| 100 | Mike Jacob | Pacific Merchant Shipping Association | Emissions Inventory, pg. A-35 – "capacity taken from the 2018 IHS Fairplay database" The IHS Fairplay database on auxiliary engines may be less than accurate or reliable than reliance on other inventories developed and available. The San Pedro Bay ports have implemented a Vessel Boarding Program in order to eliminate mistakes or inaccuracies that had been attributed to outside sources that may be incomplete. Since many ships calling Oakland have a San Pedro Bay port as a first port of call, it would make more sense and increase accuracy if the average loads from the POLA/POLB inventories were used. | OGV maneuvering and berthing emissions were originally taken from the Port of Oakland's 2017 emission inventory, which was developed by Ramboll. The text on Draft Plan page A-35 describes Ramboll's approach, including the reliance on IHS Fairplay data for auxiliary engine capacity and ARB's 18% load factor for hoteling. However, the OGV berthing emissions in the Final Plan have subsequently been replaced by emissions estimates developed by CARB as part of the development of their At-Berth Regulation. Ramboll's original emission estimates are still being used for OGV maneuvering. |
| 101 | Mike Jacob | Pacific Merchant Shipping Association | Emissions Inventory, pg. A-35 – "The use of shore power represents greater than 50% reduction in auxiliary engine operating hours at berth overall and resulting in 40–50% reduction in emissions for all pollutants." There are no citations listed for the statistics regarding use of shore power. Please list exact citations for these statistics and provide the context for the percentages of reductions. This implies that shore power is only connected for 50% of the time. If so, none of these ships would be complaint with the CARB rule because they would exceed the three-hour connection time limit, and this would only be true if average total time at berth was 6 hours or less. This statistic is much lower than the vessel connection rate reported by the Port of Oakland, in 2018 when 75% of the vessels calling in Oakland successfully drew shore power. https://www.oaklandseaport.com/wp-content/uploads/2019/07/2019-06_Oakland-shorepower.pd | This text has since been updated. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 102 | Mike Jacob | Pacific Merchant Shipping Association | Emissions Inventory, pg. A-35 – Emissions factors "(assuming 0.1% sulfur content fuel)." This is the maximum legal limit. An average based on CARB compliance data should be used to estimate PM and SOx emissions from boilers not a calculation based solely on the legal maximum. | This assumption is consistent with the methodology in CARB's OGV inventory. |
| 103 | Jessica Hogle | PG&E | In response to the strategies proposed in Chapter 6 of the Plan, PG&E looks forward to engaging with the community of West Oakland and the relevant agencies in the implementation process where the strategies will be further defined and discussed. PG&E believes it could support or may be impacted by several of the proposed strategies.<br><br>In particular, PG&E anticipates potential opportunities to collaborate and partner with West Oakland on strategies related to the following topics:<br>- Clean Transportation Infrastructure (including potential overlap with PG&E's existing transportation electrification infrastructure programs)<br>- Building Electrification<br>- Energy Efficiency<br>- Other energy infrastructure (such as storage) | Thank you for your comment. We look forward to working with PG&E on these topics during implementation. |
| 104 | Jessica Hogle | PG&E | One area of potential concern that PG&E would like to highlight is with respect to strategies aimed at limiting truck movement in the community. As identified in Table 5-2, PG&E recognizes that truck traffic is a source of PM2.5 and Diesel PM pollution in West Oakland. [Draft Plan] Strategy #9 proposes to reduce this pollution by developing a plan to limit the hours that trucks can operate in the community. PG&E operations in West Oakland (including scheduled maintenance and repair or emergency work) could be negatively impacted by such a restriction. PG&E looks forward to working with the City of Oakland on the potential implementation of any such measure to ensure that critical utility work can proceed while also balancing the needs of the community. | The implementation Steering Committee looks forward to working with PG&E and other partners to learn more about how to the partners can work together to reduce emissions and exposure in West Oakland. |
| 105 | Danny Wan | Port of Oakland | In Figure 2-5, the totals add up to more than 100%. Please add cumulative total as labels on the y-axis. | Figure 2-5 is revised in the Final Plan. |
| 106 | Danny Wan | Port of Oakland | Figure 2-7 and 2-9: Do these life expectancy values include un-natural deaths due to accident or violence, or are they only for deaths due to disease/sickness? | Yes, these include all deaths. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 107 | Danny Wan | Port of Oakland | Figure 2-8: What year is this life expectancy map based on? The map seems inconsistent with the information in Figure 2-7. For example, Figure 2-7 shows that Asians and Hispanic/Latinos have the longest life expectancy, but Chinatown and East Oakland which have the highest populations for those groups show the shortest life expectancy. West Oakland has similar life expectance as North Oakland and West Berkeley. Can you explain the discrepancy? There is a more recent map available at Alameda County's website here: http://www.acphd.org/media/500113/mapset2018.pdf. Please replace the older version with this one. | Figure 2-7 is based on Alameda County as a whole and now updated to 2017. Figure 2-8 has been replaced and now shows years 2013-2017. In Figure 2-8, life expectancy is presented by census tract and based on 2013-2017. Both figures rely on data from ACPHD. |
| 108 | Danny Wan | Port of Oakland | Page 2-9: Are there more recent vital statistics than 2010-2012? | We have updated this figure with more recent statistics from ACPHD for the Proposed Final Plan. |
| 109 | Danny Wan | Port of Oakland | Page 4-6, top of page. How do exposure conditions in Hoover-Foster neighborhood compare to other neighborhoods in the East Bay and in the Bay Area? Can you give some comparisons? | Throughout the planning process, the Steering Committee was particularly focused on local conditions, local impacts, and local solutions. Thus, the Plan targets and the technical analysis focused on air quality contributions and exposures from local sources within the West Oakland community. Further analyses will be performed during Plan implementation and tracking, possibly including comparisons with other communities. |
| 110 | Danny Wan | Port of Oakland | Page 5-2: Is there a way we can see the results of the regional modeling work? | Further technical documentation about the regional model will be available on the webpage. |
| 111 | Danny Wan | Port of Oakland | A. Table 5-2: Why are the dredging emissions higher than reported in the Port's 2017 inventory? B. Where are the Schnitzer tug emissions reported? C. How were Schnitzer ship emissions calculated? D. What is included in UP Rail Yard emissions? | A. The dredging emissions in Table 5-2 include emissions from both dredging activity and disposal of dredged materials. For disposal, only the portions of vessel trips that took place within the West Oakland modeling domain were considered. For example, dredging DPM emissions include 1.11 tpy from dredging and 0.05 tpy from disposal, for a total of 1.16 tpy. B. Schnitzer tug emissions are reported in the category "Schnitzer (ships)" in Table 5-2. This category includes emissions from both OGVs and tugs. C. The methodology for estimating emissions from Schnitzer ships is described in Appendix A, Part 1, Section 2.5.2 D. UP Railyard emissions include locomotives, cargo handling equipment, transportation refrigeration units (TRUs), and service/repair operations. See Appendix A, Part1, Section 2.10.3. |
| 112 | Danny Wan | Port of Oakland | Figure 5-10: This graph is very helpful and illustrative. As requested previously, could you please include the same graph for 2024? | Further technical documentation, including this graph for 2024, will be available on the webpage in the near future. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 113 | Danny Wan | Port of Oakland | Page 5-23 for On-Road Trucks: Starting at the end of 2022 all trucks serving the Port will have model year 2010 or newer engines. Is this included in the Without Plan scenario? | Yes, this regulation is accounted for in the EMFAC2017-based emissions estimates we used for the 2024 Without Plan scenario. |
| 114 | Danny Wan | Port of Oakland | Page 5-24: Why is Port growth 5% when regional growth is only 1%? The Port understands that the two do not need to be the same, but they are at least related, since the Port's key imports are regional cargo, not discretionary Inland Point Intermodal (IPI) cargo. | Please see Master Response #M-3 |
| 115 | Danny Wan | Port of Oakland | Page 6-3: The Port and City are committed to fully implementing the Truck Management Plan. In fact, the Port and the City have already started implementing strategies for routing, signage, and parking. The Truck Management Plan will be implemented even if the WOCAP is not approved, thus the benefits should be included in any "Without Plan" scenarios. | The Port's support for the Truck Management Plan is noted and appreciated. For the Truck Management Plan, no emission reductions were calculated or incorporated into tabulated 2024 emissions scenarios. Part of the Plan will be ensuring that the air quality benefits associated with the Truck Management Plan are realized. |
| 116 | Danny Wan | Port of Oakland | Page 6-4: CARB is already developing its new Advanced Clean Truck Regulation; the final workshop was held 8/21/19. The Port participated in the workshop. CARB staff announced that the language was largely final and they did not expect many changes. For this reason, the benefits should be included in any "Without Plan" scenarios. | The Plan represents a combination of statewide actions implemented by CARB and local actions implemented by the Air District and other local agencies. As such, CARB has instructed the District to include ACT-related emission reductions in our "With Plan" scenario. |
| 117 | Danny Wan | Port of Oakland | Page 6-6: The Port applauds [Draft Plan] Strategy #70 to install filtration systems at schools, community centers, and retirement homes. The Port suggests that the program include funding set asides for regular maintenance of the filters. | The Steering Committee will consider this comment further during Plan implementation. |
| 118 | Danny Wan | Port of Oakland | Page 6-7: Please give more specifics in the bullet list of assumptions for the "With Plan" scenario. The Port's understanding is that for trucks, the assumption is that eight new electric trucks will be purchased each year starting in 2020; or 40 trucks by the end of 2024. There are currently zero electric drayage trucks in commercial production, so these may be more demonstration trucks? For cargo handling equipment, how many pieces are assumed to become electric each year and of what type? Please list the funding source assumed for these purchases, that is helpful information. | The type of trucks funded will depend on the applications received, and may include drayage or hauling trucks. Our understanding is that there are commercially available zero-emission trucks for drayage operations; these are street-legal yard trucks useful for moving containers between terminals or between the terminals and railyards/on-port warehouses. Our understanding is that zero emission longer haul drayage trucks are still in the demonstration phase of development. At this time, we understand that CHE equipment incentives will be for cleaner than required equipment, for example, hybrid, battery electric, etc. We will know more about funding sources during Plan implementation, but are likely to include Carl Moyer Program, Goods Movement Program and Mobile Source Incentive Fund program dollars. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 119 | Danny Wan | Port of Oakland | Page 6-7: The Port is very pleased that BAAQMD plans to streamline and simplify the grant application process and requirements. Port staff hear a lot of concerns during Trucker Environmental Office Hours about how difficult and complicated the process is, technical difficulties with the on-line application, the limitations of working with dealers whose supply of used trucks is overpriced with small selection. Other concerns are the requirement to scrap a truck that can be as new as 2010 (with a 2009 engine) when that truck still has a lot of resale value. Perhaps BAAQMD would consider 3-way transfers? Language barriers could be mitigated by providing grant materials in more languages, and more advertising would be useful. | The Steering Committee will consider this comment further during Plan implementation. |
| 120 | Danny Wan | Port of Oakland | A Page 6-10: What is the per-truck DPM and cancer risk reduction for replacing a single diesel truck with an electric truck? Why are the Advanced Clean Truck and Heavy-Duty Inspection and Maintenance rules considered in the "With Plan" alternative when both of those CARB rules are well underway and will continue even if the WOCAP is not approved? The benefits of these should be moved to the "Without Plan" scenario.<br><br>B For ocean-going vessels, the Port requests a 0% growth rate, not 5%, for reasons already stated above. Also, the Port already has a requirement to meet 90% shore power compliance by 2020, due to grant requirements. Because of this and the fact that CARB's At-Berth amendments are already underway, the benefits of increased shore power should be moved to the "Without Plan" scenario. These will occur regardless of whether the WOCAP is approved. | A. The Plan represents a combination of statewide actions implemented by CARB and local actions implemented by the Air District and other local agencies. As such, CARB has instructed the District to include Advanced Clean Truck - related emission reductions in our "With Plan" scenario. Also, emission reductions for voluntary truck and CHE replacements were not quantified or included in emission summary tables. Any benefits from these programs would be in addition to the emission reduction targets specified in the plan.<br><br>B: The District has since refined the estimates for future year emissions for OGVs. The District is now using CARB's growth and control assumptions for OGV maneuvering, consistent with their SIP inventory estimates. We are also using OGV berthing emissions estimates provided by CARB that are consistent with their At-Berth regulation. These benefits are included in the With Plan scenario. |
| 121 | Danny Wan | Port of Oakland | Page 6-14: California Waste Solutions has already publicly announced its move to the former Oakland Army Base, so the benefits should be included in the "Without Plan" scenario. | No emission reductions or air quality benefits were estimated for the proposed move of the CA Waste Solutions facility. Emission reductions shown for both the With Plan and Without Plan scenario do not include any emission reductions or relocation for this facility. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 122 | Danny Wan | Port of Oakland | Page D-3: The paragraph starting with "The MAQIP" is not accurate. The MAQIP planning horizon goes until 2020. The Port had always intended to create a new air quality plan once the MAQIP expired naturally. It is not true to say that the Port initiated the 2020 and Beyond effort because it recognized "the need to identify additional strategies to achieve the 85% reduction goal." It is more accurate to say that the Port initiated the 2020 and Beyond Planning process to proactively develop a long-term framework to address both TACs and GHGs. The Port believes it is on track to meet the 85% reduction goal relying on the MAQIP, considering it was already at over 80% reductions in 2017 with three more years of progress ahead. | Appendix D has been revised as follows: Removed ..."recognizing the need to identify additional strategies to achieve the 85% reduction goal and to incorporate the Bay Area's and State of California's climate goals" and replaced it with "… the Port reconvened the Task Force to update the MAQIP (2018 Update to the 2009 MAQIP) and to identify issues for seaport air quality planning beyond the Year 2020." Added a reference to support this statement as follows: Port of Oakland, "Project Statement: Maritime Air Quality Improvement Plan: 2018 Update and Planning for '2020 and Beyond'," February 21, 2018. |
| 123 | Danny Wan | Port of Oakland | Targeting Emissions Closest and Most Impactful to People Is the Most Effective Health Risk Reduction Strategy | The Steering Committee will consider this comment further during Plan implementation. |
| 124 | Danny Wan | Port of Oakland | The Port Encourages WOCAP Incentive Strategies | We look forward to working with the Port and its tenants to successfully implement incentive strategies. |
| 125 | Danny Wan | Port of Oakland | An Unrealistic 5% Port Volume Growth Projection Undermines Validity of Many WOCAP Strategies | See Master Response #M-3 |
| 126 | Danny Wan | Port of Oakland | An Indirect Source Rule is Not Consistent with Feasible Implementation Strategies | Comment noted. |
| 127 | Joyce Xi | Union of Concerned Scientists | Funding zero emission trucks, setting emissions targets, and establishing zero-emission vehicle and technology standards are necessary for reducing the disproportionate impacts of freight in West Oakland. In order to accelerate the transition to zero-emission trucks in West Oakland, BAAQMD, Port of Oakland, City of Oakland, CARB, and other agencies must provide adequate incentives and infrastructure at the local level to do so. | Final Plan Strategy #49 and #53 will provide funding to replace diesel trucks with zero-emission trucks. We concur that a multi-agency, multi-year funding strategy is needed. |
| 128 | Joyce Xi | Union of Concerned Scientists | We urge the City of Oakland and Port of Oakland to implement the infrastructure and land use changes needed to move Oakland towards a zero-emission port, and to set concrete, measurable dates and targets to achieve electrification as soon as possible. | Final Plan Strategy #37 is specifically intended to move the Port towards zero emissions equipment. |
| 129 | Joyce Xi | Union of Concerned Scientists | Light-duty vehicle emissions also contribute to increased pollution exposure for residents in West Oakland. We also support the plan's suggested improvements to support bike and pedestrian improvements, public transit, and vehicle electrification generally. | Thank you for your comment. Final Plan Strategy #15, 20, 34, and 48 address emissions from light-duty vehicles. |
| 130 | Joyce Xi | Union of Concerned Scientists | We support the process for drafting the Community Action Plan and the strategies it lays out for improving air quality and health in West Oakland. | Thank you for your comment. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 131 | Ray Kidd | Activist | [Page 7-2, Air District Enforcement Program] It says that air district inspectors will respond immediately to complaints unless the "complaints are received after business hours or on weekends, [in which] the inspector will respond on the next workday." This policy may work under many circumstances, but if there is a situation where there may be chronic compliance issues, the creator of the pollution source can soon learn that if they create their emissions after 5 pm or on a weekend and have it stopped by the next workday then they may be able to continue with their bad practices since the evidence of their action will be dissipated by the time the inspector arrives. I would suggest that the district amend its inspection system so that an inspector could be available if there were ongoing complaints that came in outside the normal inspection hours. | The Air District has staff on-call after business hours to respond to incidents and complaints associated with major emission releases. The Air District will be updating the Complaint Policy and will host public workshops starting in December 2019 where we will consider all public comments to improve our complaint investigation procedures. |
| 132 | Arthur R. Boone | Center for Recycling Research | No comparison between West Oakland air quality and air quality in the hill communities. | Throughout the planning process, the Steering Committee was particularly focused on local conditions, local impacts, and local solutions. Thus, the Plan targets and the technical analysis focused on air quality contributions and exposures from local sources within the West Oakland community. Further analyses will be performed during Plan implementation and tracking, possibly including comparisons with other communities. |
| 133 | Terri Fashing | City of Oakland | [Draft Plan] Strategy #10 Please add a sentence to the end of [Draft Plan] Strategy 10 that acknowledges the City's plan to develop Oakland's Urban Forest Master Plan and refer to the co-benefits that will be achieved by the plan, including mitigating stormwater runoff by thoughtfully choosing planting locations and removing the most square feet of impervious surfaces possible to improve water quality by preventing runoff that pollutes Oakland's waterways and the San Francisco Bay. | Added to Final Plan Strategy #10 this sentence: "The development of the Oakland Urban Forest Master Plan will inform this work." |

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| 134 | Andy Garcia | GSC Logistics | GSC Logistics is one of the largest transportation and warehousing services provider at the Port of Oakland. GSC Logistics supports and endorses your comments and critical highlights, referencing developing a ball park at the port's Howard Terminal, and the detrimental impact such development would impose upon the West Oakland Community and downtown Oakland as well. GSC Logistics and its' almost 400 employees do not support the Howard Terminal playground/ballpark.<br><br>Please, prevent the ball park from being developed at the Howard Terminal. The current coliseum complex, off highway 880 and 66th Avenue in East Oakland, is ideal for such a project. | As indicated in Final Plan Strategy #2, continued engagement in the environmental review process for development projects in and near West Oakland is important. The Steering Committee will further investigate these projects during Plan Implementation. |
| 135 | John "Whit" Schweizer | WOEIP Community Environmental Consultant | There should be added to the Plan a section that addresses site work, demolition and construction in West Oakland. Infill development, re-purposing of former industrial sites, residential upgrades, and redevelopment have expanded in number of projects to the point that such activities are essentially a continuous source of air pollution. Lead particulate is an issue on every site because of historic airborne deposition from transportation and industrial sources. Asbestos is an issue on every demolition project. Development of industrial sites, and commercial sites such as former gasoline stations, dry cleaners, involve toxic organic chemicals such as gasoline and solvents that can be released as vapors during excavations and as vapor intrusion into homes from migrating, shallow groundwater. Heavy metals and other toxics such as PCBs and PAHs can be released in dust emissions. City of Oakland Planning and Building Department, BAAQMD, and Alameda County Department of Environmental Health must work together to enforce regulations that curtail construction-related emissions. | The Co-leads recognize the impact of construction activities on the community of West Oakland and that while individual construction projects may be temporary, the cumulative effect of multiple construction projects can be a large contributor to air pollution in West Oakland. Various Strategies in the Plan address aspects of construction (Final Plan Strategies #22, #27, #44, #86, and Further Study Measure #3). The Plan also includes Final Plan Strategy #33 that states that CARB will develop a handbook that identifies best practices for freight facilities, including construction practices. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 136 | Anonymous 1 | | How does the plan address restaurant smoke? | Draft Plan Strategy #82 is now Final Plan Strategy #87. Final Plan Strategy #87 addresses smoke from restaurants by stating "CARB conducts a technology assessment of commercial cooking rules and control strategies and proposes incentives and/or a Suggested Control Measure for commercial cooking. The Air District offers incentives and/or proposes a regulation to reduce emissions from commercial cooking." |
| 137 | Bill Aboudi | AB Trucking | [Draft Plan] Strategy #37 Long term leases for small port sealing truck companies [are] a priority to encourage investment in infrastructure and help grow local business. All the small truck companies are on a month-to-month leases and [these are] the most expensive [leases]. | The Implementation Steering Committee will consider this comment during implementation. This Draft Plan Strategy #37 is now Final Plan Strategy #42. |
| 138 | Bill Aboudi | AB Trucking | Please consider that of the 9,000 drivers that work at the port over 1,000 live in Oakland zip codes. It would be great to reflect that in the intro - truckers are residents! | Added to Chapter 2 "West Oakland today" section the following sentence: "West Oakland residents also work at the Port, Post Office, and other local freight and industrial operations, and drive these freeways and busy roadways as part of their jobs." |
| 139 | Scott Andres | Aclima | [Page 5-8, Baseline Conditions] Aclima is almost done with a new block-by-block baseline map of all of West Oakland will be creating an updated map each quarter that can be used to track outcomes of strategies implemented over time. The newest quarterly baseline map will be available in late August or early September, and includes at least 20 passes of every road segment to create median measurements. | Thank you for this update on the status of this item. We will follow Aclima's measurement campaign as we track implemenation. |
| 140 | Alexander Coate | EBMUD | [Draft Plan] Strategy #68 Please add to glossary the definition of "organic liquid storage tank" used in Draft Plan Strategy 68. It is our understanding that the intent is that these are large tanks containing refined petroleum products, that should be clearly documented in the CAP. | Draft Plan Strategy #68 is now Final Plan Strategy #73 and states, "The Air District proposes amendments to existing Regulation 8-5 to further reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020. Regulation 8-5 defines organic liquid storage tanks." |
| 141 | James Dumont | Momentum | [Draft Plan] Strategy #62 Please explore expanding the proposed Indirect Source Rules to create incentive systems that push land owners and larger businesses to adopt and encourage low- and zero-emission technologies and services (EVSE, MHE, Che, et.). Consider using SCAQMD Rule 2202 as a model for this rule. | Draft Plan Strategy #62 is now Final Plan Strategy #67 and addresses pollution from magnet sources, also called indirect sources. The Air District plans to seek authority to reduce emissions from these sources in 2021. |

| Comment # | Name | Organization | Comment | Air District Response |
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| 142 | Mike Jacob | Pacific Merchant Shipping Association | Emissions Inventory, pg. A-35 – "Data from the Port for shore power calls in 2017 indicate that the average in-use power demanded was 10.5% of the auxiliary generator capacity for the significant shore power connections. "This statement directly contradicts the use of an 18% load factor for auxiliary engines, as noted above as the basis for assumption for hoteling based on CARB data. If auxiliary engines fulfill a 10.5% load, then that is the load factor, not 18%. Please clarify which load factor is used. | During the development of the Port of Oakland's 2017 emission inventory, Ramboll originally relied on an 18% load factor for hoteling. Subsequently, Ramboll recalculated emissions based on average power demand during 2017, discarding the 18% load factor. However, the OGV berthing emissions in the Draft Plan were ultimately provided by ARB so that the Plan's emissions data would be consistent with emissions estimates developed for ARB's At-Berth Regulation amendments. The technical appendix has been updated to reflect the source of the OGV berthing emissions estimates. |
| 143 | Alvirdia Owens | WOEIP/ RAC Hoover Foster | During the Steering Committee meetings, it was discussed that converting trucks from diesel to electric vehicles has a large cost factor. Please value the health of the people in the community. Government should provide an incentive to change over to clean vehicles to improve air quality and health. | The Co-Leads and Steering Committee's believe that the health of West Oakland residents is vitally important and that more government incentives and resources are needed to protect health in West Oakland. Final Plan Strategies #18, 19, 31, 32, 36, 37,41, 43, 49, 50, 51, 52, 53, and 54 all address diesel emissions from trucks and other equipment, including incentives. |
| 144 | Anonymous 2 | | On page 5-16 of the Draft Plan, the impact zones are not necessarily dark. Is this a contradiction? Please explain. | See Figure 5-9 as an example of how the figures address emissions. The pie charts in Figures 5-9a-c are located over the local impact zones; chart size indicates concentration levels for each impact zone and colors illustrate the share contributed by each source at each zone. For example, in Figure 5-9a, the larger pie charts are closer to the dark area in West Prescott, Third Street, and Seventh Street. The pie charts located in more northern West Oakland neighborhoods are smaller and the background colors are lighter, representing lower levels of diesel PM concentrations. |

ALAMEDA County Transportation Commission

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September 9, 2019

Alison Kirk
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Via email: WestOaklandPlan@baaqmd.gov

Dear Ms. Kirk,

Thank you for this opportunity to comment on the Draft *Owning Our Air: The West Oakland Community Action Plan* (Plan). The Alameda County Transportation Commission (Alameda CTC) applauds the significant amount of work that went into developing this first Community Air Protection Program, AB 617, Plan. The community-led process that led to this Plan once again demonstrated the strong commitment the residents of West Oakland, and in particular the West Oakland Environmental Indicators Project leaders, Ms. Margaret Gordon and Brian Beveridge, to improving the public health of their community.

The Plan identifies a wide range of strategies to reach the goals and targets laid out in the Plan. These strategies highlight the breadth of activities that are all important to reduce the public health impacts in West Oakland. As noted in the Plan, implementation of the strategies will require sustained, coordinated actions by a number of entities, including numerous government agencies. Alameda CTC continues to be committed to ongoing engagement and coordination with the community. As noted at the last two Steering Committee meetings, many of the strategies will need to be defined and refined over time. Alameda CTC offers the following comments, focused on the draft strategies most relevant to the work of Alameda CTC; text in italics is directly from the draft Plan:

- *Strategy 39: The Alameda County Transportation Commission works with West Oakland residents and businesses to develop mitigations to short- and long-term impacts caused by the construction of the 7th St Grade Separation East Project and the implementation of other elements of the GoPort Initiative.* Alameda CTC continues to be committed to engaging with West Oakland communities, including residents and businesses, to ensure the appropriate mitigations are implemented as part of the 7th Street Grade Separation East and GoPort Freight Intelligent Transportation Systems projects are implemented.

- *Strategy 41: The City of Oakland collaborates with MTC and ACTC to consider a program for extending car sharing to low-income individuals and groups.* Alameda CTC is open to discussions with the City of Oakland and MTC regarding car sharing programs, including discussing funding opportunities through various grant programs administered by various agencies.

- *Strategy 84*: *The Alameda County Transportation Commission will continually engage with the community, at a minimum through participation in quarterly meetings of the WOCAP implementation committee, starting with the early planning and budgeting stages of transportation projects that are being developed by ACTC in West Oakland in order to ensure projects do not increase transportation impacts on residents. These projects will undergo appropriate reviews to assess the environmental and health impacts, and potential local benefits, and adopt associated mitigation measures so they do not result in a net increase in air pollution or health inequities for residents most impacted by the county's freight transportation system in West Oakland.* Alameda CTC agrees to engage regularly with the community during project planning and delivery and to participate in regularly scheduled local community meetings. In order to clarify the strategy, Alameda CTC proposes two changes:

    1. Remove reference to Caltrans in the Authority column.

    2. Revise the language to focus on early and continuous engagement with the community when Alameda CTC is planning, developing and delivering a project in West Oakland. Alameda CTC respectfully requests to replace the draft language with the revised language that follows: The Alameda County Transportation Commission will engage early with the West Oakland community, including local existing community groups, on early project planning and delivery for projects where Alameda CTC is the project sponsor to ensure new projects do not increase transportation impacts on residents. These projects will undergo appropriate project reviews to assess environmental and health impacts, and potential local benefits, and adopt mitigation measures as required so that they do not increase health inequities and address air pollution for residents most impacted by the county's freight transportation system in West Oakland.

Alameda CTC looks forward to continuing to work with the Bay Area Air Quality Management District, West Oakland Indicators Project, and the entire Steering Committee, to advance the strategies identified in the Plan. Should you have any questions or would like to discuss the requested revisions, please contact Carolyn Clevenger, Director of Planning (cclevenger@alamedactc.org; 510.208.7496).

Sincerely,

Tess Lengyel for

ARHTUR L. DAO
Executive Director, Alameda County Transportation Commission

cc: Tess Lengyel, Deputy Executive Director of Planning and Policy
Carolyn Clevenger, Director of Planning

September 9, 2019

Alison Kirk & Ada Marquez
Principal Environmental Planners
Bay Area Air Quality Management District
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**Comments on the "West Oakland Community Action Plan" Draft Plan and Draft EIR**

The undersigned organizations, businesses and unions represent interested stakeholders in Oakland's thriving seaport and intermodal transportation sector. We are committed to the success of the Port of Oakland and our role as partners in a seaport which is the largest logistics and supply-chain enterprise in Northern California. The Port of Oakland's customers are ultimately responsible for over 27,000 jobs, $2.5 billion in local income, $500 million in local purchases, and $280 million in state and local taxes.

We are also proud of our collective track records to dramatically and significantly reduce air emissions from seaport operations. From 2005 to 2017 seaport emissions initiatives and air quality improvement efforts in Oakland have yielded successful reductions of 91% in SOx, 80% in Diesel Particulate Matter, and 30% in NOx. More impressive still, these reductions occurred while overall container volumes increased by 6.5% over the same period. By conservative estimates, the international trade community and intermodal supply chain has collectively invested over $5 billion in efforts to reduce air emissions from seaport operations over the past 15 years in California alone.

It is because of our long history of investing, working, and living in California's port communities and our experiences with the need to significantly invest in improved local air quality that we are also aware of the importance of addressing incompatibility of our industrial uses and local residential uses in nearby communities and neighborhoods.

Under AB 617, it is incumbent on everyone to work together to address the air quality issues related to land use conflicts, including those which result in proximity-based residential impacts. Our industry is working hard in Oakland to preserve the existing industrial buffer zones, maintain infrastructure separations, and to stop residential encroachment that would exacerbate these impacts.

To the extent that the West Oakland Community Action Plan (WOCAP) also proposes to protect local residential areas through the separation of these incompatible land uses, we respectfully request that the Plan be sufficiently revised to ensure that the City of Oakland does not create new neighborhoods in locations which will *unnecessarily expose* thousands of new residents to industrial emissions and *increase* the conflicts between incompatible residential and industrial land uses within West Oakland.

Incompatible Land Uses

Evaluation of incompatible land uses which result in proximity-based exposures to sensitive receptors are what drive analyses of potential localized impacts under AB 617 generally and the CARB Community Air Protection Blueprint. Consistently, avoidance, mitigation, and preventing incompatible land uses and the subsequent detrimental impacts on air quality and public health which can result from these instances of incompatibility are a central part of the proposed WOCAP:

> "Reducing exposure of the most vulnerable members of the community is a priority of this Plan. Steering Committee members helped identify sensitive receptor locations in West Oakland and developed strategies to reduce exposure in these areas." (PROXIMITY-BASED GOALS, pg. 4-5)

The Plan is therefore built around a focused review of geographical impacts to West Oakland residents and to achieve "Proximity-based Goals" one of the challenges acknowledged by this Plan is the need to minimize the impacts of incompatible land uses.

When analyzing existing land uses, it is necessary to acknowledge that these issues are challenging in large part because both sets of competing uses are lawfully permitted, previously approved, and have utility to a community. For example, current residential uses have every right to seek to improve the living conditions of their neighborhoods as do current industrial businesses have every right to continue to operate and grow their local economy. Neither use is better or worse than the other but when made proximate to one another they create negative incompatibilities.

The WOCAP seeks to address this tension of competing and incompatible uses through supplemental and mitigating measures which may alleviate the tension of these uses in existing residential areas of West Oakland. However, what the WOCAP fails to provide for are the equally important policies which will avoid the encroachment of new residential housing into existing industrial areas.

The creation of new housing in industrial zones and the elimination of industrial buffers would immediately escalate land use conflicts and result in substantial increases in the exposure for sensitive receptors in West Oakland and which can threaten existing jobs and businesses. These outcomes are antithetical to AB 617, CARB guidance and the stated policy outcomes and goals of the WOCAP.

Therefore, for this Plan to be effective at achieving its goal of minimizing proximity-based residential impacts, it must address not just impacts on existing residential uses from existing industrial uses but also affirmatively limit the introduction of new residential uses into areas of existing industrial operations and encroachment into the existing industrial buffer zones.

Newly Proposed Residential Districts Would Create Additional AB 617 Impact Zones Which Are Unaccounted For in the WOCAP and Undermine WOCAP Goals

The Goals of the WOCAP are to "protect and improve community health by eliminating disparities in exposure to local air pollution" to specific 2025 and 2030 benchmarks. The "2025 targets are to improve air quality exposure in West Oakland neighborhoods so that *all* neighborhoods meet the exposure conditions of today's *average* West Oakland neighborhood."

The City of Oakland is currently considering two proposals for the creation of new residential communities within the WOCAP AB 617 planning area. These proposals would create new and presently unaccounted-for residential impact zones by 2025.

Specifically, the City is considering two new residential zones and concentrations of new sensitive receptors in the WOCAP which are not currently covered by an existing identified Impact Zone:

- Howard Terminal. The Oakland A's are proposing to site at Howard Terminal a development with 3,000 new residential units, a 35,000 seat open-air stadium, public recreation spaces, a hotel, and 1.5 million square feet of commercial office and retail space. This project is currently in the exploratory environmental phase with the City of Oakland potentially considering a General Plan amendment (*https://www.oaklandca.gov/documents/notice-of-preparation-of-draft-eir-for-the-oakland-waterfront-ballpark-district-project*).

- Jack London Maker District. The City is proposing to create a "Jack London Maker District" in its draft Downtown Oakland Specific Plan. (*https://www.oaklandca.gov/topics/downtown-oakland-specific-plan*) This area, which straddles into the AB 617 WOCAP area, would eliminate the current buffer zone between Seaport uses and residential uses by separating those industrial operations from Downtown and Jack London Square encroachment.

These two proposed project areas are contiguously located within the southeast corner of the currently identified WOCAP area. However, neither of these areas are currently identified in the WOCAP as Residential Zones or locations of Sensitive Receptors. As annotated with the red circles over the SE corner of the "AB 617 West Oakland" area (WOCAP Figure 2-3), these represent potential new "Zone 8" for Howard Terminal and "Zone 9" for the Jack London Maker District:

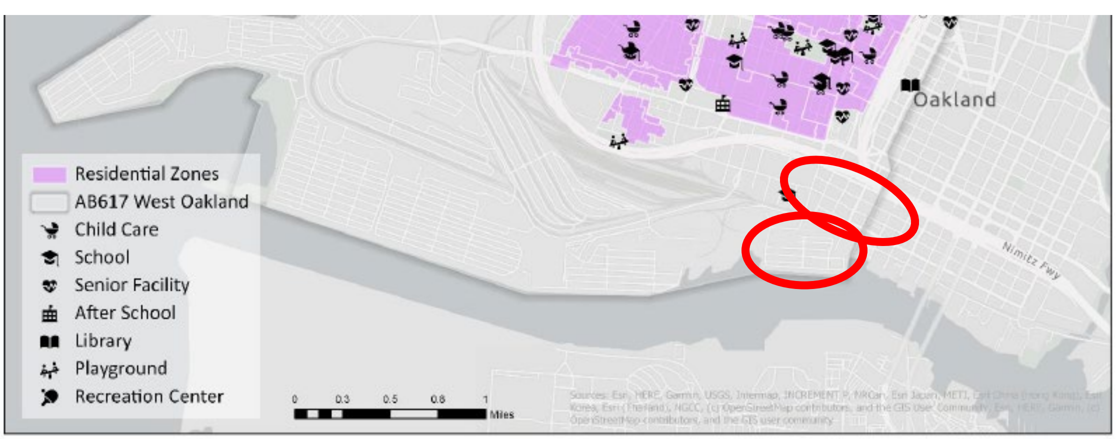
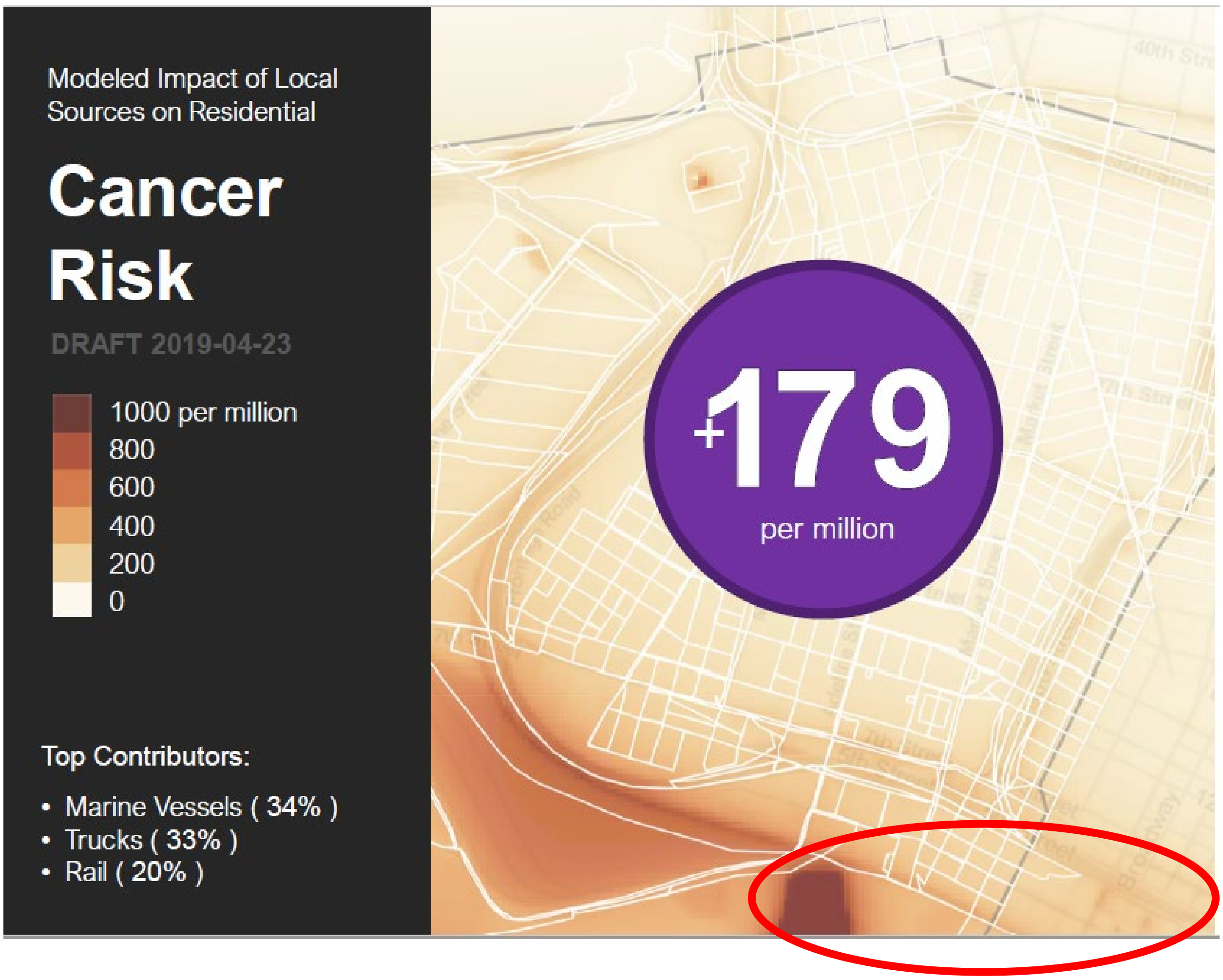



*Figure 2-3. Residential Zones and Sensitive Receptors in West Oakland*

The BAAQMD's models which are underlying the WOCAP have identified these as areas which are highly susceptible to additional air quality impacts. In fact, the Southeast corner of the planning area has the *highest* potential impacts of anywhere within the West Oakland area. As noted on the BAAQMD "Cancer Risk Draft 2019-04-23" modeling map, presented to the District Board on May 1, 2019 in advance of the WOCAP release, the area immediately upwind of Howard Terminal and the Jack London Maker District areas is the only area in which a "Modeled Impact of Local Sources on Residential Cancer Risk" of at least 1,000 per million exists in the local West Oakland modeling domain:




The existing emissions profiles for these proposed residential zones would be greater than the exposure profiles for all other existing zones. These zones would be facially out of compliance with the WOCAP goals and have estimated excess cancer risk profiles many times greater than most of the existing impact zones in West Oakland. Revised Figure 5-13 below illustrates just how far these proposed new residential zones would be out of compliance with the WOCAP goals and how they compare to the existing residential zones identified in the WOCAP:

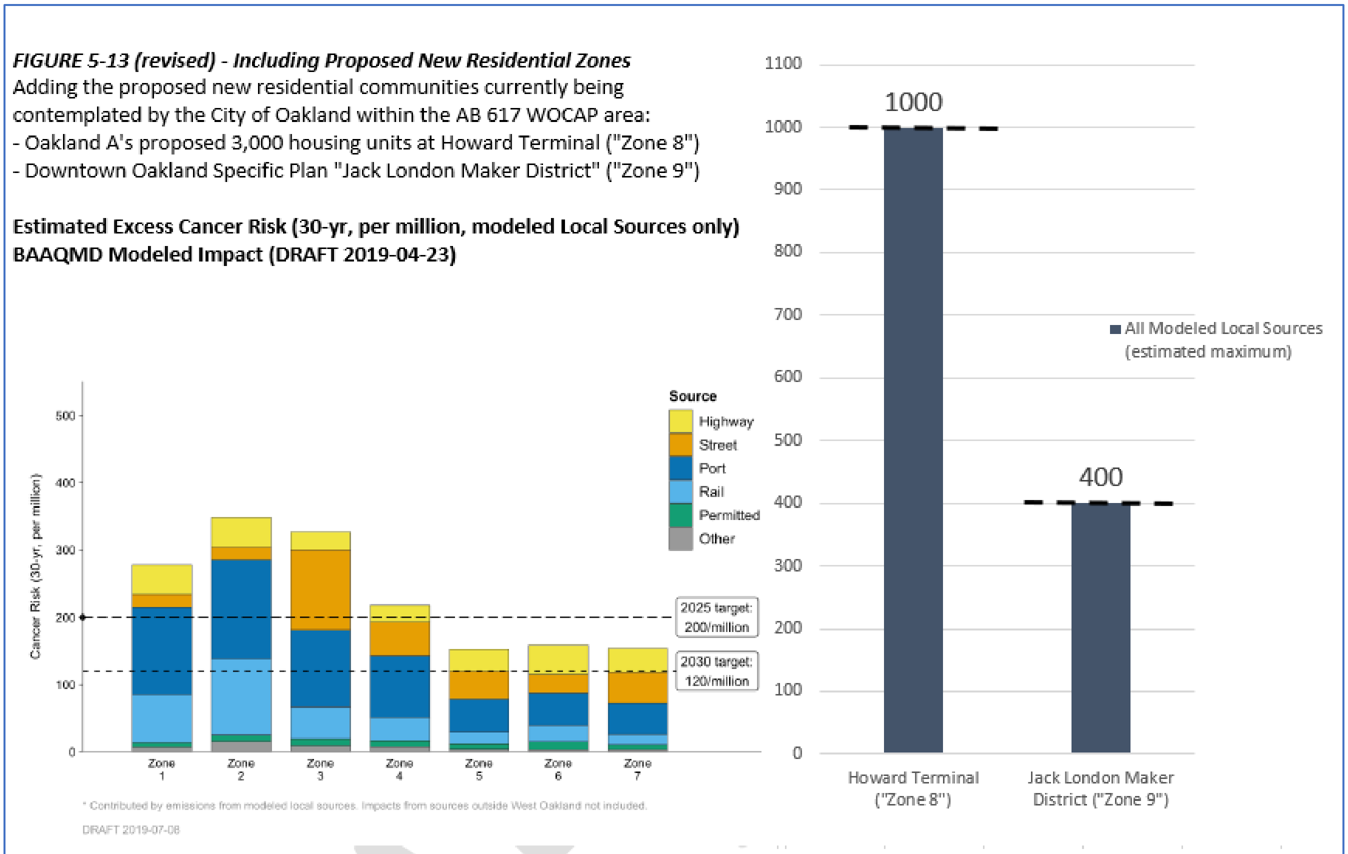


*Figure 5-13. Targets and Source Apportionment for Cancer Risk in 2017 (Baseline)*

Moreover, these risk profiles are based solely on modeled local sources of cancer risk and only those PM impacts which were included in the community scale modeling. They do not account for other PM impacts which are potentially more impactful to these new residential areas than any of the other existing neighborhoods in West Oakland.

For example, by far and away, the largest local source of PM2.5 by volume in West Oakland is “Commercial cooking” with 20.63 tons per year, compared to the next highest sources of PM2.5 of “Street: Road dust” at 14.74 tpy and “Highway: Non-truck vehicles” at 12.22 tpy. (WOCAP Table 5-2) But, commercial cooking emissions are not included in the community-scale modeling. The Plan surmises that commercial cooking emissions, despite their volume, may be of less consequence to most of the residents of West Oakland “especially given that the majority of commercial cooking facilities are generally downwind of the West Oakland community.” (Appendix A, pg. A-107)

This will not necessarily be true for the Howard Terminal or the Jack London Maker District, because of their location at the extreme southeast corner of the WOCAP planning area. As the WOCAP points out, winds in West Oakland are “most frequent from the west and west-northwest at speeds of 2.0-6.0m/s (4.5 – 13.4 mph) (Figure 3-2).” (Appendix A, pg. A-57, A-58):

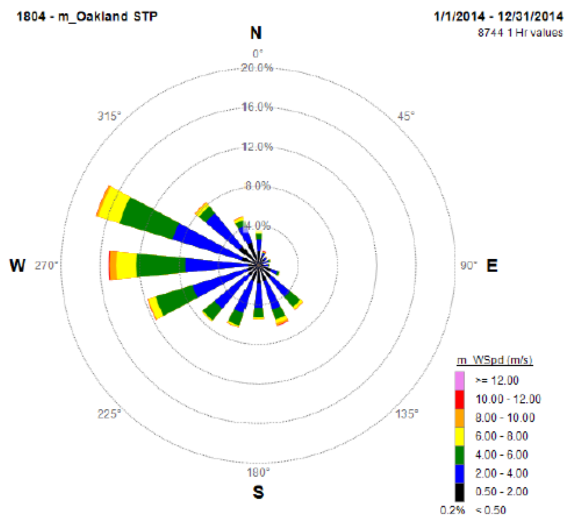



**Figure 3-2.** Annual windrose at the Oakland Sewage Treatment Plant (OST) in 2014. Compass sectors indicate the direction from which the wind is blowing. The percentage of calm winds (WSpd < 0.5 m/s) are also indicated.

As a result of the prevailing WNW winds, most emissions will be blown to the ESE. This is the precise location of the proposed Howard Terminal and Jack London Makers District residential zones.

Not surprisingly, these are also the same areas of the most impactful concentration of existing emissions which are already modeled. There is no rational reason to presume that this corner of West Oakland will not also be the recipient of the emissions from currently non-modeled emissions, such as those from "commercial cooking" given that this category is the most prolific source of local PM2.5 emissions in West Oakland.

<u>Growing and Maintaining Industrial Uses in Industrial Areas With Minimal Congestion Threatened by Howard Terminal and Jack London Maker District Proposals</u>

The A's proposed project at Howard Terminal will displace an active truck staging yard which has successfully removed many trucks from the West Oakland community. The Jack London Makers District threatens to limit the usage and supporting warehouse infrastructure surrounding the Port's main overweight truck corridors. When both of these current truck zones would then be opened up to new residential development, it is not just the impacts on the new residents that would be significant, but the WOCAP should also evaluate the impacts that these new residential developments will have on displacing and creating congestion in existing freight operations that in turn impact existing West Oakland residents and exacerbate AB 617-related concerns and issues.

Howard Terminal currently handles over 325,000 trucking transactions every year and the 3rd street overweight corridor facilitates tens of thousands of truck moves that must be handled in near proximity to the Port. When these development proposals displace these operations, it will inevitably lead to increased pressure to find additional truck parking, develop new truck, chassis, container, and equipment staging facilities, new port-supporting and industrial warehouse space, and transloading and street-turn areas. Such pressures will likely result in increased truck congestion, increased truck hours of delay, degraded levels of service on truck-intense intersections, and the resulting increased idling and emissions associated with all such introductions of unnecessary transportation inefficiencies and vehicle conflicts.

The displacement of truck parking and truck services in Howard Terminal, and the existing Port-support areas and in the current industrial buffer along 3rd street west of Broadway slated for residential conversion, runs directly counter to the land use strategies proposed by the WOCAP.

Specifically, the Howard Terminal and Jack London Maker District proposals run directly counter to WOCAP Land Use Strategies #5 and #6 and #8, which seek to minimize truck services located within the freeway boundaries and to move those activities to the Port, Army Base and its related industrial-service areas along the 3rd Street corridor, such that “any relocated businesses do not cause exposure issues at the new location.” In addition, WOCAP Land Use Strategy #26 calls specifically for a yard almost exactly along the lines of the current operations at Howard Terminal, and that this facility will be at a logistics center which is not adjacent to West Oakland residents.

In addition to existing truck displacement issues, there will be new and additional local vehicle traffic going to and from these new development parcels, and this additional traffic will create additional, new truck congestion and idling emissions. These impacts have not been thoroughly analyzed yet for either of the projects. However, even the minimal nod given to the issue of new truck congestion by the Oakland A’s recent AB 900/AB 734 submission to the state Office of Planning and Research (evaluation of only 7 truck intersections and presumption that the project’s improvements actually decrease truck delays) highlights the challenge that should be considered as part of the WOCAP. The “Emissions from Port Truck Idling Delays Due to Project” evaluation of Howard Terminal would result in increases of at least 27 mt of CO2e annually. (A’s Supplemental AB 734 Application, Exhibit A, Table OP-11) (*http://www.opr.ca.gov/ceqa/docs/ab900/20190827-AB_734_OaklandAthletics_Exhibit_A-Supplemental_GHG_Memo.pdf*)

Further, emissions from construction were not included in the WOCAP model. The WOCAP found that because “construction activity is highly transient, changing in scope and location from year to year” it would not include these emissions due to “uncertainties with 2017 emissions estimates and the spatial distribution of construction activities in the community.” (WOCAP, Appendix A, A-108) However, they are nonetheless a significant factor for local emissions impacts directly, and when there is a large, intense multi-year project – such as that proposed at Howard Terminal - the activity is not transient, it is of a known and planned scope, and concentrated in the community. In the A’s Supplemental AB 734 Application, Table 4 makes these emissions impacts plain:

**Table 4. Emissions Sources**
**Oakland Waterfront Ballpark District Project**
**Oakland, California**

| Proposed Project | | |
|---|---|---|
| **Type** | **Source** | **Description** |
| Construction | Off-Road Equipment | Direct emissions from diesel off-road equipment exhaust; Indirect emissions from electricity use for electric off-road equipment |
| | On-Road Mobile Sources | Direct emissions from running, idling, and starting exhaust |

And, Table 6, summarizes the CO2e emissions anticipated by the construction at Howard Terminal:

**Table 6. Construction GHG Emissions**
**Oakland Waterfront Ballpark District Project**
**Oakland, California**

| Year | $CO_2e$ Emissions (MT/year) | | | |
|---|---|---|---|---|
| | Diesel Off-Road Equipment | Electric Off-Road Equipment | On-Road Vehicles | Total |
| 2020 | 366 | 0 | 36 | 402 |
| 2021 | 2,560 | 17 | 2,738 | 5,315 |
| 2022 | 2,814 | 71 | 3,205 | 6,089 |
| 2023 | 1,976 | 24 | 1,768 | 3,768 |
| 2024 | 2,287 | 0 | 1,346 | 3,632 |
| 2025 | 2,151 | 149 | 1,818 | 4,117 |
| 2026 | 2,926 | 193 | 1,893 | 5,012 |
| 2027 | 1,895 | 44 | 1,232 | 3,171 |
| | | | Total GHG Emissions from Construction (MT) | 31,507 |

If the A's OPR submission can analyze the CO2e impacts of its project, there is no reason that the WOCAP emissions of interest including DPM or PM2.5 cannot be likewise estimated and projected. Since these impacts can therefore be anticipated, they should be articulated, measured and captured in the WOCAP. Otherwise, the WOCAP is proposing penalizing freight-related emissions sources doing business at marine terminals in the Port of Oakland but ignoring residential-construction related emissions sources doing business at a marine terminal in the Port of Oakland.

That's a double whammy for the Port and for the community; these construction activities, especially in the heart of a working seaport, will not only displace trucking facilities but will also result in residual delays and congestion of trucks and vehicle traffic off-site and in West Oakland generally. These same residual delays will not only make it harder for port trucks to conduct business in Oakland and increase expenses, but this congestion will have even greater residual congestion impacts on the community and community air quality will suffer as well.

CONCLUSION

Given all these factors, it is readily obvious that the creation of these new residential areas will expose thousands of potential new residents to air emissions at potentially impactful levels and render the WOCAP ineffective at reaching its goals in 2025 and 2030.

It is critical that we work to avoid developments which are antithetical to the purpose of AB 617, the stated goals of the WOPAC, and to the public health of residents and the economic health of the Northern California megaregion. We look forward to working with the BAAQMD, WOEIP, and other stakeholders to avoid these unnecessarily backward outcomes.

Sincerely,

***Agriculture Transportation Coalition***
***American Waterways Operators***
***BNSF Railway***
***California Trucking Association***
***Customs Brokers and Forwarders Association of Northern California***
***Devine Intermodal***
***GSC Logistics***
***Harbor Trucking Association***
***Inlandboatmen's Union of the Pacific***
***International Longshore and Warehouse Union – Local 10***
***International Organization of Masters, Mates & Pilots***
***Pacific Merchant Shipping Association***
***Quik Pick Express, LLC***
***SSA Terminals***
***Transportation Institute***
***Union Pacific Railroad***

Bay Planning Coalition



September 9, 2019

Alison Kirk
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

RE: Owning Our Air: The West Oakland Community Action Plan Draft

Dear Ms. Kirk:

The Bay Planning Coalition is a non-profit, policy advocacy organization with over 150 members across a range of industries who collectively advocate for strong economic growth while protecting the environmental sustainability of the region. We write to comment on the draft "Owning Our Air: The West Oakland Community Action Plan" (the Plan). We applaud the ambitious goal of the Plan to improve the air quality and corresponding health impacts in West Oakland but believe there are some opportunities for clarification and revision to strengthen the Plan for the benefit of both West Oakland residents and for the Steering Committee partners. Our recommendations are as follows:

**Cargo and Ship Call Forecasts**

Targets within the Plan are predicated on an analysis by the California Air Resources Board that forecasts a 5% growth rate for both cargo and ship calls at the Port of Oakland, which are overinflated relative to recent trends and similar assessments done by the Bay Conservation & Development Commission (BCDC). Ultimately, this skews the focus of the plan onto different source categories, creating a false sense of where the priorities should be for emissions reductions. We recommend that the Plan should instead rely on the cargo forecasts adopted by BCDC, which assumes a 2.2% growth rate. Moreover, the Port has consistently seen a decreasing number of ship calls per year for the past 8 years, so an assumed 0% growth rate would be appropriate.

**Ambitiousness of Plan Targets**

The Plan has developed targets to reduce Diesel Particulate Matter (DPM), Fine Particulate Matter ($PM_{2.5}$), and Cancer Risk by substantial levels by 2025 and 2030. Language on page 4-4 of the Plan conceded that "The 2025 and 2030 targets are ambitious for the...timeframes"..."[They] are reflected in the Plan Goal but should be considered too aspirational for a target with the Plan's timeframe."

Bay Planning Coalition



While we do not take issue with the ambitious targets identified in the draft plan, we do think it is problematic to make such an admission in this document for the following reasons:

- Ambitious, infeasible targets may create a sense that the Plan is weak and/or designed to fail, rather the Plan should instill faith in the West Oakland Community and the public at large with specific measurable, and achievable goals.
- Overly ambitious targets raise questions as to whether Plan partners and regulated parties are going to be given leniency in their role to achieve the goals, or if they are being held to unrealistic standards. The uncertainty here may make it difficult to create any kind of standard or system of accountability.
- Since this Plan is on track to be the first AB 617 community plan in the state to be adopted, we are concerned that it will serve as a precedent for subsequent plans to set targets that are unrealistic or lack pragmatism.

## Prioritizing Strategies Consistent with AB 617 and CARB Blueprint

Both the AB 617 legislation[1] and the Air Resources Board (ARB) Blueprint[2] document highlight the importance of understanding the relative contribution of different sources to the cumulative effects burden in a community and including that information in the development of Community Emission Reduction Plans (CERP). The Plan includes a source apportionment analysis that attempts to identify the relative contributions of different sources to the cumulative emissions/risk burden in the West Oakland. However, it does not appear that the extensive list of recommended strategies has been assessed against the relative benefits or cost-effectiveness of addressing different sources in the community. The plan includes strategies to reduce risk/emissions associated with essentially all sources in the community regardless of their relative contribution to community impacts.

We recommend that the list of proposed strategies be reviewed thoroughly to identify and advance only the most cost-effective strategies that focus emissions/risk reduction efforts on sources where meaningful reductions can be achieved. This approach would be consistent with legislation and the Blueprint and could help focus the Plan on strategies that would be most effective in achieving its targets.

## Diesel Particular Matter Targets - 2017 Baseline

The 2025 and 2030 targets for Diesel Particulate Matter emissions are based on a 2017 baseline. This ultimately does not take into account the significant

[1] California Health and Safety Code Section 44391.2 (b)(2)
[2] ARB Community Protection Plan Blueprint – Appendix C: Criteria for Community Emissions Reduction Programs; pp. C-15, C-20.

Bay Planning Coalition



progress made by the Port of Oakland in preceding years; in fact, the Port reduced its emissions by 81 percent between 2005 and 2018. This progress should be recognized within the Plan and taken into consideration in any corresponding emission reduction strategies and control measures.

In addition, it is important that actual monitoring data be prioritized in order to assess the progress towards these goals compared to the 2017 baseline. If not, the benefits from these proposed actions will be based solely on modeling results that are not verified by actual air quality measurements.

**Encouraging Cooperation in Implementation**

The Plan has defined several key agencies with roles in the implementation of the Plan, including: BAAQMD, City of Oakland, MTC, Port of Oakland, AC Public Health Department, CARB, ACTC, CalTrans, and more. Given that each of these entities has a degree of sovereignty, it is unclear how cooperation will be encouraged or incentivized to carry out the Plan's strategies, or to what extent the entities will be held accountable. We recommend that the Plan identify funding sources for incentives, specify whether funding would be annual vs. continuous, and determine how much funding will be available.

**Strategy #9**

We believe that Strategy #9, "The City of Oakland develops a plan to limit the hours that trucks can operate in the community", may result in unintended consequences. This type of limitation may ultimately cause more congestion and idling, thus resulting in heightened net emissions which is counterproductive to this goals of the Plan. We recommend that Strategy #9 be removed or better align with goals of West Oakland Truck Management Plan.

Thank you for the opportunity to comment on the Plan. Please do not hesitate to contact me if you have any questions or concerns.

Sincerely,

JAC

John A. Coleman
Chief Executive Officer

CITY OF OAKLAND

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September 6, 2019

Alison Kirk
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**Subject:** **Comments on the AB617 Draft Plan *Owning Our Air: The West Oakland Community Action Plan***

Dear Ms. Kirk,

Thank you for the opportunity to review and comment on the AB 617 Draft Plan *Owning Our Air: West Oakland Community Action Plan* ("WOCAP" or "Plan"). Concurrently with this letter on the Plan, the City of Oakland (City) is also providing a separate letter commenting on the associated Draft Environmental Impact Report (Draft EIR).

The City greatly appreciates the time and effort from the Bay Area Air Quality Management District (BAAQMD), West Oakland Environmental Indicators Project (WEOIP), and the broader Steering Committee required to develop the WOCAP. While the City is not a responsible agency (see concurrent Draft EIR comment letter), the City supports the Plan's overall goal to protect and improve community health by eliminating disparities in exposure to local air pollution, and the City recognizes the multi-stakeholder engagement and cross-agency collaboration that this work will require.

The City's WOCAP comments are in two categories: general comments to the Plan, particularly in regards to the implementation phase, and (2) edits to the Plan's text.

**General WOCAP Comments**

The City agrees that the recommended strategies will need to be refined and fleshed out as the Plan is implemented (as mentioned in the introduction to Chapter 6) and suggests that the Steering Committee establish a framework to continually evaluate, update and amend these strategies throughout the five-year implementation timeframe. The City is committed to a collaborative evaluation process with the community stakeholders and the state, regional and local agencies.

The suggested implementation framework in Attachment A to this letter recommends the types of considerations and guiding questions to apply to each strategy in coordination with the multiple stakeholders and includes examples of how some specific strategies may be amended using this Framework. This is not a comprehensive analysis of each strategy, but rather an initial review that we hope to continue with stakeholders as part of a collaborative evaluation process during the implementation phase.

The City also recognizes, and recommends that the Plan address, the fact that many of these strategies lack defined funding sources for evaluation and implementation. The ambitious five-year implementation will not occur without dedicated resources, and City-led strategies may take longer to commence without funding for City staff and support. The City is willing to partner with the WOCAP stakeholders to explore and identify external funding sources to support this important work.

**WOCAP Text Edits**

1. As noted in the City's comment letter to the Draft EIR sent concurrently with this letter, the term "responsible agency" has a specific meaning under the California Environmental Quality Act (CEQA), and as noted, the City is not a responsible agency under the Draft EIR. Therefore, throughout the plan, we recommend removing "responsible authority/agency" references. Specific recommended text revisions follow:

    a. On page 1-1, "The Steering Committee agreed on the Strategies and identified the government agencies that ~~are responsible for~~ <u>have jurisdiction over</u> implementing the Strategies."
    b. On page 6-1, "The Strategies and Further Study Measures are listed in Table 6-1 and Table 6-2 at the end of this chapter, along with the ~~responsible~~ authorities <u>with jurisdiction over implementing the measures</u> and <u>the</u> implementation schedule."
    c. On page 6-6 "And, as ~~the~~ various ~~responsible~~ agencies <u>engage on evaluating and</u> implement<u>ing</u> the Plan measures, refinements or ideas for additional measures may emerge."
    d. Finally, on page 6-7 to 6-8, "In addition, Steering Committee members, community members, business owners, and other stakeholders will likely need to communicate with the ~~responsible~~ <u>agencies necessary to implement the Strategies</u> to ensure their continued support for Plan strategies and the resources needed for implementation.

2. Some of the Strategies should be factually corrected. Specific recommended text revisions follow:

    a. On pages 6-15 to 6-24, Table 6-1, Strategy 72 – Change to "Consistent with the ~~Oakland~~ Healthy Development Guidelines..." (While the City collaborated with the community, the Healthy Development Guidelines (HDGs) are not a City of Oakland-led initiative).
    b. On pages 6-15 to 6-24, Table 6-1, Strategy 83 – Change to "The City of Oakland ~~revises~~ <u>studies revising its</u> standard conditions of approval ~~for conditional use permits~~ for large projects to require "opt-up" to East Bay Community Energy's Brilliant 100 carbon-free electricity supply <u>or similar requirement</u>." (Standard Conditions of Approval apply to all City of Oakland projects requiring discretionary approval, not just those with conditional use permits).

We thank you for this opportunity to comment on the WOCAP and look forward to our continued collaboration.

Sincerely,

~~Ed~~ Manasse
Deputy Director, Bureau of Planning

cc: Ms. Margaret Gordon, WOEIP
Brian Beveridge, WOEIP
Elizabeth Yura, BAAQMD
Yvette DiCarlo, BAAQMD
Ada E. Marquez, BAAQMD
Alison Kirk, BAAQMD
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Micah Hinkle, City of Oakland
Jason Mitchell, City of Oakland
Daniel Hamilton, City of Oakland
Laura Kaminski, City of Oakland
Nicole Ferrara, City of Oakland
Joe Wang, City of Oakland
Richard Sinkoff, Port of Oakland

Attachment A: Implementation Framework

Attachment A – Implementation Framework

The Implementation Framework below suggests the types of considerations and guiding questions to apply to each strategy in the *West Oakland Community Action Plan* in coordination with the multiple stakeholders and includes examples of how some specific strategies in the Plan may be amended using this Framework. This is not a comprehensive analysis of each strategy, but rather an initial review that we hope to continue with stakeholders as part of a collaborative evaluation process during the implementation phase of the Plan.

| **Considerations** | **Examples** |
|---|---|
| **Jurisdictional Authority**<br>• Is the strategy attributed to the appropriate legal authority from another agency? | **Strategy #7** - These appear to be two different strategies and suggest separating them into: 1) revising business licensing procedures to capture truck visits per day (City of Oakland) and 2) Caltrans, BAAQMD, WEIOP work on air quality issues from truck parking leases. |
| | **Strategy #53** – The City of Oakland will have an active role in the planning, engineering, and permitting of this action, but Oakland Unified School District will have to manage the execution of day to day operations. |
| **Effectiveness of Outcome**<br>• Determine whether the strategy will be most effective at reducing emissions<br>• Will this strategy have other implications that have not been considered?<br>• How are we measuring success for this strategy? | **Strategy #33** –To prevent/mitigate disproportionate impacts on low-income households, we suggest that relevant stakeholders consider and mitigate equity impacts of increasing ticketing fees/penalties related to this Plan. |
| | **Strategy #41** – The City of Oakland currently has a free-floating car-share program operating in West Oakland that uses hybrid vehicles. Should this strategy also include other shared mobility options to this strategy, such as scooters, or a "bike share for all" low-income program? |
| | **Strategy #53 –** The Safe Routes to Schools program promotes alternate modes (bike/pedestrian) of transportation for AM/PM traffic associated with schools. It was not designed to handle all traffic. Road closures would force school traffic to other streets not appropriately designed for school traffic and could have unintended traffic impacts causing additional air quality impacts. |
| **Legality**<br>• Is the strategy consistent with relevant codes, laws or Cities ordinances/polices? | **Strategy #7 -** The City is unclear whether business licensing information can be legally disclosed to the public if it is collected. |
| | **Strategy #78 -** The City of Oakland has not "adopted" the Healthy Development Guidelines authored by community leaders, so the strategy should be changed to "The City of Oakland works with community partners to adopt a set of Healthy Development Guidelines that could apply to new building projects." |
| **Operational Feasibility**<br>• Are other policies, plans or actions already adopted or underway by the City to respond to or incorporate some of the strategies?<br>• Is there funding? | **Strategy #9** –Would the truck hour limits apply to all of West Oakland or only certain areas? Would these times of day be tailored to avoid children going to school etc.? Should we also stipulate that there will be privileged entry during restricted times for heavy-duty Emergency Vehicles (EVs), that are equipped with crash prevention technology (blind spot detection/cameras, etc.) since other cities have encouraged electric vehicle adoption in this way? |
| | **Strategy 37** – What is the intention behind long-term leases? How will the City ensure the vendor delivers on agreed terms with a longer lease? |

August 27, 2019

Brian Beveridge
Margaret Gordon
West Oakland Indicators Project
349 Mandela Parkway
Oakland, CA 94607

Dear Brian and Miss Margaret:

The Ditching Dirty Diesel Collaborative is very supportive of your efforts to develop strategies to reduce pollution, and exposure to pollution, as a member of the steering committee for the AB 617 process for West Oakland. Many of these strategies address diesel pollution, and thus are in line with Ditching Dirty Diesel's mission. But the Collaborative met recently to review the strategies proposed in the draft West Oakland Community Action plan that was released on July 23, 2019, and reviewed all the strategies regardless of whether they addressed diesel pollution or not. Below are the comments of the Collaborative on the proposed strategies. We hope these comments can be of use to you as you work with the rest of the steering committee and the West Oakland community to finalize the AB 617 plan for West Oakland.

General comments

1) A strategy should be developed to create a pollution emissions cap for West Oakland to ensure that cumulative emissions do not increase.

2) The Alameda County Transportation Commission recently set aside funding for freight-related pollution reduction strategies. A strategy should be developed that creates a mechanism to engage the steering committee in determining what to spend the funding on, and how to match this funding with other possible funding sources.

3) The Alameda County Public Health Department (ACPHD) regularly maps health rates and provides detailed spatial health analysis to support health outcome tracking and trends over time for the West Oakland Community Action Plan using data from the California State Office of Statewide Health Planning and Development (OSHPD) in the Health and Human Services Agency. OSHPD collects hospitalization, emergency department, and ambulatory care data with complete patient residence addresses and makes this available to local health departments. A

strategy should be developed to utilize this data help evaluate the health goals of the Action Plan.

Comments on Specific Strategies

#3 – Caltrans and ACTC should be added as co-authorities for this strategy.

#4 – This strategy should contain the same caveat as #6, which is that the Air District will provide emissions data and technical support to assist the City in these efforts and to ensure that any locations located outside of Oakland for industries to relocated are not in already overburdened areas or will not create new overburdened areas.

#7 – Business licenses should also be reviewed to determine if other Best Management Practices for the control of diesel emissions from the trucks that visit the facility can be added to the licensing requirements.

#21 – Add ACTC to the list of Authorities.

#22 – Add Caltrans projects to this strategy and add Caltrans to the list of Authorities

#25 – While the members of the Ditching Dirty Diesel collaborative generally support efforts to address gentrification and displacement concerns, we do not understand how this strategy intends to address potential changes in local pollution exposure by addressing these concerns. Further clarification of this strategy is needed to make this nexus clear.

#30 – Excessive idling has already been well established as a problem and rules have been passed to address it. Rather than just study this issue more, CARB and the Port should commit to a more expanded and aggressive enforcement program.

#38 – Rather than just study the effects of increased shipping on truck flow and congestion, the use of zero-emission trucks at the marine terminal and the impact on efficiency from hauling more loaded containers, the Port should commit to establishing actual reduction goals through strategies such as the use of incentives, increased enforcement and lease requirements.

#49 – This strategy should focus adopting these new technologies, especially the batter-powered lawn and garden equipment, on the Oakland Unified School District and the City of Oakland landscape and maintenance departments, for which an Air District grant program for this equipment already exists.

#51 – This strategy should include infrastructure safety improvements, and should require adoption of a Vision Zero program and goals.

#60 – Rather than just study the potential for using electric switcher engines, the Port should commit to actually employing this technology if the study shows it is feasible, using the funding identified in Strategy #46 to do so.

#70 – The Air District should work with the City of Oakland and the Alameda County Health Department to coordinate the development of clean air centers with the development of cooling centers, so the same facilities can provide both of these inter-related functions.

#71 – This strategy should explain how implementation of the State's Health in All Policies program will directly improve local air quality.

#72 - This strategy should require that any new smoking ban needs to be done in conjunction with tenant protection policies.

#73 – Because this is an overburdened area, this strategy should go beyond the state guidelines which requires air filtration for building of four floors or more, and require air filtration for all new habitable buildings.

#79 – This strategy should include expansion of home visiting programs to address in-home asthma triggers.

#80 – This strategy should be more general rather than list specific programs, and should say that the Alameda County Public Health Department, supported by the City of Oakland and AC Transit, should improve access to health care in West Oakland by increasing services and programs, reducing transportation barriers and addressing cultural competence in health care delivery. AC Transit should be added as an authority.

#81 – This strategy should be re-worded to state that the Alameda County Health Department should develop a program to connect their medically vulnerable clients to local energy efficiency programs to provide measures in their homes that will both improve health and reduce energy usage.

#84 – Implementation of this strategy to engage ACTA should begin immediately rather than waiting till 2022.

EAST BAY COMMUNITY ENERGY

***Submitted Via Email***
September 11, 2019

Henry Hilken
Director, Office of Planning and Climate Protection
Bay Area Air Quality Management District
375 Beale St, Suite 600
San Francisco, CA 94105

RE: West Oakland Community Action Plan

Dear Mr. Hilken,

East Bay Community Energy (EBCE) congratulates the West Oakland Environmental Indicators Project (WOEIP), the Bay Area Air Management District (BAAQMD), the Community Action Plan Steering Committee, and the residents of West Oakland for their leadership in developing the West Oakland Community Action Plan *Owning Our Air*.
EBCE welcomes the opportunity to comment on the Plan and looks forward to working with the Air District, the West Oakland community, its leaders and other stakeholders in implementing the plan and we are especially pleased by the role the plan developers have envisioned for EBCE, particularly in replacing the dirty peaker plant currently in Jack London Square with clean energy storage[1] and in providing carbon-free energy options for West Oakland residents and businesses[2].
In addition to what was identified in the plan EBCE sees other opportunities for partnering with the West Oakland Community to help improve its air quality[3]. Among them:

- Identifying opportunities to work with stationary sources in the area to help them become more efficient energy users and thereby lower their emissions;
- Engaging smaller businesses in energy efficiency efforts to help reduce their air emissions;
- Increasing the number of electric and ZEV vehicles, both light, medium, heavy and public transit;
- Increase the number of passenger EVs, including shared and personal, along with charging stations.

[1] Ref. "Stationary Sources" Recommendation #69
[2] Ref. "Stationary Sources" Recommendation #83
[3] See attached appendix document for more detailed comments

Beyond partnering on projects and programs EBCE can also support stakeholders' understanding of energy usage in the community on a more refined level. EBCE staff saw that the CEQA document distributed in support of the West Oakland CAP references PG&E system and regional electricity usage data to base performance measurements. We believe this data is too broadly scaled to provide the information needed to assess AB 617 energy objectives and that EBCE can support more locally scaled data needs. We look forward to discussing with the Air District and the community our ideas on how we can support the Plan.

Respectfully,

*Deidre Sanders*

Deidre Sanders
Director, Public Policy
East Bay Community Energy

## Appendix:  EBCE Areas of Opportunity with Air District and Community

- ***Strategy 14:*** *Battery Storage* - Explore development of incentive program for battery energy storage to help customers replace diesel back-up generators;
- ***Strategy 17:*** *Fuel Substitution Support* - EBCE is supporting (funding) Oakland's and other EBCE member communities' exploration of ways to eliminate natural gas from the built environment;
- ***Strategy 18:*** *EV Charging Infrastructure* **–** Installation of DC fast charging infrastructure; specifically, Level 2 charging for Medium and Heavy-Duty trucks;
- ***Strategy 21:*** *Freight Emissions Reductions* - Explore creation of a Sustainable Freight Advisory Committee that would look at ways to help reduce area freight VMT out of and in to the Port of Oakland;
- ***Strategy 36:*** *EBCE/Community Engagement* - Provide incentives to support community outreach efforts for workshops and other related activities;
- ***Strategy 41:*** *Encourage Growth of Zero Emission Car Share Options* – EBCE is currently working with the CEC to develop a 2021 CALeVIP incentive program that, If approved, will provide significant funding for car share charging infrastructure;
- ***Strategy 43:*** *Community EV Education Partnership* - EBCE can support outreach and sponsor customer awareness events like Ride and Drives;
- ***Strategy 44:*** *EBCE Infrastructure Charging Incentives* - EBCE is developing a CALeVIP incentive project that, if approved, will create incentives for EV charging infrastructure 2021-2024.
- ***Strategy 48:*** *EBCE EV Rate Design* – To benefit all classes of electric vehicles that operate in West Oakland and throughout the County to ensure driving them is cheaper than vehicles using fossil fuels.
- ***Strategy 49:*** *Supporting Clean Off-Road Equipment (CORE) Replacement* - EBCE is working with external stakeholders to create incentives and technical support to align with other programs (e.g., CORE Voucher; PG&E Fleet Ready) for off-road equipment (e.g., forklifts)

**Comment: CAP Appendix**

***Pg. D-1:*** We respectfully suggest adding the following description for EBCE under Appendix D: Government Collaboration EBCE is a Joint Power Authority that includes membership from eleven (11) cities in Alameda County, and the County itself. EBCE's Board of Directors is made up of elected officials from each of its member communities, and EBCE staff closely coordinates with each of its local government partners on transportation and goods movement electrification.

**Comments: Draft CAP EIR**

***Page 3.2 - 36 - Paragraph 3-5:*** Currently states:

*Electricity to Alameda County, including West Oakland, is supplied by Pacific Gas and Electric (PG&E).*

Please correct to state that East Bay Community Energy (EBCE) is the electric power service provider for Oakland and most of Alameda County beginning in 2018. As the County's community choice aggregation program, EBCE buys and develops clean electric power for its customers and PG&E ensures this power is safely and reliably delivered through its transmission and distribution system.

***Page 3.2 - 38:*** We would appreciate clarification of this statement:

*Combustion emissions from gasoline and diesel fuels would be displaced by combustion emissions from natural gas, which is the primary fuel used for generating electricity in the district.*

We also believe that, as the Plan identifies PG&E as the electric power provider for Alameda County, the reference natural gas as “the primary fuel used for generating electricity in the district.” also refers to PG&E’s power sources. Please reference EBCE's electricity mix from this cite in the Plan’s assessment. https://ebce.org/wp-content/uploads/Item-11-Power-Content-Informational-Item.pdf

Additionally, EBCE respectfully requests that its Strategy comments provided for the Plan be applied to similar EIR Strategies.

EAST BAY
MUNICIPAL UTILITY DISTRICT

ALEXANDER R. COATE
GENERAL MANAGER

September 6, 2019

Ms. Alison Kirk
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

RE: Assembly Bill 617 West Oakland Community Action Plan

Dear Ms. Kirk:

The East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the West Oakland Community Action Plan (CAP). The CAP project area (Project Area) is located in the West Oakland neighborhood of Oakland, CA, as defined by the California Air Resources Board (CARB) in compliance with Assembly Bill (AB) 617.

EBMUD provides critical water and wastewater services to protect public health and the health of the San Francisco Bay. EBMUD's water service area includes 1.4 million customers in Alameda and Contra Costa Counties and its wastewater service area includes 685,000 customers. Both service areas include the Project Area. EBMUD operates one of its maintenance centers and its Main Wastewater Treatment Plant (MWWTP), including portions of its interceptor system, within the Project Area. Air emissions from the MWWTP are regulated by the Bay Area Air Quality Management District (Air District).

**BACKGROUND**

CARB developed a Community Air Protection Program to implement AB 617. West Oakland is one of ten communities selected by CARB to participate in the program, and the West Oakland Steering Committee (WOSC) was formed by the Air District to implement it. EBMUD is a member of the WOSC and appreciates the opportunity to work collaboratively with the Air District and the WOSC on this important initiative.

EBMUD has reviewed the CAP and respectfully submits the following comments.

**COMMENTS**

Draft Strategy #7: *The City of Oakland revises business licensing procedures to require current and proposed businesses to disclose truck visits per day and works with Caltrans to determine the number of trucks that park in the Caltrans right-of-way near West Oakland. Caltrans works with WOEIP and the Air District to address air quality issues from truck parking leases, such as by modifying leases to allow for collecting surveys and partnering with the Air District and CARB to allow enforcement access.*

Comment: Please clarify the definition of "truck." EBMUD has facilities located in the Project Area as well as a fleet of vehicles—light, medium, and heavy duty—that must be used in the course of installing, repairing and replacing critical drinking water and wastewater infrastructure in the Project Area. It is not clear to what extent this strategy would apply to EBMUD and its vehicles which are needed in order to perform its essential public service. EBMUD's vehicles utilize BACT and are in compliance with all existing local and state air requirements including the Heavy Duty Public and Utility Fleet Rule. Additionally, EBMUD class I-III vehicles are in compliance with all SMOG program requirements EBMUD is concerned that limiting the use of vehicles within the project area will limit EBMUD's ability to respond effectively in situations where critical water and wastewater infrastructure requires repair or replacement.

Draft Strategy #8: *The City of Oakland amends existing City Ordinances and Administrative policies to list new truck yards and truck service, repair, and fueling businesses as prohibited uses within the area of West Oakland that is inside the freeways (excluding the Port, OAB, and 3rd St. corridor of Jack London Square from Brush St. to Union St.).*

Comment: Please clarify the definition of "truck" and "truck yards." It is not clear if existing EBMUD facilities, which include vehicle storage, repair, and fueling equipment, would be prohibited under this strategy. Further, the blanket prohibition of the development of new truck yards could be a disadvantage for the Project Area. Yard development should be permissible for essential public service utilities in order to reduce the time for EBMUD to respond to water emergencies which will minimize the amount of time customers are without water and to minimize the potential environmental impacts from water main breaks and/or sanitary sewer overflows. We recommend that instead of a blanket prohibition that this strategy be revised to consider essential public service and include language for case-by-case exemptions as appropriate when there is a net benefit to the Project Area.

Draft Strategy #9: *The City of Oakland develops a plan to limit the hours that trucks can operate in the community.*

Comment: Please clarify the definition of "trucks" relevant to this strategy. EBMUD crews respond at any time of day—24 hours a day, seven days a week—to water infrastructure repairs (e.g., water main repairs). Delaying response to main breaks can result in impacts to customers, including loss of drinking water service, property damage from flooding and potential impacts to the environment. Further, EBMUD discharges are regulated under federal NPDES permits and require that EBMUD respond immediately to control the discharges to minimize impacts to receiving waters. Please ensure that this strategy includes exemption language for hour limitations for essential public services and that adoption of such a restriction will not impede compliance with other regulatory mandates.

Draft Strategy #67: *The Air District proposes new regulations to reduce emissions from wastewater treatment plants and anaerobic digestion facilities, such as a regulation to reduce emissions of methane, reactive organic gases, and oxides of nitrogen by 2019.*

Comment: Please add a clear reference to the specific regulation—Rule 13-4—that the Air District is developing for this intended purpose.

Draft Strategy #68: *The Air District proposes a regulation to reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020.*

Comment: It is EBMUD's understanding after meeting with representatives of the Air District on August 28, 2019, that the intent of this strategy is to proposed amendments to existing Rule 8-5 and not to create a new regulation. EBMUD requests that the strategy be reworded to say: "The Air District proposes amendments to Rule 8-5 to further reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020."

Draft Strategy #77: *The California Office of Environmental Health Hazard Assessment, in partnership with the Steering Committee, the City of Oakland, CARB, and the Air District, studies setting a limit on West Oakland's cumulative exposure to TACs.*

Comment: EBMUD generates some emissions during the course of providing water and wastewater services. These are related to operations that are critical to EBMUD providing reliable water and wastewater services to the people in and outside the Project Area, such as individual wastewater treatment processes, or trucks responding to locations in the Project Area to repair a broken water main or to proactively replace aging pipelines. EBMUD strives to implement programs that extend beyond regulatory compliance stipulations and actively collaborates with regulatory agencies, local agencies, non-governmental organizations, and the public to understand their needs and balance those needs with its operations. EBMUD provides essential services 24 hours a day, 7 days a week while protecting public health and the environment. EBMUD requests that, before adopting a cumulative exposure limit, CARB work with EBMUD to better understand water and wastewater operations to ensure that the proposed new limit will not impede EBMUD's critical services. EBMUD understands from discussion and materials provided at the July 10, 2019, Steering Committee meeting that the Air District will work with EBMUD and other stakeholders throughout the limit setting process.

Further Study Measure #4: *The Air District will work with CARB and other agency and community partners to identify incentives to improve shortcut nitrogen removal processes at wastewater treatment plants to reduce emissions. Shortcut nitrogen removal processes may provide potential benefits in terms of energy, carbon, and chemical savings compared to conventional biological nitrogen removal.*

Comment: EBMUD is the only wastewater treatment plant within the West Oakland study area and currently does not have "conventional biological nitrogen removal" in its wastewater treatment processes. Therefore it would be an ineffective use of the Air District's limited resources to seek incentives to improve upon something that does not currently exist. Instead, EBMUD suggests the following language for this Further Study

> Measure: "The Air District will work with CARB and other agency and community partners to identify incentives for property owners within the study area to implement technologies that will improve upon existing technologies in use in order to reduce emissions targeted by the CAP."

**CONCLUSION**

EBMUD appreciates the opportunity to coordinate with the Air District on this project and requests that the Air District continue to include EBMUD in the WOSC as it refines the CAP, finalizes the Draft Environmental Impact Report, and moves to the implementation phase of the CAP. EBMUD looks forward to continuing to collaborate with the Air District to ensure the success of this project.

If you have questions or would like additional information regarding the comments provided in this letter, please contact Matt Hoeft at (510) 287-0214 or matthew.hoeft@ebmud.com.

Sincerely,

Alexander R. Coate

Alexander R. Coate
General Manager

ARC:MRH:mrh

METROPOLITAN
TRANSPORTATION
COMMISSION

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September 9, 2019

Ms. Alison Kirk and Ms. Ada Marquez
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

RE: <u>*Owning Our Air*: The West Oakland Community Action Plan – Comments</u>

Dear Ms. Kirk and Ms. Marquez:

Thank you for the opportunity to comment on the Draft West Oakland Community Action Plan (Action Plan), entitled *Owning Our Air*, as well as the associated Draft Environmental Impact Report (EIR). Our staff has appreciated being engaged in the Steering Committee over the past year, and we commend the Air District's planning staff for developing a robust data-driven air quality Action Plan for West Oakland – in concert with community stakeholders – in just 12 months' time.

The Metropolitan Transportation Commission (MTC) shares the Air District's commitment to improving environmental conditions across the Bay Area, particularly in historically disadvantaged communities such as West Oakland. While regional air quality has generally improved over the past several decades – primarily a result of targeted regulations at the state and regional levels – residents of West Oakland still experience disproportionately high adverse health impacts. This is reflective of the proximity of both industrial land uses and major transportation facilities that surround and traverse the community.

The strategies included in the Action Plan will help to address these inequities over the next decade. We appreciate the specific acknowledgement of Regional Goods Movement Plan, as well as integration of key strategies from that plan and subsequent Goods Movement Investment Strategy (MTC Resolution 4244) into the West Oakland Community Action Plan. MTC is supportive of many strategies outlined in Chapter 6 to address mobile source pollutants, including improvements to local transit and street improvements to encourage non-auto modes. We would suggest that it may be appropriate to recognize that a suite of similar strategies are being considered in the context of *Plan Bay Area 2050* on a regional level.

Regarding the implementation strategies listed in Chapter 6 of the Action Plan, we support the Air District's efforts in providing financial incentives to reduce emissions from mobile sources, and find these programs to be consistent with many of the community protection elements included in MTC's Goods Movement Investment Strategy.

However, we suggest the Plan could be strengthened by detailing the timing of these funding opportunities, the degree to which they will be targeted toward West Oakland, and ultimately, which entities would be best positioned to apply for them.

Our concern is ensuring that the region is taking advantage of available funding opportunities, and that the various entities- including the Air District, City of Oakland, Port of Oakland, and private sector- are effectively collaborating toward a shared understanding of implementation roles and responsibilities.

With regards to land use, we encourage the Air District to make revisions to the Draft Action Plan to provide further context beyond addressing existing stationary sources. West Oakland has been identified by the City of Oakland as Priority Development Area for more than a decade, which means it is slated for significant residential and employment growth over the coming years. While mitigations are critical to ensure that existing residents can stay in place, reinvestment in this community also presents opportunities to improve the built environment and to address environmental inequities. Further growth in West Oakland can also help to reduce per-capita greenhouse gas emissions, given its central location and relatively good transit accessibility – a key priority of *Plan Bay Area 2050*.

In addition to these high-level comments, we would also like to provide some specific comments for your consideration, which could help to strengthen the Action Plan:

**Comments Related to the Summary and Draft Action Plan**

- All figures, maps, and charts should be appropriately captioned with data source or analysis methodology.
- <u>Summary page 5</u>. The summary table of West Oakland Sources in 2024 potentially understates the benefits of the Action Plan, given that the Action Plan document generally cites net benefits across all of these emission source categories.
- <u>Summary page 8</u>. Consider rephrasing "Complete transit service promises" to "Improve transit services" to better acknowledge fiscal constraints of regional transit operators.
- <u>Action Plan page 2-3</u>. The Action Plan should acknowledge past successes as a result of community advocacy, in particular the demolition of the Cypress Viaduct and relocation of Interstate 880 after the Loma Preita earthquake. These infrastructure investments are a first step towards addressing mid-20$^{th}$ century decisions, such as freeway construction that divided West Oakland and other communities of concern in our region.
- <u>Action Plan, page 6-17</u>. We generally support the creation of the Sustainable Freight Advisory Committee. We have three suggestions: 1) the Air District should take on staffing responsibilities for this committee to ensure its success; 2) the committee should consider a broader geographic scope, as the Action Plan seems to suggest it would be limited to West Oakland; and 3) the Committee should broaden its scope to serve as a venue for information sharing especially around regional and state funding opportunities and financial incentives.
- <u>Action Plan, pages 6-19 to 6-20.</u> Actions 43-49 and 52 describe financial incentives that the Air District will make available to reduce mobile sources. We suggest the Air District build upon these actions by further specifying 1) how these financial incentives might be phased over the 5-year lifecycle of the Plan; 2) the degree to which these

opportunities will be targeted toward West Oakland; 3) venues for information sharing and collaboration among potential proposers like the City of Oakland, Port of Oakland, and the private sector.

**Comments Related to the Draft EIR**

- DEIR page 3.4-12. The description of California Air Resources Board targets set under Senate Bill 375 should be updated to acknowledge 2018 action by the Board, which modified the Bay Area's per-capita GHG reduction targets for 2020 and 2035.

We look forward to working with the Air District and partner organizations to advance key strategies from the Action Plan in the coming years. Should you have any questions with regards to our feedback, please feel free to contact David Vautin of our Regional Planning team at dvautin@bayareametro.gov.

Sincerely,

Alix A. Bockelman
Deputy Executive Director, Policy

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***VIA E-MAIL and CERTIFIED U.S. MAIL***

Alison Kirk
Ada E. Márquez
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Bay Area Air Quality Management District
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WestOaklandPlan@baaqmd.gov

**Re: Comment Letter on the Draft West Oakland Community Action Plan and Draft Environmental Impact Report**

The Oakland Athletics (A's), through their undersigned counsel, submit this comment letter on the Draft West Oakland Community Action Plan and Draft Environmental Impact Report (DEIR).

As community members deeply rooted in Oakland, the Oakland Athletics (A's) are very interested in the West Oakland Community Action Plan and committed to its implementation. The A's have two goals in submitting these comments. First, the A's want to affirm their interest in putting the Action Plan into action and improving environmental conditions for West Oakland residents. The A's believe their proposed ballpark in West Oakland can play an important role in helping to implement the Action Plan. Second, the A's believe several strategies identified in the Draft Action Plan would benefit from clarification and possible expansion.

## I. The ballpark project can help implement the Action Plan's strategies and improve conditions for West Oakland residents.

As recognized in Strategy 2 of the Draft Action Plan, the A's are evaluating the Howard Terminal site at the Port of Oakland as a potential location for a new ballpark. While the ballpark project is currently at an early stage, the A's anticipate the project can play an important role in helping to implement the Action Plan's strategies. Consistent with Strategy 2, the A's look forward to continuing to work with the public, West Oakland Environmental Indicators Project, the Bay Area Air Quality Management District (BAAQMD), and other agencies and community groups during the course of review of the proposed ballpark project to identify ways the A's can help realize the Action Plan's emissions reduction goals.

## II. Available information raises several questions about the Draft Action Plan's strategy for reducing Schnitzer Steel's air pollution emissions.

The A's evaluation of the Howard Terminal site as a potential location for a new ballpark necessarily involves reviewing environmental conditions in West Oakland, including conditions associated with the operations at Schnitzer Steel's Metals Recycling Yard and Port (the Schnitzer Facility), which is adjacent to Howard Terminal.

Schnitzer is a public company with more than $2 billion in sales and net income for its latest fiscal year of more than $100 million, which operates California's largest metal shredding facility in West Oakland.[1] Schnitzer's operations include shredding automobiles, appliances, and scrap metal in a "mega-shredder" and removing metals. While recycling is an important activity, the Draft Action Plan indicates Schnitzer is a considerable source of air pollution and excess cancer risk in the West Oakland community, as explained further below. Based on this finding of the Draft Action Plan, the A's have several questions about strategies for reducing Schnitzer's air pollution emissions.

### A. Why does the Draft Action Plan exclude Schnitzer from Strategy 1, which will help relocate West Oakland's two other recyclers away from receptors?

Strategy 1 of the Draft Action Plan provides for "relocating two recycling companies (California Waste Solutions and CASS, Inc.) to the former Oakland Army Base."[2] The Draft Action Plan explains that this measure "will reduce exposure from both their onsite operations and from trucks traveling and idling on local streets," including by distancing the recyclers from residential and other receptors.[3] Strategy 4 similarly calls for identifying "locations outside of West Oakland for heavier industrial businesses currently in West Oakland that contribute to air pollution emissions and negative health outcomes in West Oakland."[4]

The Draft Action Plan shows air pollution emissions and excess cancer risks attributed to these two recyclers are much lower than the air pollution and cancer risk caused by Schnitzer, the other recycler in West Oakland. In fact, according to the Draft Action Plan, Schnitzer emits more pollutants and contributes more cancer risk than any other permitted source in West Oakland that

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[1] Schnitzer's website states that, in 2018, net income was $156.45 million and total revenue was over $2.364 billion. http://www.schnitzersteel.com/investors_fundamentals.aspx?content=income-statement (last visited Sept. 5, 2019).
[2] Draft Action Plan at 6-2, 6-14, 6-15.
[3] *Id.* at 6-2, 6-3.
[4] *Id.* at 6-15.

was inventoried and modeled as part of the community-scale modeling. According to the Draft Action Plan, Schnitzer's permitted stationary sources emit 5.2 tons per year of PM2.5, more than any other permitted source inventoried and modeled.[5] These PM2.5 emissions result in a weighted cancer risk of 822.78, which is also more than any other permitted source modeled.[6] To put this into perspective, Schnitzer's cancer risk accounts for over 74% of the total cancer risk-weighted emissions caused by all permitted sources listed in Table 5-2 of the Draft Action Plan.[7]

The estimated cancer risk across West Oakland caused by Schnitzer's permitted stationary sources, 5.4 per million, is also more than any other permitted source modeled in the Draft Action Plan.[8] According to the Draft Action Plan, Schnitzer causes an even higher excess cancer risk in Zone 2 (3rd Street) and Zone 3 (7th Street): 7.3 per million in Zone 2 and 7.5 per million in Zone 3.[9] Schnitzer's ocean going vessels add another 2.6 estimated cases per million in Zone 2 and 2.2 cases per million in Zone 3.[10]

Importantly, there are approximately 23,000 residents within one mile of the Schnitzer Facility and, unlike newer or future developments, existing older buildings may not be equipped with the latest filtration technology or systems.[11]

The emissions data in the Draft Action Plan and the proximity of receptors to Schnitzer raise the question of why the Draft Action Plan proposes helping relocate the other two West Oakland recyclers further from receptors but not Schnitzer.

**B. Why aren't concrete measures to reduce Schnitzer's public health impacts identified in the Draft Action Plan?**

While Schnitzer is not mentioned in Strategy 1, the Draft Action Plan does include a strategy to reduce Schnitzer's pollution and public health impacts. Strategy 64 provides that "the Air District may require Schnitzer Steel and the East Bay Municipal Utility District to adopt a Risk Reduction Plan if the health risk determined by the facility-wide health risk assessment exceeds a risk action level per the requirements of Rule 11-18 implementation."[12] The Draft

[5] *Id.* at 5-7 (Table 5-2).
[6] *Id.*
[7] *See id.*
[8] *Id.* at A-98 (Table 5-1).
[9] *Id.* at A-99 (Table 5-2).
[10] *Id*.
[11] Approximate population based on census tract-scale population data from the US Department of Commerce 2010 census. *See* U.S. Census, 2010 US Census American Community Survey, U.S. Department of Commerce, https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.
[12] Draft Action Plan at 6-21.

Action Plan explains that "[a]ccelerated implementation of Rule 11-18 will drive down the toxic emissions at Schnitzer Steel . . . by 70%."[13]

A 70% reduction of Schnitzer's toxic emissions would be very beneficial for the West Oakland community. However, the Draft Action Plan does not explain how emissions will be reduced by 70% reduction or include any concrete measures to achieve this strategy. In fact, the Draft Action Plan implies that these reductions may not be required in stating that "the Air District *may* require Schnitzer Steel and the East Bay Municipal Utility District to adopt a Risk Reduction Plan . . . ."[14] The DEIR also raises uncertainty in stating that that "the implementation actions [to achieve the 70% reduction] themselves and/or any resulting physical changes to the environment are not yet known with any specificity," and are "too speculative for evaluation."[15] In seeming contradiction with these statements, the Draft Action Plan appears to account for a 70% reduction of Schnitzer's toxic air emissions in forecasting emission reductions in 2024 under the Action Plan.[16]

These statements in the Draft Action Plan and DEIR raise the question of why concrete measures to further reduce Schnitzer's emissions and cancer risk are not identified now as part of the AB 617 process and implemented sooner than 2025.[17] Measures that would help reduce Schnitzer's process and fugitive emissions of toxic air contaminants include: enclose stockpiles, pave all surfaces, ensure truck and other containers of "shredder residue" or other material that exceeds toxicity thresholds for hazardous waste are properly secured, prevent all offsite deposition of "light fibrous material," and impose limits on the Facility's toxic air contaminant emissions and associated excess cancer risk. Concrete measures instead of a plan to develop a plan requiring such measures would help ensure that the Action Plan's emission reduction goals are met.

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[13] *Id.* at 6-12.
[14] *Id.* at 6-21 (emphasis added); *see also* DEIR at 2-18.
[15] Draft Action Plan at 3.1-6.
[16] *Id.* at 6-12 ("These emission reductions are slated to occur by 2025, and so associated emission reductions are included in the 2024 forecast with the Plan."). It is unclear why a 70% reduction to be achieved by unspecified, "speculative" measures that are "slated to occur by 2025" are accounted for in the 2024 ledger.
[17] The A's understand that Schnitzer has taken steps to improve its environmental performance during the last several years, such as enclosing its mega-shredder and joint products plant, installing scrubbers at the mega-shredder to reduce particulate matter emissions, improving its stormwater collection system, modifying its ship conveyor belt to reduce discharges to the Bay, electrifying its crane, and expanding paved surfaces.

**III. Conclusion**

Thank you for this opportunity to comment on the Draft Action Plan and DEIR.

Sincerely,

William M. Sloan

William M. Sloan
Tyler Welti
*Attorneys for the Oakland Athletics*

PG&E Corporation

**Jessica C. Hogle**
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**September 9, 2019**

Alison Kirk
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

**RE: Pacific Gas and Electric Comments in Response to the Draft AB 617 West Oakland Community Action Plan**

To Ms. Kirk,

Pacific Gas and Electric Company (PG&E) appreciates this opportunity to provide feedback in response to the West Oakland Environmental Indicators Project (WOEIP) and the Bay Area Air Quality Management District (BAAQMD)'s release of the draft *Owning Our Air: The West Oakland Community Action Plan* (Plan) on behalf of the AB 617 West Oakland Steering Committee (Steering Committee).

PG&E recognizes and applauds the almost year-long public process beginning in 2018 to develop the Plan for West Oakland, led by the Steering Committee, WOEIP and BAAQMD. The Plan is the culmination of many public meetings to discuss strategies and priorities, and behind-the-scenes work from BAAQMD to provide a technical analysis of the local emissions and primary sources of pollution.

Assembly Bill 617 (Chapter 136, Statutes of 2017) established California's goal to reduce emissions of toxic air contaminants (TACs) and criteria pollutants (CPs) in communities affected by a high cumulative exposure burden, which PG&E supported. As part of the requirements of AB 617, selected communities and their air districts must develop a local community emissions reduction plan, such as the Plan developed by West Oakland.

In response to the strategies proposed in Chapter 6 of the Plan, PG&E looks forward to engaging with the community of West Oakland and the relevant agencies in the implementation process where the strategies will be further defined and discussed. PG&E believes it could support or may be impacted by several of the proposed strategies.

In particular, PG&E anticipates potential opportunities to collaborate and partner with West Oakland on strategies related to the following topics:

- Clean Transportation Infrastructure (including potential overlap with PG&E's existing transportation electrification infrastructure programs)
- Building Electrification
- Energy Efficiency
- Other energy infrastructure (such as storage)

One area of potential concern that PG&E would like to highlight is with respect to strategies aimed at limiting truck movement in the community. As identified in Table 5-2, PG&E recognizes that truck traffic is a source of PM2.5 and Diesel PM pollution in West Oakland. Strategy #9 proposes to reduce this pollution by developing a plan to limit the hours that trucks can operate in the community. PG&E operations in West Oakland (including scheduled maintenance and repair or emergency work) could be negatively impacted by such a restriction. PG&E looks forward to working with the City of Oakland on the potential implementation of any such measure to ensure that critical utility work can proceed while also balancing the needs of the community.

PG&E reiterates its support of West Oakland's Plan and looks forward to working with the community to help it achieve its emissions reductions goals in order to improve the health and quality of life in West Oakland. If you have any questions, please contact Karen DeGannes (karen.degannes@pge.com) or myself.

Sincerely,

/s/

Jessica Hogle

Chief Sustainability Officer,
Vice President Federal Affairs

PMSA
PACIFIC MERCHANT SHIPPING ASSOCIATION

September 9, 2019

Alison Kirk, Principal Environmental Planner
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*Delivered via email to WestOaklandPlan@baaqmd.gov*

**Public Comments Re: "West Oakland Community Action Plan" Draft Plan and Draft EIR**

Dear Ms. Kirk and Ms. Marquez:

We submit these comments regarding the "West Oakland Community Action Plan" (WOCAP) Draft Plan and Draft Environmental Impact Report on behalf of the members of the Pacific Merchant Shipping Association (PMSA). PMSA represents marine terminal operators, ocean carriers, and other maritime industry businesses which operate at the Port of Oakland.

To set the context for the offering of these comments on the WOCAP, it is important to note the tremendous Air Quality improvements which have already been achieved at the Port of Oakland due to the efforts of the private industries operating at the Seaport. From 2005 to 2017, the Port and its industry partners across the maritime intermodal supply chain have achieved tremendous emissions reduction results: 91% reduction in SOx, 80% reduction in Diesel PM, and 30% reduction in NOx.

By starting the WOCAP with a 2017 baseline, the Plan does not acknowledge the dramatic and recent history of air quality improvements at the Port. The significant scope, scale, and speed of implementation and the sheer magnitude of investment in the very substantial emissions reductions which have already occurred is a critical context for all future air quality efforts at the Port of Oakland. These significant contributions to emissions reductions should be reflected affirmatively in the WOCAP.

The pace and scale of these emissions reductions, as the WOCAP points out with respect to future reductions from seaport sources already anticipated, are primarily dictated by regulatory rules for freight mobile sources which already exist at the state level. As the WOCAP correctly concludes, even without any WOCAP Plan implementation, regulated emissions reductions will continue to result in improvements in West Oakland such that only one residential zone in 2024 will still be clearly over the DPM targets, and three will decrease below the 2030 goals (Figs. 5-11, 5-12).

When one considers that these "without the plan" improvements and reductions are projected to occur even after the application of very aggressively overstated projections of growth in Port emissions, it is clear that the WOCAP's goals are most likely to be achieved under the present "without the Plan" scenario by 2025 for nearly all West Oakland residents with little need for local intervention into questions related to freight mobile source regulation.

PMSA and its member companies are proud of our history of investment in the infrastructure in California necessary to maintain a growing efficient business in the face of major loss of market share and to achieve substantial and significant environmental improvements.

PMSA appreciates and agrees with those related WOCAP goals for mobile source rules and regulations related to the Seaport which acknowledge that the best way to address these sources is to support the rules already in place or to engage in future regulatory processes underway at the state, federal and international level.

For example, while we disagree with the WOCAP's forecasted inventory of future emissions associated with Oceangoing Vessels, PMSA agrees with the WOCAP goal that the best way to pursue strategies for the reduction of emissions from these sources is for the local community to defer to the jurisdiction of the California Air Resources Board (CARB). In this regard, PMSA has been working closely with CARB for years in their efforts to update their existing regulations of vessels at berth and agrees with the WOCAP goal that new amendments to the existing rules for vessels at berth proceed in a manner which is consistent with CARB-adopted policies including the AB 617 Community Air Protection Blueprint, the SB 32 Scoping Plan, the SIP Mobile Source Strategy, and the Sustainable Freight Action Plan.

PMSA agrees with the WOCAP assessment that most of the environmental exposure issues facing West Oakland are not derived from local sources, such as those at the Port, and that the marginal contributions by local sources must be taken in the regional context of emissions issues. It is obvious that many sources contribute to exposure issues and that impacts will necessarily vary by location and proximity of residential areas to industrial sources. The farther residential housing is located from industrial sources (a criteria well beyond the control of the industrial sources), the more marginal the impact on the West Oakland community.

Consistently, the WOCAP highlights the benefit of the existing industrial buffer zones and the value of greater distances between Port operations and residential housing in West Oakland in its examination of the raw emissions values of operations versus the residential impacts of those operations. For instance, while the WOCAP lists Ocean-going Vessels' Berthing and Maneuvering as the 1$^{st}$ and 2$^{nd}$ largest sources of DPM per year (Table 5-2), when it comes to the WOCAP evaluation of the actual Residential Impacts of these emissions, these sources drop dramatically 4$^{th}$ and 7$^{th}$ respectively (Figure 5-10).

With respect to the need to maintain these buffers and to avoid land use incompatibility issues, PMSA is a signatory to a coalition letter submitted separately and we incorporate those comments by reference here regarding proposed residential encroachment being considered by the City of Oakland. PMSA respectfully requests that, to the extent that the purpose of the WOCAP is to reduce exposure to sensitive receptors primarily due to proximity exposures, that the Plan address the question of the creation of these new residential zones.

Given the obvious negative impacts which would result from allowing the residential redevelopment of Howard Terminal by the Oakland A's and related changes to the Downtown Oakland Specific Plan, which are in direct conflict with the policy goals of the WOCAP, the Plan should do everything it can to discourage the City of Oakland from replacing current industrial zoning within and near the Port of Oakland with new residential uses that are in and amongst and closer than ever before to Port and industrial operations.

Please find our additional specific comments on pages 4-10 of this letter, below.

We look forward to working with the BAAQMD to clarify, correct and update the WOCAP Draft Plan and the Draft EIR prior to final adoption and presentation to CARB. Please feel free to contact us at any time to discuss these or any other issues.

Sincerely,

Mike Jacob
Vice President & General Counsel

**COMMENTS ON WOCAP DRAFT PLAN**

- Pg. 2-3 - "West Oakland History" & "West Oakland Today"
  This History and Today sections are an appropriate location to describe events from 1999 to the present in this narrative. This section is currently missing the recent history of substantial emissions reductions and significant air quality improvements occurring at the Port of Oakland. Acknowledgement of the recent history of investments in improved air quality are arguably just as, if not more, relevant to the profile of impact and context for present air quality initiatives than the other historical inputs noted here. We would request a provision which notes the air quality improvements which have occurred in the WOCAP Planning Area since 2005.

- Pg. 2-6 – "Population Characteristics"
- Pg. 2-7 – "Health Conditions in West Oakland"
  While beyond the immediate scope of AB 617, the WOCAP Plan does properly identify the issue of poverty in West Oakland and disparate level of unemployment as relevant to the context of public health. It is important in this planning process to recognize that just as the impacts of degraded air quality can reduce public health, poverty and unemployment can be greater predictors of and more direct corollaries with public health outcomes. To the extent that these economic factors are complicated by other demographics, employment and the alleviation of poverty become increasing relevant as some studies have found that environmental factors only contribute to 10% of public health outcomes, while socioeconomic factors are the largest at 40%. For more on these issues see the following links which may be of interest: https://www.countyhealthrankings.org/sites/default/files/differentPerspectivesForAssigningWeightsToDeterminantsOfHealth.pdf; https://www.dhs.wisconsin.gov/lh-depts/orientation/hoodcarly-employeeorientation-madisonnotes.pdf; https://www.improvingpopulationhealth.org/blog/what-are-health-factorsdeterminants.html
  And, additional relevant study of this subject by the Robert Wood Johnson Foundation: https://www.rwjf.org/en/library/research/2012/12/how-does-employment--or-unemployment--affect-health-.html; https://www.rwjf.org/en/library/infographics/infographic--stable-jobs---healthier-lives.html; https://www.rwjf.org/en/library/research/2018/09/wealth-matters-for-health-equity.html

- Fig. 5-5 – "Intensity of Air Pollution Contributed by Local Sources in West Oakland (2017)"
- Fig. 5-9 a.b.c. - "… Showing the Mix of Sources Contributing to Local Enhancement …"
  These Maps are unnecessarily limited in scope and do not show values which capture the entirety of the West Oakland planning area, including large portions of the Port complex and those additional areas which are being considered for additional development of new residential housing by the Oakland A's at Howard Terminal and the City of Oakland in its proposed Downtown Oakland Specific Plan. Please include the full picture of sources for each map without the "frame" obscuring the full picture of local sources captured to facilitate evaluation of not just the existing residential zones, but also for the potential for new residential zones proximate to industrial sources.

- Pg. 5-22 – "Summary of Modeled Changes…" - "Ocean-Going Vessels"
- Pg. 6-10 – "Diesel PM" – "Ocean-Going Vessels"

  The WOCAP assumption which forecasts "a 5% compound annual container ship activity growth rate between 2017 and 2030" is problematic with respect to both: 1) the rate of growth forecast and 2) forecasting OGV emissions and impacts will grow at the same rate as freight.

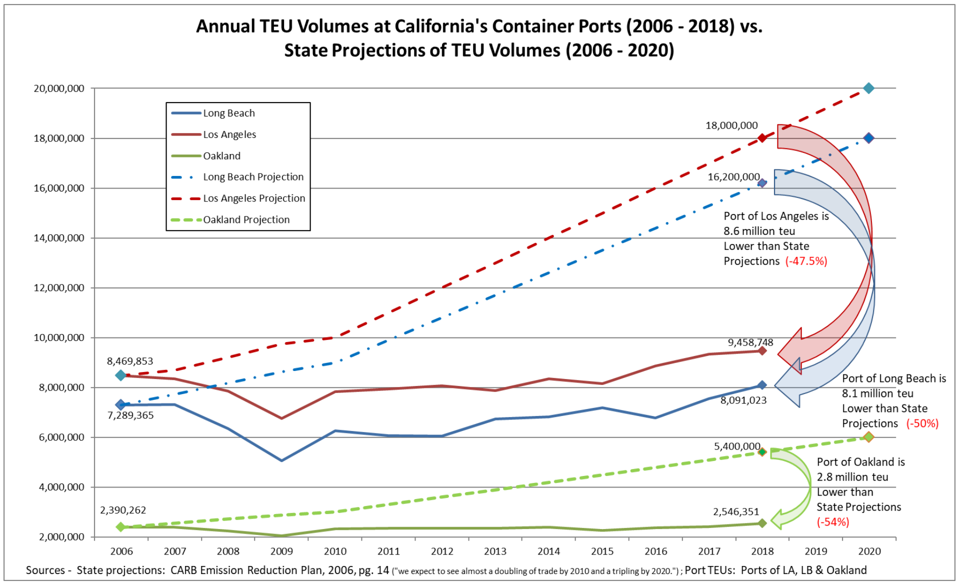
  We appreciate the BAAQMD staff comments regarding refining these estimates with CARB, BCDC, and the Port of Oakland and request that as the District staff works on further improvements to this Plan that these forecasts be reduced to reflect more historically accurate levels of cargo growth and historical trends towards efficiency that actually reduce emissions per unit of freight. To ensure accuracy of predictive emissions and to make sure that the WOCAP is focused on prioritizing issues only those sources necessary to achieve its goals, it is important that these forecasts be revised to advise the public of the most likely scenarios.

  1) Regarding Freight Growth Forecasts

  The FAF analysis used by CARB does not reflect historic growth trends generally, and it departs greatly from the actual growth on the ground in the Port of Oakland. CARB's predicted 5% Compounded Annual Growth Rate until the 2030 horizon of the WOCAP is not consistent with historic actual container volumes at the Port of Oakland, which have not demonstrated anything near this level of growth.

  From 2005 to 2018, tracking the baseline year for emissions reductions calculations, the Port of Oakland's CAGR per TEU is less than 1%, at 0.88%. When compared to the pre-recession high-water mark of container volumes in 2007, CAGR is even lower, at 0.59%. Even if one excludes the recession years pre-2009, Port of Oakland TEU volumes have only grown 24.5 percent total over the past decade, which is a CAGR of 2.46% between 2009 and 2018. This CAGR of 2.46% is very close to the BCDC 2019-2050 Bay Area Seaport Forecast, which shows a moderate growth forecast of 2.2%. (Exec. Summary, Exhibit 2)

  The disparity between the actual rates of growth and overly optimistic forecasts by CARB have occurred before and can result in significantly skewed views of future air quality impacts and cost-benefit analyses. For example, the 2006 Goods Movement Emission Reduction Plan by forecast was based on an expectation of container cargo growth based on "almost a doubling of trade by 2010 and a tripling by 2020." (GMERP, pg. 14) These forecast estimates are nearly double the actual amount of cargo which is being processed at California's container ports now:



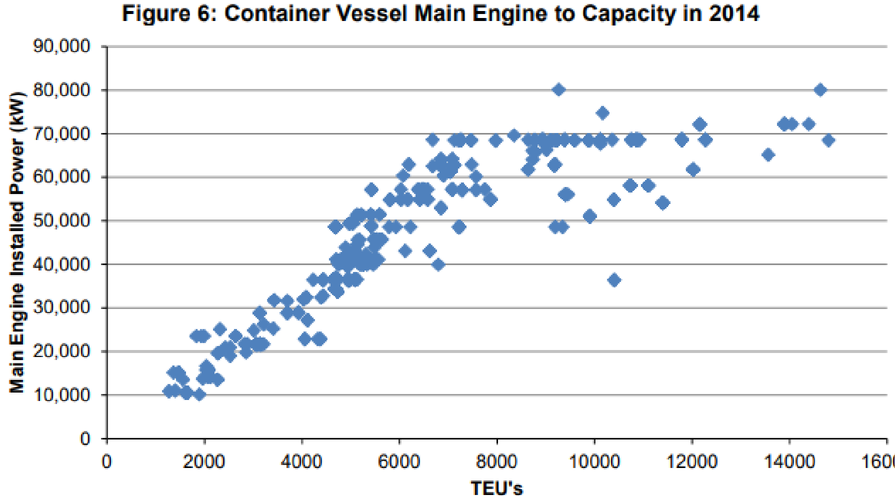

2) Emissions Do Not Increase 1:1 With Cargo Growth

The WOCAP also describes that "OGV emissions and impacts generally will, absent any reductions, grow at [CARB's forecasts for cargo growth] rate." These calculations are more complicated than that, as vessels do not maintain a straight-line methodology for emissions with vessel size or vessel calls with freight forecasts. Instead, we see more cargo growth in the Port of Oakland occurring with fewer vessel calls and with larger vessels on average per port call.

As described in the CARB 2019 "Update to Inventory for Ocean-Going Vessels" main engine and auxiliary engine power "have a non-linear relationship with vessel size" and that "[l]arger vessels show a small increase (on average) in auxiliary engine and boiler sizes but overall are much more efficient on a per-TEU basis." This is illustrated in Figure 6 from the Update:

Update to Inventory for Ocean-Going Vessels

**Figure 6: Container Vessel Main Engine to Capacity in 2014**



This dynamic of efficiency both lowers the rate of emissions per unit and overall emissions from the maritime sector. It is unclear whether these trends were considered given the language of the WOCAP that seems to assert a straight-line projection of emissions to cargo on a 1:1 basis. This is not accurate, and we would request that efficiency trends be reflected in the WOCAP projections.

- Pg. 6-10 – "Diesel PM" – "Ocean-Going Vessels"
  With respect to CARB's At-Berth Regulation, it is important to catalogue these emissions reductions properly. In this instance, the emissions reductions from Ocean-Going Vessels should be captured in the WOCAP "Without Plan" projections.

  The WOCAP correctly identifies that emissions from Ocean-Going Vessels will see future reductions. These emissions reductions are going to continue to be achieved through state regulations that have already been enacted independent of the adoption of this Plan, and which are likely to be further amended by CARB also independent of the adoption of this Plan. However, the language of this section describes these future emissions reductions only being included in the "With Plan" scenarios under the WOCAP. This is facially improper, as these emissions reductions will occur or not occur independent of the WOCAP Plan and should be built into the 2024 and 2030 projections for emissions "Without Plan."

- Table 6-1 – "Strategies"

  #2 – Development Projects in West Oakland, Including Howard Terminal
  PMSA concurs with the comments of the Industry Coalition submission.

  #3 – Study Allowing Heavy Truck Traffic on I-580 Through Oakland and I-880 Truck Lanes
  PMSA agrees with the recommendation to study additional truck routes to access the Port of Oakland, including the potential to open Interstate 580 to heavy-duty trucks and to designate "truck only" lanes on I-880. WOCAP should also Oppose any changes to the Downtown Oakland
  Specific Plan that would further restrict freeway access by Trucks to the Port of Oakland, including removal of I-980 or development of the 3rd Street overweight truck corridor.

  #9 – Truck Hours of Operations Limitation
  PMSA disagrees with any strategy that would limit the ability of trucks serving the Port and its marine terminals from being able to expand gate hours to maximize off-hour service and minimize truck traffic and congestion in the community and throughout the region. Restricting hours of operation would likely lead to increased road and highway congestion, resulting in measurable increases in emissions. From an exposure perspective, off-peak operations may, in fact, be preferable with emissions occurring when nearby receptors are indoors and not engaged in outdoor activities.

#13 – Development Fees Imposed by the City of Oakland for Environmental Mitigation
PMSA disagrees with the imposition of any fees on freight activities at the Port of Oakland as likely legally problematic under the United States Constitution and without nexus to Port operations. In addition, without further detail as to the scope and nature of this concept, such fees would likely be violative of the City Charter and potentially of the state tidelands trust.

#19 – Port Electrical Infrastructure Plan
PMSA agrees that greater access, reduced costs, and additional infrastructure provided to industry will remove barriers to improved utilization of electrified equipment. However, it is our experience that many of the most problematic infrastructure components in this regard often lie outside of the control of the Port itself. This Plan should be consider it necessary to examine the roles and authority of the City and PG&E as well.

#21 – Sustainable Freight Advisory Committee
To the extent this is intended to be an advisory committee, PMSA views this as an unnecessary duplication of the many advisory committees already maintained by the Port, the City, and the BAAQMD which address issues of air quality and freight activities.

To the extent this is intended to set up a special public-agency with a scope which includes oversight of marine terminal, ocean carrier, and other business terms and operations including "improvements to the Port appointment system" or "charging infrastructure and rates," both of which may be proprietary and such regulation by a local government also potentially violative of the federal Shipping Act, or to expand the committee's scope to "enforce truck parking, route, and idling restrictions," which may also be preempted by federal law, PMSA opposes the formation of such a committee.

#38 – Study Off-terminal Container Yard Development
PMSA agrees with the recommendation to study the creation of additional off-terminal container yards and to improve the ability of trucks to improve efficiency and the number of turns possible to and from the Port.

#45 – Financial Incentives for Tug and Barge Operators
PMSA agrees with the recommendation to provide financial incentives for the tug and barge fleet serving the Port of Oakland to subsidize their upgrades.

#55 – CARB Amendments to the Regulations of Vessels At Berth
PMSA agrees with the recommendation that CARB should update and amend the existing regulations for Ocean-Going Vessels while At Berth and has been participating in the ongoing effort at the Board to improve this rule. All CARB amendments to the At Berth rule to evaluate and regulate additional vessel fleets must be consistent with the AB 617 Blueprint, the SB 32 Scoping Plan, the SIP Mobile Source Strategy, and the Sustainable Freight Action Plan.

#58 – Port of Oakland Clean Ship Program
PMSA is prepared to work with the Port of Oakland to explore the efficacy of a Clean Ship Program, however, these types of initiatives are notoriously hard to manage or to put in to practice. If the purpose of this WOCAP measure is to affirmatively proscribe and restrict vessel

operations, then PMSA is opposed to this strategy measure. If the purpose of this WOCAP measure is to work to develop incentives and non-prescriptive pathways towards a higher fleet composition of newer vessels, then PMSA supports this strategy measure.

#62 – Air District Seeks Authority in 2021 to Regulate Mobile Sources via Indirect Source Rule
PMSA opposes this strategy. The Port of Oakland, marine terminals, warehouses, and other facilities do not, will not, and should not have the capacity or ability to take responsibility for the emissions of the mobile sources who utilize their facilities. Local Air Districts likewise should not have the authority to regulate those facilities via an Indirect Source Rule.

**COMMENTS ON WOCAP DRAFT PLAN APPENDICES**

- Emissions Inventory, pg. A-7 – "2.1.3 Emissions Sources and Base Year"
  There are several inaccuracies which need to be corrected in this description:

  > In West Oakland, a large number of emissions source types are attributed to activity from the Port of Oakland. The Port is the fifth busiest port in the U.S. and serves as a gateway for intermodal cargo transport. In 2017, the Port consisted of four active marine terminals (TraPac, Nutter (STS/Everport), Oakland International Container Terminal [OICT], and Matson), and two railyards (Burlington Northern Santa Fe [BNSF], and Oakland Global Rail Enterprise [OGRE]). A fifth terminal (the Charles P. Howard terminal, located on the southeastern corner of the Port), has been vacant since the tenant filed for bankruptcy in 2010. Presently, the American Baseball League the Oakland Athletics (the A's) is investigating the possibility of building a baseball stadium on the site that is currently being used for long term Port (drayage) Truck parking.

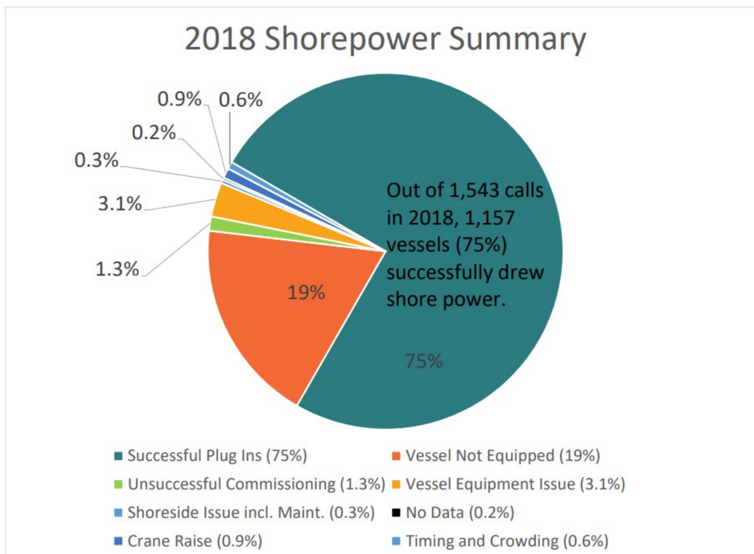
  With respect to the description of the size of the Port, please provide a statistic relative to some metric and provide citations. With respect to the Howard Terminal, several points: While it is not a currently active ship-to-shore marine terminal, it is not vacant and hosts numerous logistics and truck operations. It has not been subject to vacancy due to a bankruptcy. It was last subject to a marine terminal lease through 2014, when SSAT/Matson moved to the former APL terminal. Please clarify that the Oakland A's have a non-binding tentative term sheet with the Port of Oakland but have no rights to the property which is currently undergoing preliminary environmental review.

- Emissions Inventory, pg. A-35 – "Vessel auxiliary power is primarily used when propulsion engines are not running (e.g. at berth or in anchorage outside of the Source Domain)."
  This is not precisely the most accurate statement. While it is true that when the main engines are not running that the vessel's auxiliary power is the main source of power for crew needs for things like lights, computers, and navigation equipment you need auxiliary engines, it would be inaccurate to conclude that auxiliary power is not used also when propulsion engines are running for those same auxiliary functions. It is just no longer the primary source of vessel power or emissions.

- <u>Emissions Inventory, pg. A-35 – "capacity taken from the 2018 IHS Fairplay database"</u>
  The IHS Fairplay database on auxiliary engines may be less than accurate or reliable than reliance on other inventories developed and available. The San Pedro Bay ports have implemented a Vessel Boarding Program in order to eliminate mistakes or inaccuracies that had been attributed to outside sources that may be incomplete. Since many ships calling Oakland have a San Pedro Bay port as a first port of call, it would make more sense and increase accuracy if the average loads from the POLA/POLB inventories were used.

- <u>Emissions Inventory, pg. A-35 – "The use of shore power represents greater than 50% reduction in auxiliary engine operating hours at berth overall and resulting in 40–50% reduction in emissions for all pollutants."</u>
  There are no citations listed for the statistics regarding use of shore power. Please list exact citations for these statistics and provide the context for the percentages of reductions.

  This implies that shore power is only connected for 50% of the time. If so, none of these ships would be complaint with the CARB rule because they would exceed the three-hour connection time limit, and this would only be true if average total time at berth was 6 hours or less. This statistic is much lower than the vessel connection rate reported by the Port of Oakland, in 2018 when 75% of the vessels calling in Oakland successfully drew shore power.

  https://www.oaklandseaport.com/wp-content/uploads/2019/07/2019-06_Oakland-shorepower.pdf

- <u>Emissions Inventory, pg. A-35 – "Data from the Port for shore power calls in 2017 indicate that the average in-use power demanded was 10.5% of the auxiliary generator capacity for the significant shore power connections."</u>
  This statement directly contradicts the use of an 18% load factor for auxiliary engines, as noted above as the basis for assumption for hoteling based on CARB data. If auxiliary engines fulfill a 10.5% load, then that is the load factor, not 18%. Please clarify which load factor is used.

- <u>Emissions Inventory, pg. A-35 – Emissions factors "(assuming 0.1% sulfur content fuel)."</u>
  This is the maximum legal limit. An average based on CARB compliance data should be used to estimate PM and SOx emissions from boils not a calculation based solely on the legal maximum.

September 6, 2019

Alison Kirk
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
akirk@BAAQMD.gov

*via email*

**Subject: Port of Oakland Comments on the Draft West Oakland Community Action Plan**

Dear Ms. Kirk:

The Port of Oakland (Port) appreciates the opportunity to provide comments on the July 2019 Draft West Oakland Community Action Plan (WOCAP) developed jointly by the Bay Area Air Quality Management District (BAAQMD) and the West Oakland Environmental Indicators Project (WOEIP). The Port played an important role throughout the WOCAP process and is proud to be part of the West Oakland community. As I stated during my presentation at the August 17 Town Hall, the Port consists of many employees, tenants, businesses and their workers who work (and many who live) in the West Oakland community and who have their stake in breathing clean air as well as working good paying jobs. In this letter, I offer the Port's commitment to continued participation in the WOCAP and its implementation. As a starting point and as part of the Port's *Seaport Air Quality 2020 and Beyond Plan* (2020 and Beyond Plan), the Port has already included the WOCAP strategies assigned to the Port in the set of measures that the Port will screen and evaluate for achievable implementation. In this letter and also in the attached "Comments on the Draft Environmental Impact Report (DEIR) for the West Oakland Community Action Plan," the Port also offers comments that we believe are considerations for achieving the desired air quality results while permitting the continued vitality of a working port and important jobs center for the region.

## The Port's Commitment to Action

Port staff have served consistently on the AB 617 Steering Committee since the July 27, 2018, kick-off meeting at City Hall, where Board of Port Commissioners (Port Board) President Cestra Butner provided opening statements and Port Environmental Supervisor Diane Heinze described the Port's Draft 2020 and Beyond Plan. The Port's former Executive Director, Chris Lytle, was a panelist at the June 5, 2019 Steering Committee meeting on the topic of agency commitment. I and Port Board Commissioner Leslie both attended the August 17, 2019 Town Hall, where I spoke on a panel on behalf of the Port.

The Strategies in the WOCAP which have the Port listed as the authority were included in the pool of Suggested Actions for the Port to screen and evaluate for possible future inclusion in the Port's update to the Near-Term Action Plan. The screening process uses the criteria established in the 2020 and Beyond Plan (Table D-1) and is already under way. Results will be provided by the next Task Force meeting in January 2020.

*The Port's History of Clean Air Progress*

The Port shares the goals of BAAQMD and WOEIP to clean the air and reduce negative health impacts on its workers and neighbors. As you know, the Board of Port Commissioners first officially formalized its commitment to clean air by approving 10 years ago the Port's *Maritime Air Quality Improvement Plan* (MAQIP). The MAQIP was developed by working with community leaders and stakeholders many of whom are now leading the WOCAP process. The MAQIP identified a series of initiatives to improve air quality and set a target to reduce diesel particulate matter (DPM) emissions 85% over 2005 levels by 2020. The Port has since implemented the MAQIP resulting in a significant, measurable decrease in emissions from Port operations. The 2017 Seaport Emissions Inventory shows that the Port has achieved an over 80% reduction in DPM emissions between 2005 and 2017, despite a 6% growth in cargo volume over the same twelve-year period (0.5% annual growth). The Port invested in environmental programs designed to reduce emissions by using the cleanest diesel engines available, using shore power for ocean-going vessels, and reaching out to truck and equipment owners regarding incentives.

Recognizing that the Port needed to update and take its commitment to clean air to the current best practices and standards, the Port initiated a successor to the MAQIP that is the 2020 and Beyond Plan. The process of developing the 2020 and Beyond Plan involved extensive stakeholder engagement, including participation by BAAQMD and the WOEIP as co-chairs of the Task Force. The 2020 and Beyond Plan establishes the Port's long-term vision of a zero-emissions seaport and provides a framework for making future decisions on the Port's clean air projects in consultation with the community. The 2020 and Beyond Plan was approved by the Board on June 13, 2019, through Resolution 19-41.

As part of Resolution 19-41, the Port Board directed Port staff to take six additional actions over the next 18 months. Port staff will make three presentations to the Port Board on: zero-emission truck feasibility, zero-emission cargo handling equipment feasibility, and the capacity of the Port's electrical system. These reports are coming in late Fall 2019. Additionally, Port staff will conduct a 2019 seaport air emissions inventory, report to the Port Board on WOCAP Strategies to include in its update to the 2020 and Beyond Plan, and report on financing aspects of the 2020 and Beyond Plan.

As well, recognizing that the impact of Port operations on the West Oakland community are directly linked to truck traffic in and around the Port, the Port and the City prepared a West Oakland Truck Management Plan (TMP) through a joint planning and plan development effort. This included substantial input from the West Oakland residential and business communities. The Port's Executive Director approved the TMP on April 29, 2019. The TMP will improve safety for people walking, biking, and driving in West Oakland; reduce the nuisance of trucks driving or parking where they should not; and improve the quality of life for people living and working in West Oakland, including a reduction in local diesel emissions.

The Port is committed to implementing the 2020 and Beyond Plan and TMP. In fact, the Port and City have already held three separate kick-off meetings for the three TMP strategies identified for first year implementation: routing, signage, and parking. The Port has also already begun screening over 200 Suggested Actions (including WOCAP Strategies) for new clean air projects under the 2020 and Beyond Plan.

*The Port's Current Actions Towards Zero Emissions*

In addition to the initiatives discussed above, the Port is participating in multiple grant efforts and pilot projects to help reduce emissions and commercialize electric trucks. For instance, the Port helped one of its tenants win a grant to convert 13 pieces of cargo handling equipment from diesel to hybrid electric. This project is well underway with nearly half the fleet already converted and in service. The Port is also currently designing and constructing ten electric charging stations for zero-emissions battery-electric trucks at tenant Shippers Transport Express. The charging stations are being paid for by the Port and will cost between $1.25M and $2M. The Peterbilt trucks are being funded through a Zero- and Near-Zero Emissions Freight Facilities (ZANZEFF) grant from the California Air Resources Board (CARB). Another Port tenant, GSC Logistics, has received two BYD battery-electric trucks as part of a demonstration project funded by CARB through the South Coast Air Quality Management District and BAAQMD. The Port expects nine more BYD trucks to be placed with its tenants and is actively helping process permit applications for charging stations.

Lastly, another Port initiative that started in August 2018 is hosting weekly Environmental Office Hours. BAAQMD staff are always invited to attend these office hours, which Port staff find to be a rewarding and productive way to connect with drivers, hear their concerns, and advertise the technologies and funding available for clean trucks and equipment. Port staff request that BAAQMD provide promotional materials for grants in the following languages to help communicate with truck drivers: Spanish, Punjabi, Simple Chinese, and Vietnamese.

**Overall Comments on WOCAP**

I took to heart comments by West Oakland residents at the August 17 Town Hall that plans need to be enforceable and feasible so that implementation actually happen in the context a major transportation corridor and a working port. The Port's 2020 and Beyond Plan is a commitment to vigorously pursue all feasible means to achieve zero emissions while preserving and growing the commercial and work opportunities at the Port of Oakland. Towards these same goals for the WOCAP, the Port makes the following overall comments and suggestions, along with more specific comments on the DEIR concurrently submitted to you by our Director of Environmental Programs and Planning, Richard Sinkoff.

*Targeting Emissions Closest and Most Impactful to People Is the Most Effective Health Risk Reduction Strategy*

The chief goal of the WOCAP is to reduce health risk to West Oakland residents. The Port believes the most effective strategies to reduce health risk to residents are the ones that focus on important sources with the closest proximity and highest impact on current and future residents. Therefore, Figure 5-10 of the WOCAP shows that non-Port trucks on the streets and highways have the largest impact of any source. The next biggest impact is harbor craft, followed closely by rail lines. One of the Port's chief focus is strategies and measure to reduce harbor craft emissions. The Port is also encouraging rail operators to take action. These are the sources that deserve the most attention. A related focus should be keeping housing away from heavy industrial uses. This is a land use strategy that would prevent more people from being exposed to the worst sources.

*The Port Encourages WOCAP Incentive Strategies*

Many of the BAAQMD's WOCAP Strategies are to use and improve incentives for equipment and infrastructure. The Port applauds these Strategies and will continue to encourage Port tenants and related business to apply for available funding through Trucker Work Group announcements, Environmental Office Hours, and individual outreach.

Port staff encourage BAAQMD to streamline and simplify the funding application process. Two examples of streamlined and simplified funding programs are the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) and Clean Off-Road Equipment Voucher Incentive Project (CORE) programs administered by CARB. HVIP and CORE do not require difficult applications or up-front payment for new equipment with delayed reimbursement, which is a burden on the applicant. Additionally, neither program requires the owner to scrap an existing piece of equipment, which may have significant resale value.

*An Unrealistic 5% Port Volume Growth Projection Undermines Validity of Many WOCAP Strategies*

The Port believes that the WOCAP strategies should be based on the most accurate projections of emission source volume based on historical trends and credible projections. One of the Port's main concerns with the WOCAP is that its projection of ship emissions is based on an unrealistic 5% compounded annual growth rate (CAGR) for cargo despite historical growth trends that are significantly lower and Port of Oakland-specific studies that contradict this level of growth projection.. This growth rate, developed by CARB, is misleading for forecasting emissions. It is particularly important that the 5% CAGR not be applied to vessel and tug activity. The trend over the past eight years is for *decreasing* ship calls, due to shipping lines forming alliances and moving more cargo on fewer, larger vessels.[1]

[1] A more detailed discussion about growth rate is included in the Port's 9/6/19 comment letter on the Draft EIR for the WOCAP, included as Attachment 1 to this letter.

The Port's comments on the DEIR goes into details on more valid growth projections. As an example here, the Bay Conservation and Development Commission (BCDC) prepared a port- and region-specific cargo forecast for the Bay Area. The Port requests that the WOCAP rely on the BCDC analysis and use a 2.2% CAGR for cargo growth instead of 5%. For reference, the Port's historical compounded annual growth rate from fiscal year 2008 to fiscal year 2018 was **0.4%**.[2] For ship emissions, the Port projects a 0% growth rate, which would be conservative because ship calls are actually decreasing.

As an alternative, the WOCAP could include both the CARB and BCDC growth forecasts, as is commonly done, to bound the future emission estimates.

*An Indirect Source Rule is Not Consistent with Feasible Implementation Strategies*

As an enterprise department of the City of Oakland, the Port of Oakland supports a significant portion of the region's job base by facilitating the operations of commerce. The Port does not collect tax revenues, but instead must generate revenue to continue operations.

- The Port and its partners provide 84,144 jobs in the Bay Area.
- The Port's overall economic value is estimated at $130 billion.[3]
- About 20% of the jobs created through the Port are based in Oakland.
- Each marine terminal at the Port employs union labor.
- The Port and its tenants contribute $698 million in state and local taxes.

While the Port has been maintaining the current commercial cargo volume, the Port of Oakland is a "discretionary port"—meaning cargo and commerce could go to other ports if the regulatory environment is overly burdensome and expensive compared to other competitor ports. In contrast, the Ports of Los Angeles and Long Beach maintain a large share of "non-discretionary" cargo, meaning that there are high barriers to cargo moving elsewhere. Maintaining the successful business at the Port of Oakland is essential to support the economy of the Bay Area and provide tens of thousands of local jobs.

While the Port is committed to achieving zero emissions, the clean air regulatory strategies cannot have the effect of disadvantaging the Port of Oakland vis-à-vis competitive ports of commerce that draw jobs and commerce away from the Bay Area region. WOCAP Strategy #62 is for BAAQMD to pursue an Indirect Source Rule. The Port is already highly regulated. It is also highly compliant as highlighted in the WOCAP Appendix E, which shows zero stationary source violations from Port tenants and a compliance rate of over 99% for truck emissions inspections.

In addition to being highly regulated and compliant, the Port is improving its efficiency with a host of new projects planned and underway, including new transloading facilities in the Port

[2] From Budget and Finance report at May 23, 2019 Port Board Meeting (File ID 098-19), slide 6.
[3] https://www.portofoakland.com/economic-impact-report/jobs-study-port-oakland-generates-84000-jobs-bay-area/

area, the 7th Street realignment and grade separation projects to improve truck and rail efficiency, and the $30.6M Freight Intelligent Transportation System which is currently in construction.

California ports use some of the cleanest equipment available and are held to very strict standards relative to their domestic and international competitors. No other state regulates the goods movement industry as aggressively and separately from other sectors as California does. CARB has historically held the goods movement industry to higher standards than other sectors.

- All container lift and horizontal transport equipment is regulated to Tier 4 off-road engine standards by CARB via the Mobile Cargo-Handling Equipment at Ports and Intermodal Rail Yards Regulation for California seaports.
- Drayage trucks serving the Port are all newer than 2007 and use diesel particulate filters. With appointment systems for truckers, the Port has reduced queue and idle times at terminal gates.
- By the end of 2022, every truck serving the Port will have model year 2010 or newer engines pursuant to the CARB Drayage Truck Regulation. Trucks newer than 2010 have selective catalytic reduction for NOx control.
- The Port runs a successful shore power program, with 75% of all 2018 calls using zero-emission shore power. This level of shore power usage was achieved in a very short time frame after an approximately $55 million investment.

The Port competes with other U.S. and Canadian ports for cargo. West Coast ports have been steadily losing market share to East Coast ports since the widened Panama Canal opened.

An Indirect Source Rule is a growth-punishing regulation that will threaten the success of the Port and its workforce, who operate in an industry already held to higher standards than other industries. Any investments that Port tenants and operators make in Oakland hinge on overall business considerations, including regulatory uncertainty and growth potential. Limiting growth will reduce clean technology investment in the Bay Area. Moreover, losing Asian import trade to U.S. East Coast ports has real environmental impacts from longer ship transits. For these reasons, the Port does not support Strategy #62 for an Indirect Source Rule.

**Closing**

The Port submitted a separate letter on the Draft Environmental Impact Report for the WOCAP. That letter, which is included here as Attachment 1, is more detailed and includes a list of technical questions.

Thank you for the opportunity to comment on the WOCAP. My staff and I look forward to continuing and strengthening our efforts with BAAQMD and WOEIP to implement the WOCAP and improve air quality in West Oakland.

Sincerely,

Danny Wan
Acting Executive Director

CC: Richard Sinkoff, Director of Environmental Programs and Planning
Michele Heffes, Acting Port Attorney

Enclosure: September 6, 2019, Port comment letter to BAAQMD on the WOCAP Draft Environmental Impact Report

September 6, 2019

Ada E. Márquez
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
amarquez@BAAQMD.gov

*via email*

**Subject: Port of Oakland Comments on the Draft Environmental Impact Report for the West Oakland Community Action Plan, State Clearinghouse No. 2019059062**

Dear Ms. Márquez:

The Port of Oakland ("Port") appreciates the opportunity to provide comments on the Bay Area Air Quality Management District's ("BAAQMD") July 2019 Draft Environmental Impact Report ("DEIR") for the AB 617 West Oakland Community Action Plan ("WOCAP"). The DEIR identifies the environmental impacts of the WOCAP. This letter follows the June 14, 2019, Port comment letter to BAAQMD on the Notice of Preparation for this DEIR.

The letter introduces the Port and its actions on air quality, then clarifies the role of the Port with respect to the WOCAP, before making specific comments on the DEIR.

## About the Port

Under the Charter of the City of Oakland (the "Charter"), the Port of Oakland is an independent Department of the City of Oakland, operating by and through the Board of Port Commissioners ("Board"). The Board is appointed by the City Council upon nomination by the Mayor and has complete and exclusive power and duty to adopt and enforce rules and regulations within the Port Area. The Port Area includes the waterfront properties and lands adjacent thereto, including trust lands granted to the City by the State of California. As an enterprise department of the City of Oakland, the Port of Oakland does not receive tax revenues, but instead must generate revenue to be self-supporting. About 20% of the jobs created through the Port are based in Oakland. The Port and its tenants contribute $698 million in state and local taxes.[1]

[1] https://www.portofoakland.com/economic-impact-report/jobs-study-port-oakland-generates-84000-jobs-bay-area/

**Market Share and Growth**

The Port is the only container port serving the Bay Area, loading California agricultural products for export to foreign markets and importing goods destined primarily for Bay Area residents. The Port operates in a competitive goods movement marketplace, competing against other ports along the West Coast including Canada and Mexico, and also competing against U.S. East Coast ports. The Bay Conservation and Development Commission ("BCDC") *Draft Final 2019-2050 Bay Area Seaport Forecast*[2] notes:

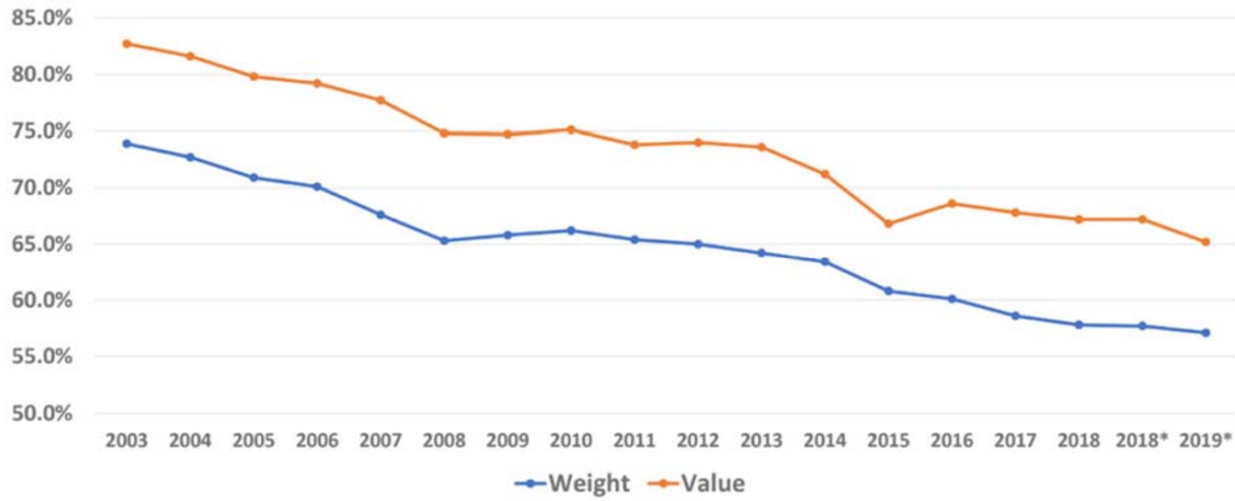
"California container ports compete with other U.S. and North American ports in two ways:

- "California ports compete for "discretionary" container traffic that can move by rail to other regions through any one of several ports. For example, Oakland competes for Asian imports to Midwestern consumer markets with the ports of Los Angeles, Long Beach, Vancouver [Canada], Prince Rupert [Canada], New York-New Jersey, Baltimore, and Virginia.
- "California ports compete with other regions for the location of import distribution centers (DCs) and their inbound trade flows. For example, San Joaquin County might compete with Georgia for a new import DC that would bring in goods through either Oakland or Savannah."

As shown in Exhibit 1, West Coast ports are losing market share both on the weight of cargo and its value. The loss of market share, even as the market grows, means that discretionary cargo may be transiting to the U.S. East Coast or Canada rather than California ports. For the East coast, this entails a longer transit ocean voyage from Asia through the Panama Canal with the associated higher ocean-going vessel ("OGV") emissions.

[2] http://www.bcdc.ca.gov/seaport/CargoForecastDraftFinal.pdf

**Exhibit 1. West Coast Ports' Market Share of Containerized Asian Imports**



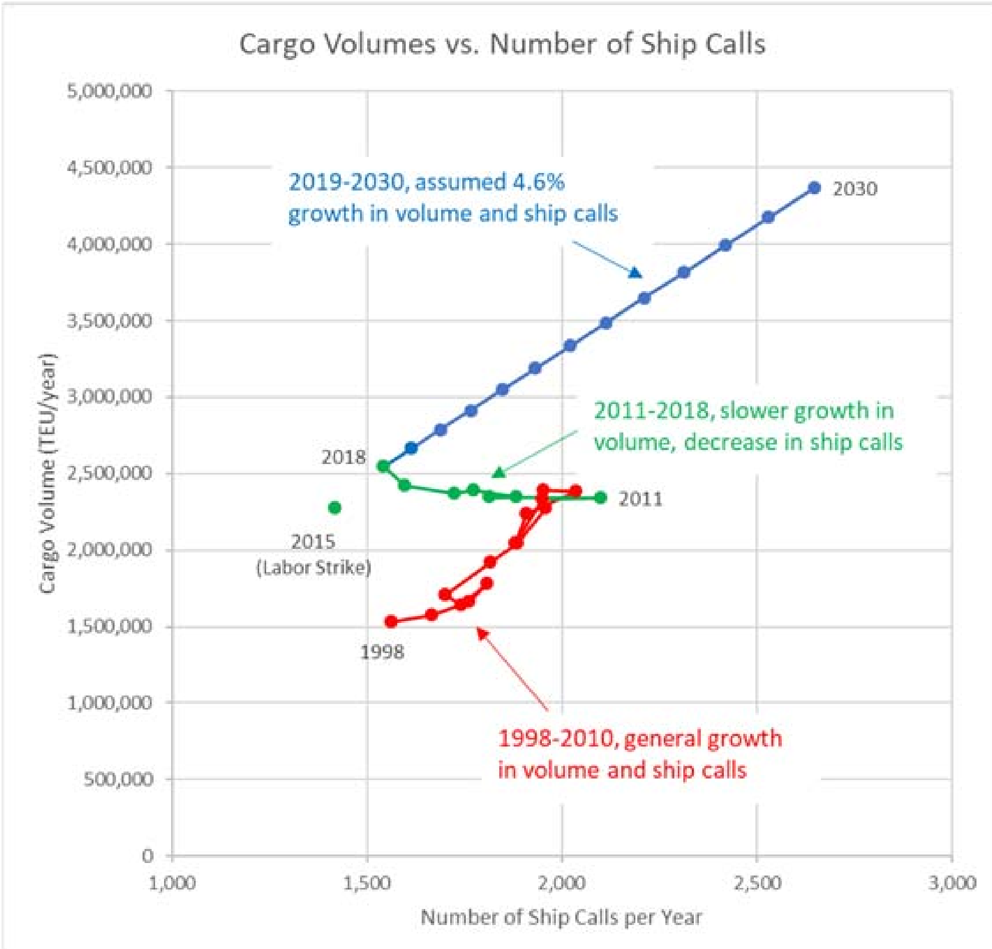

Source: U.S. Commerce Department via Pacific Merchant Shipping Association
*First half of the year only

The Port's Compound Annual Growth Rate ("CAGR") from fiscal year 2008 to fiscal year 2018 was **0.4%**.[3] The Port's fiscal year 2019 through fiscal year 2020 Operating Revenue Budgets are based on cargo growth estimates ranging from 0% to 2.0%. Budget projections through fiscal year 2024 reflect similar growth assumptions.

The number of vessel calls at the Port has been decreasing in recent years, as illustrated in Exhibit 2. Each dot on the graph is a different year. The graph shows cargo volume on the y-axis generally growing upwards from year to year. It shows number of ship calls on the x-axis. The number of ship calls generally grew each year until 2011, when it abruptly shifts and begins to decrease each year.

[3] From Budget and Finance report at May 23, 2019 Port Board Meeting (File ID 098-19), slide 6.

**Exhibit 2. Port Cargo Volumes vs. Number of Ship Calls, Actual 1998-2018 calls and Projected 2019-2030 calls using CARB's average CAGR of 4.6% for the Port**




Starting in 2011, shipping lines have been forming alliances and moving more cargo on fewer, larger ships. The average capacity of a vessel calling the Port is 6,333 Twenty-Foot Equivalent Units ("TEUs") (BCDC, 2019). All international shipping lines calling the Port also call the ports of Los Angeles and Long Beach. As those vessels grow, as described in CARB's *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results*, the vessels calling Oakland will also be, on average, larger with more containers discharged and per vessel.

**Development and Operations**

At the end of 2018, the Cool Port cold storage facility opened on Port property. This facility uses temperature-controlled transloading and efficient use of rail to reduce truck trips. The CenterPoint Properties development, a 460,000-square foot warehousing and transloading facility, is expected to open in June 2020, and it will allow even more transloading within the Port area. The development of transloading centers in the Port's backlands, adjacent to the marine terminals, allows for efficient cargo transport with fewer and shorter truck trips, which is a deliberate Port response to reduce logistics sprawl.

The use of on-dock transloading, on-line portal and appointment systems for truckers, and the cleanest available engines set the Port apart as an industry leader in systematic efficient and low-emissions operations. The Port is currently enacting its GoPort program, a series of three projects to further improve efficiency at the Port. The first project, the $30.6M Freight Intelligent Transportation System ("FITS") is in construction. FITS includes advanced and innovative demonstration technologies to improve the efficiency and safety of operations and improve circulation and reliability of truck and rail throughout the Seaport. The second two projects improve 7th Street access points via grade separations for rail. These projects will improve both truck and rail efficiencies by removing at-grade crossings and modernizing the Port's circulation infrastructure.

**The Port's Role in Improving Air Quality**

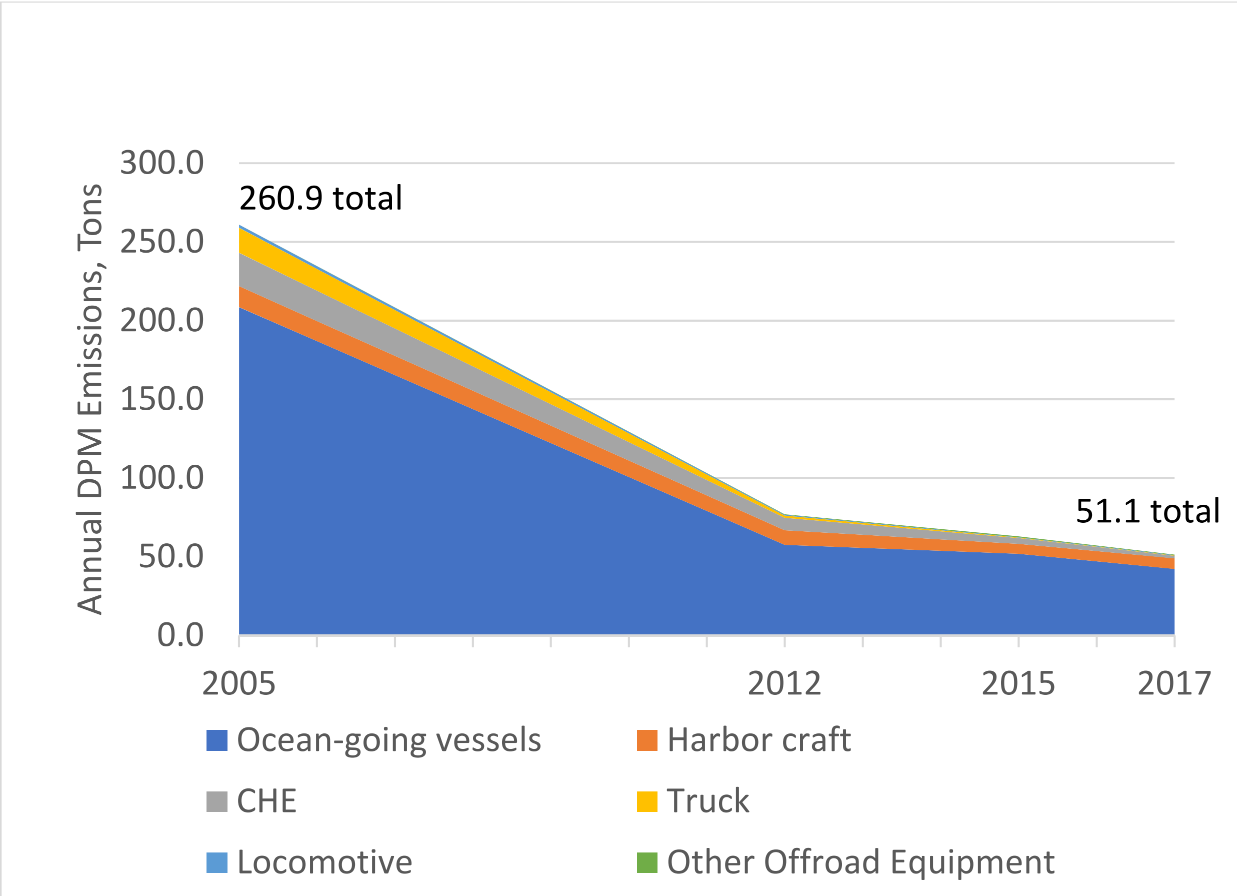
The Port has performed in a leadership role to improve air quality and manage Seaport-serving truck traffic within the Port area and West Oakland.

Following a comprehensive stakeholder outreach process, which included extensive engagement from the West Oakland community and the BAAQMD, the Board approved its Marine Air Quality Improvement Plan (MAQIP) in 2009. The MAQIP identified a series of programs and projects to improve air quality in West Oakland and the region affected by the Port's operations. The Port and its business partners—the carriers, terminals, and truckers—have played a major role and invested millions in their own projects resulting in a decrease in emissions from Port operations.

As a result, the 2017 Seaport Emissions Inventory shows that the Seaport-related emissions have achieved an over 80% reduction in emissions of diesel particulate matter ("DPM") between 2005 and 2017 (Exhibit 3). During this period, the Port, the truckers, the marine terminal operators and the carriers invested in environmental programs designed to reduce emissions through the use of the cleanest diesel engines available, the use of shore power for ocean-going vessels, and outreach to truck and equipment owners regarding incentives, as noted in the Port's June 14, 2019, comment letter to BAAQMD. Maintaining the successful business of the Port is essential to support the 84,144 jobs the Port and its partners provide in the Bay Area, with the Port's overall economic value at an estimated $130 billion.[4]

[4] https://www.portofoakland.com/economic-impact-report/jobs-study-port-oakland-generates-84000-jobs-bay-area/

**Exhibit 3. Reduction in Port Diesel Particulate Matter ("DPM") Emissions Since 2005**




In late 2017, the Port initiated a successor to the MAQIP called the Seaport Air Quality 2020 and Beyond Plan ("2020 and Beyond Plan"). The process of developing the 2020 and Beyond Plan involved extensive stakeholder engagement, including participation by BAAQMD and the West Oakland Environmental Indicators Project ("WOEIP") as co-chairs of the 2020 and Beyond Plan Steering Committee. The 2020 and Beyond Plan establishes the Port's long-term vision of a zero-emissions Seaport and provides a framework for making future decisions on the Port's clean air projects in consultation with the stakeholders. The 2020 and Beyond Plan was approved by the Board on June 13, 2019, through Resolution 1941.

The standards for air quality in California are amongst the most protective of human health in the United States. California sets stricter ambient air quality standards than USEPA. At California seaports, operators use some of the cleanest equipment available and are held to very strict standards relative to their domestic and international competitors, as shown below. No other state regulates the goods movement industry as aggressively and separately from other sectors, as California does; CARB has historically held the goods movement industry to higher standards than other sectors, with the result that the goods movement industry uses cleaner equipment than other industries. The resulting air quality requirements and accomplishments include:

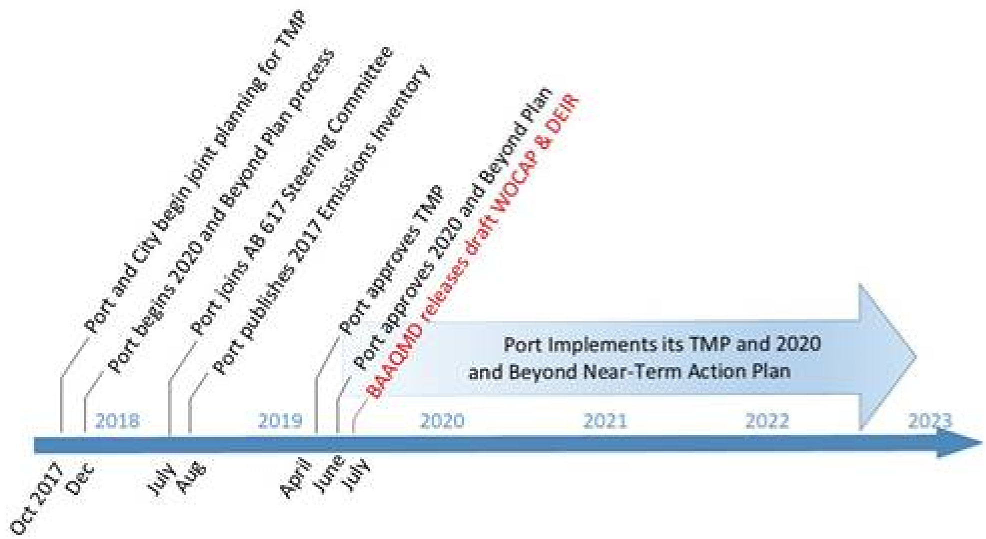
- All container lift and horizontal transport equipment is regulated to Tier 4 off-road engine standards by the California Air Resources Board ("CARB") via the Mobile Cargo-Handling Equipment ("CHE") at Ports and Intermodal Rail Yards Regulation for California seaports.
- Drayage trucks serving the Seaport are all newer than 2007 and use diesel particulate filters. With appointment systems for truckers, the Port has reduced queue and idle times at terminal gates.
- By the end of 2022, every truck will have a model year 2010 or newer engine pursuant to the CARB Drayage Truck Regulation. Trucks newer than 2010 have selective catalytic reduction for NOx control.
- The Port designed, constructed, and operates a shore power program, with 75% of all 2018 calls using zero-emission shore power. This level of shore power usage was achieved after an approximately $55-million investment at the Port and only six years after implementation of California's first-ever requirement to use shore power, a previously untested control measure for container vessels.

It is worth noting that the compliance summary in Chapter 7 of the WOCAP, supported by details in Appendix E of the WOCAP, "List of Complaints Received in West Oakland (January 2016 – December 2018)" showed that there were zero violations documented for complaints related to Port tenants during the three-year period summarized. For trucks, out of 924 inspections, the majority conducted within the Port, only nine reported emissions violations; less than 1%. These data highlight an extremely high compliance rate at the Port for both mobile and stationary sources.

Recognizing that operations at the Seaport and on the City of Oakland's portion of the former Oakland Army Base (OAB) affect the West Oakland community, with some impacts associated with truck traffic in and around the Port, the Port and the City also prepared a Truck Management Plan ("TMP"). The TMP included extensive input from the West Oakland residential and business communities. The Port's Executive Director approved the TMP on April 29, 2019. The TMP addresses impacts in the area encompassed by West Oakland, the Port of Oakland, the former Oakland Army Base, and the industrial area of Jack London Square north of Jefferson Street. The TMP is intended to improve safety for people walking, biking, and driving in West Oakland; reduce the nuisance of trucks driving or parking where they should not; and improve the quality of life for people living and working in West Oakland, including a reduction in localized diesel emissions.

A timeline of recent Port activities relating to the TMP, the 2020 and Beyond Plan, and the WOCAP is provided in Exhibit 4, below. The Port is committed to implementing the TMP and the 2020 and Beyond Plan, effective on their approval dates of April 29, 2019, and June 13, 2019, respectively. The 2020 and Beyond Plan contains a Near-Term Action Plan, which will be implemented independently of the WOCAP. Therefore, all Port commitments listed in the Near-Term Action Plan that overlap with WOCAP Strategies should be part of the "without Plan" scenario in the WOCAP in Chapters 5 and 6 analysis and discussion.

**Exhibit 4. Timeline of Recent Port Activities**




Source: Port of Oakland, 2019.

## <u>The Port's Role on the West Oakland Community Action Plan</u>

Port staff have served on the AB 617 Steering Committee since the July 27, 2018, kick-off meeting at City Hall, where Board of Port Commissioners ("Port Board") President Mr. Cestra Butner provided opening statements and Port Environmental Supervisor Diane Heinze described the Port's Draft Seaport Air Quality 2020 and Beyond Plan. The result of the AB 617 Steering Committee process is the WOCAP, created by BAAQMD and WOEIP.

The Port's focus in its involvement with the WOCAP has been to educate and inform the BAAQMD and WOEIP about the Port, the need for maintaining and improving efficient Seaport operations, and both ongoing and future air quality improvement initiatives the Port included in the MAQIP and the 2020 and Beyond Plan. The Port will evaluate initiatives identified through the WOCAP process to determine if they meet the screening criteria described in the 2020 and Beyond Plan for implementation.

It must be noted that the Port is not a Responsible Agency for the WOCAP, under the provisions of the California Environmental Quality Act ("CEQA"). CEQA Guidelines section 15381 states:

> *"'Responsible agency' means a public agency which proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or negative declaration. For the purposes of CEQA, the term 'responsible agency' includes all public agencies other than the lead agency which have discretionary approval power over the project."*

The WOCAP DEIR accurately reflects this in Section 1.2.3 of the DEIR. BAAQMD does not list the Port as a Responsible Agency.

However, Section 2.3 of the DEIR states:

> *"[t]he Seaport Air Quality 2020 and Beyond Plan is an example of the Port's effort to manage operations at and air pollution from the Port. For the [West Oakland Clean Air] Plan, the Port will implement strategies that address air pollution from Port and Port tenant activities, such as the movement of inbound and outbound freight on cargo equipment, port trucks, locomotive, and ocean-going ships and harbor craft in the San Francisco Bay (Strategies #19, #32, #38, #58, #59, and #60)."*

This is not accurate. The initiatives and process described in the Port's 2020 and Beyond Plan constitute the Port's plan and commitment towards a zero-emission seaport. Although the 2020 and Beyond Plan will consider additional initiatives not explicitly listed in that Plan; including initiatives identified in the WOCAP DEIR and others, through the process described in the Plan, the WOCAP cannot commit the Port to implement strategies listed, but not analyzed, in the DEIR. The Board of Port Commissioners has sole authority over the actions of the Port and only the Board can direct Port actions. Port staff have already started screening emissions reduction measures for a potential update to the 2020 and Beyond Plan's Near-Term Action Plan. The Port will consider incorporation of appropriate measures from the WOCAP based upon review and consideration and the exercise of the Board's independent judgment, per the 2020 and Beyond Plan and associated Board Resolution 19-41.

**The Relationship between the WOCAP DEIR and the Port's CEQA Review Process**

The WOCAP includes 84 Strategies, 28 of which (33%) are under the authority of BAAQMD to implement and 56 of which are outside BAAQMD's authority to implement, are not analyzed in the DEIR, and, in the case of those initiatives identified as the Port's responsibility, have not been evaluated in other CEQA documents. Suggesting that agencies such as the Port will rely on the DEIR to tier off CEQA analysis of the 56 Strategies creates the false impression that these initiatives have some level of CEQA clearance, which they do not. While many of the 28 BAAQMD Strategies were "not expected to result in adverse physical environmental impacts" as stated in the DEIR, some were found "too speculative to determine if any environmental impacts might occur at this stage," and as such may also need further CEQA review before they can be considered for implementation.

Chapter 4 of the DEIR identifies Alternative 2 as the Alternative consisting of the 28 BAAQMD Strategies; which are analyzed in the DEIR. Because these are the only initiatives evaluated in the DEIR, this should be identified as the Proposed Project. The Proposed Project identified in the DEIR, including all 84 Strategies, has not been evaluated for CEQA compliance.

**The Port Board of Commissioners Will Conduct its own CEQA Review Pursuant to its own Authority**

The Port offers these comments on the DEIR as a member of the AB 617 Steering Committee and as a committed participant in reducing emissions in West Oakland, primarily through the MAQIP and its successor, the 2020 and Beyond Plan. As defined under the California Environmental Quality Act, the Port is not a Responsible Agency for the WOCAP, meaning the Port will need to conduct its own CEQA review pursuant to its own authority for consideration of implementation of actions in the 2020 and Beyond Plan.

The Port requests that it be removed from the discussion in Section 2.3, which should be limited to BAAQMD as the agency with authority over the 28 Strategies analyzed in the DEIR.

Section 1.2.3 of the DEIR states "[l]ocal public agencies, such as cities, and counties could be expected to tier off this EIR when considering land use and planning decisions related to projects that implement a Strategy in the West Oakland Community Action Plan, pursuant to CEQA Guidelines §15152."

Section 1.4 of the DEIR states "…the Air District's approval of the Strategies will not authorize or commit those agencies to any action. As these actions and activities by independent agencies are not Air District actions and will occur independently of the District's approval of the Strategies under their authority, they are not direct or indirect effects resulting from approval of the Plan that must be analyzed in this document. Accordingly, the EIR does not address implementation actions by other agencies that are independent of the Air District's implementation actions under the Community Action Plan."

The Port cannot rely on or tier off the AB 617 WOCAP DEIR to provide environmental review for future discretionary actions as there is no analysis of direct or indirect effects associated with Port-assigned strategies. In addition, the Port will not be making any discretionary approvals for the 28 BAAQMD actions included in the 84 WOCAP Strategies. Even though Section 1.1 of the DEIR states the Port is one of the government agencies with "primary responsibility for implementing the strategies in the [West Oakland] Community Action Plan," the Port is not a Responsible Agency as defined in CEQA.

**Port-Specific Growth Estimates Should Rely on Port-Specific Studies**

As the Port stated in its June 14, 2019 comment letter to BAAQMD on the Notice of Preparation for this DEIR, the macroeconomic cargo growth estimate CARB developed and BAAQMD applied in Appendix C of the DEIR is overly aggressive, not realistic, and therefore misleading in the context of forecasting emissions. CARB developed a growth estimate of 4.6% CAGR based on its interpretation of the Federal Highway Administration Freight Analysis Framework ("FAF") Version 4.3.1 data. In the WOCAP, this growth estimate is rounded to 5%.

The WOCAP (Page 5.23) and the DEIR do not provide details on the queries made of the FAF database, nor the underlying assumptions for freight growth in Oakland. The FAF database has been updated three times since Version 4.3.1. Accordingly, the Port requests that the FAF growth analysis be updated to rely on FAF Version 4.5.

Subsequent to CARB's FAF analysis, BCDC has prepared a port- and region-specific analysis of anticipated cargo growth in the Bay Area. As CARB states in its January 2019 *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results*,[5] for the Ports of Los Angeles and Long Beach ("LA/LB"), "CARB is using the Mercator growth rates for the Ports of LA/LB because; (1) this analysis was port specific and not regional, and (2) the forecasting accounts for berth space, port capacity, shipping lanes, and additional features not included in FAF." The same is true for the BCDC *Draft Final 2019-2050 Bay Area Seaport Forecast*. Since BCDC has published the Oakland-specific forecast, BAAQMD's future-year projections should replace the unrealistic 4.6% forecast with the BCDC forecast of 2.2% CAGR for container throughput, to provide a justifiable projection of anticipated growth. This is the medium-growth scenario in the BCDC forecast. It is particularly important that the 4.6% CAGR **not** be applied to vessel and tug activity because growth in number of vessel calls should be estimated separately as the trend over the past eight years is for negative growth in number of vessel calls.

The Port requests that the growth rate of vessel calls be set to 0%. This is a conservative estimate which will overestimate vessel activity in future years.

**The Port Supports the Goal of Coordinating Efforts on Strategies Focused on the Highest-Impact Sources**

Figure 5-10 of the WOCAP shows that Street and Highway Heavy-Duty Trucks, excluding Port Drayage Trucks, have a high health impact relative to their emissions due to proximity to residents in West Oakland. The Port supports Strategies regarding emissions reductions for these categories, as well as for rail and commercial harbor craft.

**The Port Supports Strategies Continuing Incentives**

The Port recognizes that incentive programs are critical to implementing several air quality initiatives. For instance, the Port is currently designing and constructing electric charging stations for ten zero-emissions battery-electric trucks at tenant Shippers Transport Express ("STE"). The trucks are being funded through CARB's Zero- and Near-Zero Emissions Freight Facilities ("ZANZEFF") grant, with the intent to demonstrate zero-emissions Class 8 over-the-road drayage trucks in a commercial environment. As part of the ZANZEFF grant project, it is expected that $9 million will be awarded to improve air quality associated with Port seaport operations, out of a larger multi-port grant award, to demonstrate the viability of zero emissions cargo handling equipment and heavy-duty Class 8 electric trucks in seaport operations.[6]

Of the ten emissions-reduction projects listed in Table 2.6-2 of the DEIR and repeated in Table D-1 of Appendix D to the WOCAP, six of these projects were already initiated by Port tenants, for total $PM_{2.5}$ reductions of 2.5 tons per year. Three of the remaining projects, for tug

[5] https://www.arb.ca.gov/msei/ordiesel/draft2019ogvinv.pdf
[6] https://www.portofoakland.com/seaport/port-oakland-add-electric-trucks-thanks-state-grant/

boat engine replacements, will also serve Port operations. Not listed in Table 2.6-2 are three additional projects in West Oakland, funded by BAAQMD through the Reformulated Gasoline Settlement Fund ("RFG") in 2019. These projects will bring five electric forklifts, one electric vacuum unit, two electric terminal trucks, and six electric yard hostlers to West Oakland.[7]

WOCAP Strategies #36, 44, 45, 46, 47, 48, and 49 are for the BAAQMD to use and improve incentives for equipment and infrastructure. The Port applauds these Strategies and will continue to encourage Port tenants and related business to avail themselves of available funding through Trucker Work Group announcements, Trucker Environmental Office Hours, and individual outreach. Trucker Environmental Office Hours allow Port staff to inform truck drivers about grant and voucher funding opportunities for cleaner equipment, assist with the grant application process, and provide updates on the latest zero-emissions demonstration projects.

Exhibit 5 shows the details of weekly Trucker Environmental Office Hours at the Port. As noted in the Port's June 14, 2019, comment letter to BAAQMD, BAAQMD staff are always invited to attend these office hours, which Port staff find to be a rewarding and productive way to advertise the technologies and funding available to truck drivers. Port staff also request BAAQMD promotional materials for grants in the following languages most commonly spoken by Port truckers: English, Spanish, Punjabi, Simple Chinese, and Vietnamese.

**Exhibit 5. Trucker Environmental Office Hours Advertisement on Maritime Street**


[7] http://www.baaqmd.gov/~/media/files/board-of-directors/2019/msc_agenda_072519-pdf.pdf?la=en

Unlike cleaner diesel equipment, zero-emissions technologies will require new infrastructure for charging or alternative fuel dispensing. Infrastructure for zero-emissions equipment needs incentive funding as much as the equipment itself, and, unlike the equipment, which is limited in operational availability at this time, infrastructure can be funded immediately. The Port suggests that WOCAP Strategies #36, 44, 45, 46, 47, 48, and 49 be refined to explicitly allow for the funding of infrastructure independent of equipment. For each Strategy that begins "The Air District offers financial incentives to..." the Port requests the Strategy be revised to begin "The Air District offers financial incentives for equipment and infrastructure to…"

Port staff encourage BAAQMD to streamline and simplify the funding application process. Programs like CARB's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project ("HVIP") and Clean Off-Road Equipment Voucher Incentive Project ("CORE") vouchers are examples of streamlined and simple funding opportunities. HVIP and CORE do not require tedious applications or up-front payment for new equipment with delayed reimbursement, which is a burden on the applicant. Additionally, neither HVIP nor CORE requires an existing piece of equipment, which may have significant resale value, to be scrapped.

Given the state of zero-emissions technology, demonstration projects like ZANZEFF will continue to be essential to improve commercial offerings. In addition to the Port's ZANZEFF commitment, Port tenant GSC Logistics is currently testing a BYD battery-electric Class 8 truck, with second-generation trucks to follow within the year. The GSC Logistics project is funded through CARB's Climate Change Investments, with the South Coast Air Quality Management District ("SCAQMD") as the lead applicant and BAAQMD as a co-applicant. This grant-funded project allows the user, GSC Logistics, to invest time and expertise in the project, with minimal financial and administrative burden. The technology vendor, who stands to benefit from an improved commercial product, is the major sponsor of the project.

Incentives are necessary to support transformative change in seaport equipment technologies. The investments the Port's tenants and operators make in Oakland are contingent on overall business considerations, including regulatory uncertainty and growth potential. Regulations to limit growth will limit clean technology investment in the Bay Area. The loss of Asian import trade to U.S. East Coast ports has real environmental impacts; longer trade routes have higher emissions—from the sources the WOCAP health risk assessment has identified as the highest emitters, OGV.

**<u>Corrections of Inaccuracies in the WOCAP DEIR</u>**

The Port requests correction of the following items in the Final EIR and the Final WOCAP, including the Final Technical Support Document. Attachments 1 and 2 to this letter list specific questions on the DEIR and WOCAP, respectively.

The Port requests that in the Technical Support Document, when entire phrases, sentences, and paragraphs are quoted from the Port's 2017 Seaport Air Emissions Inventory, that a citation is given to the author, Ramboll US Corporation, and the text is placed in quotation marks.

1. Figures 1-1, 2-1, 2-4, 2-5, 2-6, 2-7, 3-1, 3-3, 3-4, 3-8, 3-9, 3-10, 3-12, 3-13, 3-14, 3-15, 3-16, 3-17, 3-18, and 4-2 of Appendix C to the DEIR show an incorrect Port boundary. Exhibit 6 shows the correct Port boundary, with the City's portions of the former Oakland Army Base, the Union Pacific Railyard, and the Schnitzer Steel property specifically shown as not being in the Port or the Port Area. Only a portion of the Schnitzer Steel property is in the Port's land use planning Port Area.

2. DEIR Section 2.2 Background states "Stationary sources of air pollution are regulated and subject to permitted conditions established by the District. These include complex sources such as metal smelting, wastewater treatment plants, and Port activities, and smaller facilities, such as diesel generators, gasoline dispensing facilities (GDFs, or gas stations), and boilers." Stationary sources at the Port, which are diesel generators and GDFs, are not complex sources. Please strike the phrase "and Port activities" from this sentence.

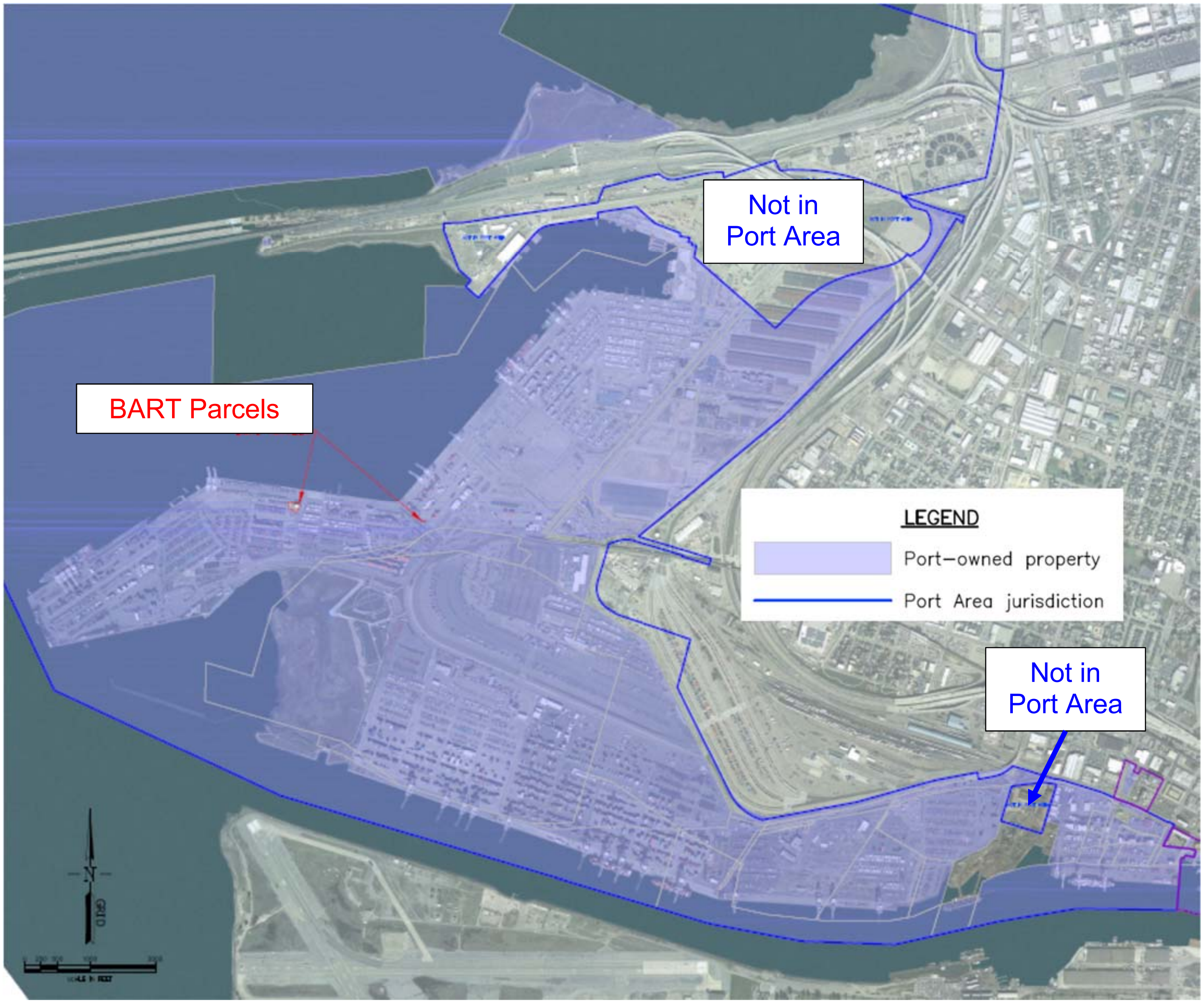
3. DEIR Section 3.7.3.7 Land Use and Planning incorrectly states "The Union Pacific Intermodal Yard lies south of Interstate 880, within the Port." The Union Pacific Railyard is not within the Port. Please replace this sentence with "The Union Pacific Intermodal Yard lies south of Interstate 880, outside of the Port Area."

4. DEIR Section 3.7.3.7 Land Use and Planning incorrectly states: "Interstate 880 is located along the western boundary of West Oakland area. The Union Pacific Railroad and the BNSF Railroad, and the Knight Rail Yard are located underneath and immediately west of Interstate 880." The Knight Rail Yard is now known as the Outer Harbor Intermodal Terminal. The Port requests that this sentence replace "Knight Rail Yard" with "Outer Harbor Intermodal Terminal."

5. DEIR Section 3.7.3.7 says "The Oakland Base Reuse Authority currently leases space for various transportation, industrial and commercial uses until the former Army Base is redeveloped for permanent non-military uses." The Port of Oakland and the City of Oakland lease their respective parts of the space, not the Oakland Base Reuse Authority. The Oakland Army Base redevelopment is underway and contains only non-military uses. Please strike this sentence.

6. Appendix C of the DEIR, Section 2.1.3 Emissions Sources and Base Year, says "The Port is the fifth busiest port in the U.S. and serves as a gateway for intermodal cargo transport. In 2017, the Port consisted of four active marine terminals (TraPac, Nutter (STS/Everport), Oakland International Container Terminal [OICT], and Matson), and two railyards (Burlington Northern Santa Fe [BNSF], and Oakland Global Rail Enterprise [OGRE]). A fifth terminal (the Charles P. Howard terminal, located on the southeastern corner of the Port), has been vacant since the tenant filed for bankruptcy in 2010. Presently, the American Baseball League the Oakland Athletics (the A's) is investigating the possibility of building a baseball stadium on the site that is currently being used for long term Port (drayage) Truck parking."

**Exhibit 6. Port of Oakland Property Map**



a. The Port of Oakland is currently the eighth busiest container port in the United States based on annual container volume. Please update the ranking from “fifth” to “eighth.”

b. Since not all terminals are identified by their current lessee in parentheses, please strike “(STS/Everport)” from the second sentence of this paragraph.

c. The Charles P. Howard Terminal, located on the southeastern corner of the Port, is not vacant: short-term tenants use the site for truck parking, loaded and empty container storage and staging, transloading (i.e. logistics) facilities, longshoreperson training facilities, and berthing vessels for maintenance and storage. The Howard Terminal has not been used as a marine terminal since January 2014. Please describe the actual activities at the Howard Terminal and strike the incorrect description of a tenant filing for bankruptcy in 2010.

7. Appendix C of the DEIR, Section 2.1.3 Emissions Sources and Base Year, states “While there are some privately owned terminals and non-maritime activity on Port property, emissions from these sources are not included in the Port source categories. For example, emissions from activities at Schnitzer Steel and from truck fleets operating on Port property were accounted for separately.”

    a. Privately owned terminals are not part of the Port nor are they on Port property. Exhibit 6 shows what is Port property and what is in the Port Area. The Schnitzer Steel terminal is not “within the Port” or “part of the Port” and is not on Port property. Please strike the sentence “While there are some privately owned terminals and non-maritime activity on Port property, emissions from these sources are not included in the Port source categories.”

    b. The Port requests clarification of what is construed as “non-maritime activity on Port property.”

8. Appendix C to the DEIR, Section 2.5 Ocean-Going Vessels, states “Vessel auxiliary power is primarily used when propulsion engines are not running (e.g., at berth or in anchorage outside of the Source Domain). Vessel auxiliary power was derived from auxiliary generator capacity taken from the 2018 IHS Fairplay database or estimated from a comparable ship (by size and owner) if data were not available.” This is incorrect. Vessel auxiliary engines run at the same time as the propulsion engines during transiting and maneuvering, and also run when propulsion engines are not running, unless the vessel is connected to shore power. The Port’s 2017 Seaport Emissions Inventory accounts for auxiliary engine emissions in all vessel modes.

9. Appendix C of the DEIR, Section 2.7 Cargo Handling Equipment, states “Other types general purpose CHE, such as sweepers, bulldozers, backhoes, excavators, and other off-road equipment, were not included as part of the CHE category since they are used at the Port for facility maintenance and construction.” Equipment that is not used to move cargo, which at the Port is containerized, is not CHE. The Port

suggests this sentence be revised to "Other types of general-purpose off-road equipment, such as sweepers, bulldozers, backhoes, excavators, and other off-road equipment, were not included as part of the CHE category since they are used at the Port for facility maintenance and construction."

10. Appendix C of the DEIR, Section 2.7 Cargo Handling Equipment, states "Emissions were split between on-dock and off-dock operations, based on the mix of equipment types used at the marine terminals as compared to the BNSF railyard." The use of the term "off-dock operations" at the Port applies to more areas than just the BNSF railyard. Section 3.4.7 indicates that all off-dock CHE emissions were modeled as originating from polygon area sources covering the BNSF railyard. Additionally, Figure 3-14 incorrectly identifies the location of the BNSF railyard. The "off-dock operations" label applies to all non-marine terminal tenants at the Port, including at the BNSF railyard and at the former Oakland Army Base.

11. Appendix C to the DEIR, Section 6 Uncertainties, Limitations, and Future Improvements, states "The District did attempt to correct emissions for the largest emissions sources (such as Schnitzer Steel) to better reflect the latest source test results and upcoming facility modifications." Since the health risk assessment for the WOCAP is intended to provide information on "base year (effective 2017)" conditions, the Port requests that upcoming facility modifications at Schnitzer Steel and any other large emissions sources be assumed only in future-year analyses, not the 2017 base-year health risk analysis.

12. Appendix D of the WOCAP, page D-3, states "[i]n response to advocacy by community members, the Air District and others, the Port Commissioners adopted the 2020 and Beyond Plan in 2019 with the condition that the Port would review and incorporate applicable measures from this Community Action Plan." Board Resolution 19-41 directs Port staff to "submit an Agenda Report to the Board by June 1, 2020, on Port-related strategies and/or implementing actions that are legally required or that, in the Port's judgment, may meet the 2020 and Beyond Plan feasibility criteria (Table D2), as a result of the final West Oakland Community Air Action Plan prepared pursuant to AB 617 and any potential related updates to the 2020 and Beyond Plan." Port staff have started screening emissions reduction measures for a potential update to the 2020 and Beyond Plan's Near-Term Action Plan. The Port will not incorporate measures from the WOCAP without appropriate review and consideration using the Board's judgment, per the 2020 and Beyond Plan and associated Board Resolution 19-41.

Port staff appreciate the responses from BAAQMD staff on technical questions transmitted via email on August 23, 2019. Port staff request that speciated toxic air contaminant (TAC) emissions from the Port Truck category be removed to avoid double-counting of Port Truck TAC emissions. DPM is the only TAC that should be used for Port Truck running exhaust emissions, per BAAQMD Rule 2-5, which states "Diesel exhaust particulate matter should be used as a surrogate for all TAC emissions from diesel-fueled compression-ignition internal combustion engines." Port Truck emissions estimates should be conducted using the same methods as for non-Port trucks and vehicles.

**Closing**

Thank you for the opportunity to comment on the DEIR. My staff and I look forward to discussing these issues with you. If you have any questions, please contact Catherine Mukai, Port Associate Environmental Planner/Scientist at (510) 627-1174 or cmukai@portoakland.com.

Sincerely,

Richard Sinkoff
Director of Environmental Programs & Planning

CC: Danny Wan, Acting Port Executive Director
Michele Heffes, Acting Port Attorney

**Attachment 1: Questions on the DEIR**

1. In Section 1.4.2.2 Energy Impacts, what is the basis of the estimate of 0.42 gigawatt-hours for marine vessel shore power? The value is repeated in Table 3.3.3 of the DEIR. The Port's 2015 Emissions Inventory Final Report, which includes shore power usage information for container ships only, does not contain the value 0.42 gigawatt-hours for marine vessel shore power, nor does the Port's 2017 Seaport Air Emissions Inventory.

2. In Section 3.2.1.4 Sensitive Receptors, Community-Scale Emissions Inventory, and Health Risks in West Oakland, Table 3.2-8 shows a modeled residential cancer risk from local sources in West Oakland of 204 in one million. In Appendix C to the DEIR, Section 5.3 states population-weighted excess cancer risk is 203 in a million. In Appendix C to the DEIR, Table 5-1, the "excess cancer risk across residential areas in West Oakland" is shown to be 307.1 in one million. What is the difference between population-weighted cancer risk and residential-weighted cancer risk?

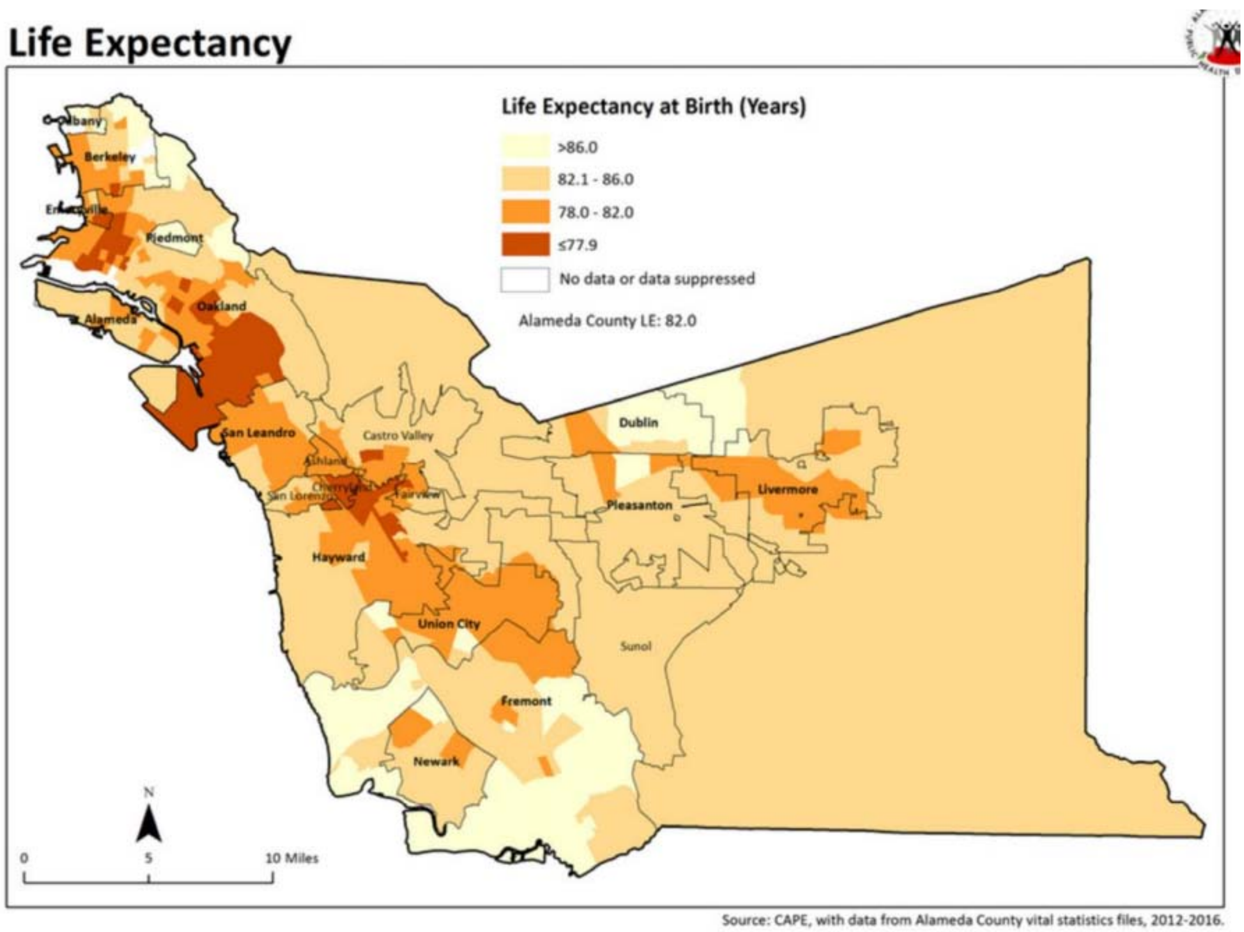
3. To support regulatory planning and advocacy, the Port requests that a supplemental table of emissions is provided that sorts emissions sources by regulatory category, for example CHE or commercial harbor craft.

**<u>Attachment 2: Questions on the WOCAP</u>**

1. Figure 2-5, the totals add to more than 100%. Please add cumulative total as labels on y-axis.

2. Figure 2-7 and 2-9: Do these life expectancy values include un-natural deaths due to accident or violence, or are they only for deaths due to disease/sickness?

3. Figure 2-8: What year is this life expectancy map based on? The map seems inconsistent with the information in Figure 2-7. For example, Figure 2-7 shows that Asians and Hispanic/Latinos have the longest life expectancy, but Chinatown and East Oakland which have the highest populations for those groups show the shortest life expectancy. West Oakland has similar life expectance as North Oakland and West Berkeley. Can you explain the discrepancy? There is a more recent map available at Alameda County's website here: [http://www.acphd.org/media/500113/mapset2018.pdf](http://www.acphd.org/media/500113/mapset2018.pdf). Please replace the older version with this one.




4. Page 2-9: Are there more recent vital statistics than 2010-2012?

5. Page 4-6, top of page. How do exposure conditions in Hoover-Foster neighborhood compare to other neighborhoods in the East Bay and in the Bay Area? Can you give some comparisons?

6. Page 5-2: Is there a way we can see the results of the regional modeling work?

7. Table 5-2: Why are the dredging emissions higher than reported in the Port's 2017 inventory? Where are the Schnitzer tug emissions reported? How were Schnitzer ship emissions calculated? What is included in UP Rail Yard emissions?

8. Figure 5-10: This graph is very helpful and illustrative. As requested previously, could you please include the same graph for 2024?

9. Page 5-23 for On-Road Trucks: Starting at the end of 2022 all trucks serving the Port will have model year 2010 or newer engines. Is this included in the Without Plan scenario?

10. Page 5-24: Why is Port growth 5% when regional growth is only 1%? The Port understands that the two do not need to be the same, but they are at least related, since the Port's key imports are regional cargo, not discretionary Inland Point Intermodal (IPI) cargo.

11. Page 6-3: The Port and City are committed to fully implementing the Truck Management Plan. In fact, the Port and the City have already started implementing strategies for routing, signage, and parking. The Truck Management Plan will be implemented even if the WOCAP is not approved, thus the benefits should be included in any "Without Plan" scenarios.

12. Page 6-4: CARB is already developing its new Advanced Clean Truck Regulation; the final workshop was held 8/21/19. The Port participated in the workshop. CARB staff announced that the language was largely final and they did not expect many changes. For this reason, the benefits should be included in any "Without Plan" scenarios.

13. Page 6-6: The Port applauds Strategy #70 to install filtration systems at schools, community centers, and retirement homes. The Port suggests that the program include funding set asides for regular maintenance of the filters.

14. Page 6-7: Please give more specifics in the bullet list of assumptions for the "With Plan" scenario. The Port's understanding is that for trucks, the assumption is that eight new electric trucks will be purchased each year starting in 2020; or 40 trucks by the end of 2024. There are currently zero electric drayage trucks in commercial production, so these may be more demonstration trucks? For cargo handling equipment, how many pieces are assumed to become electric each year and of what type? Please list the funding source assumed for these purchases, that is helpful information.

15. Page 6-7: The Port is very pleased that BAAQMD plans to streamline and simplify the grant application process and requirements. Port staff hear a lot of concerns during Trucker Environmental Office Hours about how difficult and complicated the process is, technical difficulties with the on-line application, the limitations of working with dealers whose supply of used trucks is overpriced with small selection. Other concerns are the requirement to scrap a truck that can be as new as 2010 (with a 2009 engine) when that truck still has a lot of resale value. Perhaps BAAQMD would consider 3-way transfers? Language barriers could be

mitigated by providing grant materials in more languages, and more advertising would be useful.

16. Page 6-10: What is the per-truck DPM and cancer risk reduction for replacing a single diesel truck with an electric truck? Why are the Advanced Clean Truck and Heavy-Duty Inspection and Maintenance rules considered in the "With Plan" alternative when both of those CARB rules are well underway and will continue even if the WOCAP is not approved? The benefits of these should be moved to the "Without Plan" scenario.

    For ocean-going vessels, the Port requests a 0% growth rate, not 5%, for reasons already stated above. Also, the Port already has a requirement to meet 90% shore power compliance by 2020, due to grant requirements. Because of this and the fact that CARB's At-Berth amendments are already underway, the benefits of increased shore power should be moved to the "Without Plan" scenario. These will occur regardless of whether the WOCAP is approved.

17. Page 6-14: California Waste Solutions has already publicly announced its move to the former Oakland Army Base, so the benefits should be included in the "Without Plan" scenario.

18. Page D-3: The paragraph starting with "The MAQIP" is not accurate. The MAQIP planning horizon goes until 2020. The Port had always intended to create a new air quality plan once the MAQIP expired naturally. It is not true to say that the Port initiated the 2020 and Beyond effort because it recognized "the need to identify additional strategies to achieve the 85% reduction goal." It is more accurate to say that the Port initiated the 2020 and Beyond Planning process to proactively develop a long-term framework to address both TACs and GHGs. The Port believes it is on track to meet the 85% reduction goal relying on the MAQIP, considering it was already at over 80% reductions in 2017 with three more years of progress ahead.

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Alison Kirk
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Re: Comment on AB 617 West Oakland Community Action Plan

Dear Ms. Kirk,

We, the Union of Concerned Scientists (UCS), are writing to provide comments regarding the West Oakland Community Action Plan draft released in July 2019.

As a science-based advocacy organization, UCS is familiar with the air quality and health impacts West Oakland faces from a number of pollution sources. We support the longstanding efforts of the community in West Oakland, and the work of the West Oakland Environmental Indicators Project (WOEIP), to advocate for health, wellness, and reducing air quality burdens in their back yard. We applaud the Bay Area Air Quality Management District (BAAQMD) and WOEIP for working together to develop a strong plan addressing the range of contributing factors.

UCS has particular expertise around the air quality and emissions impacts of vehicles–in this regard, we can speak to the critical importance of the plan's strategies to fund clean trucks, move the Port of Oakland toward a zero-emission port, and reduce car trips.

For many years, UCS has worked to curb the harmful air quality, health, and climate impacts from freight, particularly from diesel trucks and buses. **Funding zero emission trucks, setting emissions targets, and establishing zero-emission vehicle and technology standards are necessary for reducing the disproportionate impacts of freight in West Oakland**.

As mentioned in the plan, heavy-duty diesel trucks are the largest single source of West Oakland's diesel PM and cancer risk impacts. In California, heavy-duty vehicles contribute 40 percent of transportation $NO_x$, 27 percent of PM2.5, and 20 percent of GHGs, while only accounting for 7 percent of the vehicle population.[1] Furthermore, a recent UCS study showed that on-road transportation emissions disproportionately harm communities of color in California, including places like West Oakland. On average, African American Californians are exposed to $PM_{2.5}$ pollution that is 43 percent higher and Latino Californians are exposed to $PM_{2.5}$ pollution 39 percent higher than that for white Californians.[2]

**Zero emission trucks are increasingly available.** The state of the industry is advancing rapidly, and manufacturers continue to come out with new electric truck models in all classes. Electric trucks are

[1] Chandler, S., J. Espino, and J. O'Dea. 2017. Delivering opportunity: How electric buses and trucks can create jobs and improve public health in California. Cambridge, MA, and Berkeley, CA: Union of Concerned Scientists and The Greenlining Institute. Online at www.ucsusa.org/sites/default/files/attach/2016/10/UCS-Electric-Buses-Report.pdf
[2] Reichmuth, David. 2019. Inequitable Exposure to Air Pollution from Vehicles in California. Cambridge, MA: Union of Concerned Scientists. Online at www.ucsusa.org/clean-vehicles/electric-vehicles/CA-air-quality-equity.

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particularly suitable for West Oakland where driving distances around the port are relatively short. UCS is simultaneously advocating for a strong Advanced Clean Truck rule at the California Air Resources Board (CARB), which will ensure more electric trucks are available for purchase, shifting the industry toward a zero-emission future.

In order to accelerate the transition to zero-emission trucks in West Oakland, BAAQMD, Port of Oakland, City of Oakland, CARB, and other agencies must provide adequate incentives and infrastructure at the local level to do so. We support these strategies as outlined in the plan, as well as measures to reduce negative impacts from existing sources such as inspection and maintenance, changes to truck routes, and limiting idling, among others. To ensure success, implementation is critical, as is collecting adequate data and setting measurable goals.

We urge the City of Oakland and Port of Oakland to implement the infrastructure and land use changes needed to move Oakland towards a zero-emission port, and to **set concrete, measurable dates and targets** to achieve electrification as soon as possible. Technologies required to move towards a zero-emission port are already available. There is ample opportunity for the Port to electrify now.

Light-duty vehicle emissions also contribute to increased pollution exposure for residents in West Oakland. We also support the plan's suggested improvements to support bike and pedestrian improvements, public transit, and vehicle electrification generally.

In conclusion, we support the process for drafting the Community Action Plan and the strategies it lays out for improving air quality and health in West Oakland. Thank you for considering our comments.

Sincerely,

Joyce Xi
Western States Campaign Coordinator

Jimmy O'Dea
Senior Vehicles Analyst

Coreen Weintraub
Western States Senior Outreach and Campaign Coordinator

David Reichmuth
Senior Engineer

**From:** Ms.Margaret Gordon
**To:** Brian Beveridge; Henry Hilken; Jack Broadbent; Gregory H. Nudd; Alison Kirk; Azibuike Akaba; Luz Gomez
**Subject:** Fwd: One other thing.
**Date:** Monday, September 2, 2019 1:08:19 PM

FYI,
Ms.M

---------- Forwarded message ---------
From: **Arthur Boone** <arboone3@gmail.com>
Date: Sun, Sep 1, 2019 at 6:02 PM
Subject: One other thing.
To: Brian Beveridge <brian.woeip@gmail.com>, Margaret Gordon <margaret.woeip@gmail.com>

What most caught my attention when I went to some MAQIP meetings ten years ago was the disparity between West Oakland air and top-of-the-hills air; as I remember the PM 2.5 or PM 10 for WO was twice as bad as the top of the hills.

I didn't notice any top-of-the-hills numbers in that thick report at your meeting.All they were measuring is how one part of WO is better or worse than another - a no-win situation for you. But those other numbers need to stay our there.

In our San Leandro case, we were trying to get air data for Warden Park, that 200 house enclave west of 880, north of Davis Street and east of Doolittle and closest residential neighborhood to the transfer station on whose property a garbage-sorting factory was to be erected. The only air data for that community is gathered on International Blvd. at 99th Avenue (as I remember); lots of opportunity for all the exhausts for all those jets now taking off 24/7 with packages going here and there to get diluted with cross-winds, etc.

I have come to believe that the BAAQMD is there to give the appearance of government caring but not the substance of caring. Watch your step.

Arthur R. Boone
Center for Recycling Research, Berkeley

--
Ms. Margaret Gordon/Co-Director
West Oakland Environmental Indicators Project

349 Mandela Parkway
Oakland, CA 94607
510-257-5647 Direct line
www.woeip.org

| | |
|---|---|
| **From:** | Fashing, Terri |
| **To:** | BAAQMD West Oakland Plan |
| **Cc:** | Hathaway, Kristin; Moore, David |
| **Subject:** | Comments on Draft West Oakland Community Action Plan |
| **Date:** | Friday, September 6, 2019 3:59:52 PM |

To Alison Kirk,

Please accept these comments on the Bay Area Air Quality Management District's Draft West Oakland Community Action Plan (Draft Plan):

1. **Page 6** - Under Land Use Strategies, the Draft Plan States: *The second is a recommendation that the City of Oakland develop a comprehensive urban canopy and vegetation plan for West Oakland that identifies the locations where trees can be added, such as parks and along Caltrans' highway and freeway rights-of-way, and that provides for the long-term maintenance of trees (Strategies #10, 16).*

   **Comment:** The City of Oakland (City) is a Permittee under the San Francisco Bay Regional Water Quality Control Board National Pollutant Discharge Elimination System (NPDES) Municipal Regional Stormwater Permit (NPDES Permit No. CAS612008, Order No. R2-2015-0049) (MRP). This permit requires the City to appropriately incorporate green infrastructure requirements into planning documents such as Urban Forestry Plans. The City of Oakland Public Works Department's (OPW) Watershed and Stormwater Management Division has coordinated with the OPW Parks and Trees Services Division as they prepare to develop Oakland's Urban Forest Master Plan (UFMP, funded by a grant from the California Department of Forestry and Fire Protection). The UFMP will develop ways to use trees to mitigate stormwater runoff by thoughtfully choosing planting locations and removing the most square feet of impervious surfaces possible. These actions will improve water quality by preventing runoff that pollutes Oakland's waterways.

   The City's Watershed and Stormwater Management Division (Watershed Division) provides guidance on designing planted areas to clean stormwater runoff and will be completing a Green Stormwater Infrastructure Plan at the send of September 2019. See the Green Infrastructure Resources webpage for more information: https://www.oaklandca.gov/resources/green-infrastructure-resources.

2. **Page 6-16:** Under Strategy 10 states: *The City of Oakland creates a comprehensive, area-wide urban canopy and vegetation plan that identifies locations that trees can be added and maintained, such as parks and along Caltrans' right-of-ways, and develops a plan to protect existing trees that reduce exposure to air pollution emissions in West Oakland. This includes partnering with local nonprofit groups and encouraging trees on private property.*

   **Comment:** Please add a sentence to the end of Strategy 10 that acknowledges the City's plan to develop Oakland's Urban Forest Master Plan and refer to the co-benefits that will be achieved by the plan, including mitigating stormwater runoff by thoughtfully choosing planting locations and removing the most square feet of impervious surfaces possible to improve water quality by preventing runoff that pollutes Oakland's waterways and the San Francisco Bay.

Thanks,

**Terri Fashing, CPSWQ, QSD**
**Watershed Program Specialist, Watershed and Stormwater Management Division**
Bureau of Design and Construction
City of Oakland | Oakland Public Works | APWA Accredited Agency
250 Frank H Ogawa Plaza, Ste 4314 | Oakland, CA 94612
**(510) 238-7276** | (510) 390-5156 Cell
tfashing@oaklandca.gov

**Report A Problem | Call OAK 311** | **From outside Oakland: (510) 615-5566**
311.oaklandca.gov | OAK311@oaklandca.gov | Mobile app: Apple or Android

**Mission Statement:**
*Oakland Public Works is dedicated to you! We strive to maintain, improve and preserve Oakland's infrastructure and environment for the residents, businesses, visitors and future generations of every neighborhood in our diverse city.*

**From:** Andy Garcia
**To:** BAAQMD West Oakland Plan
**Subject:** AB 617 Communications letter.
**Date:** Monday, September 9, 2019 3:15:11 PM
**Attachments:** image001.png

---

Dear Bay Area Air Quality Management District:
GSC Logistics is one of the largest transportation and warehousing services provider at the Port of Oakland. GSC Logistics supports and endorses your comments and critical highlights, referencing developing a ball park at the port's Howard Terminal, and the detrimental impact such development would impose upon the West Oakland Community and downtown Oakland as well. GSC Logistics and its' almost 400 employees do not support the Howard Terminal playground/ballpark.
Please, prevent the ball park from being developed at the Howard Terminal. The current coliseum complex, off highway 880 and 66th Avenue in East Oakland, is ideal for such a project.
Please, accept our gratitude for your diligence and professionalism at all times.

Thank you kindly for your communications.

GSC Logistics ❖ A.L. "Andy" Garcia, Chairman/Executive Vice President ❖ 530 Water St. 5th FL., Oakland, CA. 94607 ❖ T: (510) 844-3702 ❖E: algarcia@gsclogistics.com

**From:** Whit Schweizer
**To:** BAAQMD West Oakland Plan
**Subject:** Plan Review Comments
**Date:** Friday, August 30, 2019 12:38:05 PM

---

There should be added to the Plan a section that addresses site work, demolition and construction in West Oakland. Infill development, re-purposing of former industrial sites, residential upgrades, and redevelopment have expanded in number of projects to the point that such activities are essentially a continuous source of air pollution. Lead particulate is an issue on every site because of historic airborne deposition from transportation and industrial sources. Asbestos is an issue on every demolition project. Development of industrial sites, and commercial sites such as former gasoline stations, dry cleaners, involve toxic organic chemicals such as gasoline and solvents that can be released as vapors during excavations and as vapor intrusion into homes from migrating, shallow groundwater. Heavy metals and other toxics such as PCBs and PAHs can be released in dust emissions. City of Oakland Planning and Building Department, BAAQMD, and Alameda County Department of Environmental Health must work together to enforce regulations that curtail construction-related emissions.
Sincerely,
John Schweizer
WOEIP Community Environmental Consultant
--

John W. Schweizer
47 Vicente Road
Berkeley, California 94705
w. (510) 526-3214
m. (510) 508-5050

| | |
|---|---|
| **From:** | ray kidd |
| **To:** | BAAQMD West Oakland Plan |
| **Subject:** | Comment on Owning Our Air Draft Plan |
| **Date:** | Monday, September 9, 2019 12:27:44 PM |

On page 7-2 in the enforcement section of the Draft Action Plan, it says that air district inspectors will respond immediately to complaints unless the "complaints are received after business hours or on weekends, the inspector will respond on the next workday." This policy may work under many circumstances, but if there is a situation where there may be chronic compliance issues, the creator of the pollution source can soon learn that if they create their emissions after 5 pm or on a weekend and have it stopped by the next workday then they may be able to continue with their bad practices since the evidence of their action will be dissipated by the time the inspector arrives. I would suggest that the district amend its inspection system so that an inspector could be available if there were ongoing complaints that came in outside the normal inspection hours.

Ray Kidd

# Individual Comments

## Exec Summary and Introduction

## Chapter 1

**Name not available**
July 22, 2019, 9:27 AM

test

**Name not available**
July 22, 2019, 10:54 AM

How does the plan address restaurant smoke?
Jane Doe
public@baaqmd.gov

**Jane Doe**
inside District Boundary
July 22, 2019, 10:57 AM

How does the plan address restaurant smoke?

## Chapter 6

**Chandra Johannesson**
inside District Boundary
September 6, 2019, 11:26 AM

The East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the West Oakland Community Action Plan (CAP) and respectfully submits the following comments related to the proposed strategies.

Draft Strategy #7: The City of Oakland revises business licensing procedures to require current and proposed businesses to disclose truck visits per day and works with Caltrans to determine the number of trucks that park in the Caltrans right-of-way near West Oakland. Caltrans works with WOEIP and the Air District to address air quality issues from truck parking leases, such as by modifying leases to allow for collecting surveys and partnering with the Air District and CARB to allow enforcement access.
Comment: Please clarify the definition of “truck.” EBMUD has facilities located in the Project Area as well as a fleet of vehicles—light, medium, and heavy duty—that must be used in the course of installing, repairing and replacing critical drinking water and wastewater infrastructure in the Project Area. It is not clear to what extent this strategy would apply to EBMUD and its vehicles which are needed in order to perform its essential public service. EBMUD’s vehicles utilize BACT and are in compliance with all existing local and state air requirements including the Heavy Duty Public and Utility Fleet Rule. Additionally, EBMUD class I-III vehicles are in compliance with all SMOG program requirements EBMUD is concerned that limiting the use of vehicles within the project area will limit EBMUD’s ability to respond effectively in situations where critical water and wastewater infrastructure requires repair or replacement.

Draft Strategy #8: The City of Oakland amends existing City Ordinances and Administrative policies to list new truck yards and truck service, repair, and fueling businesses as prohibited uses within the area of West Oakland that is inside the freeways (excluding the Port, OAB, and 3rd St. corridor of Jack London Square from Brush St. to Union St.).
Comment: Please clarify the definition of “truck” and “truck yards.” It is not clear if existing EBMUD facilities, which include vehicle storage, repair, and fueling equipment, would be prohibited under this strategy. Further, the blanket prohibition of the development of new truck yards could be a disadvantage for the Project Area. Yard development should be permissible for essential public service utilities in order to reduce the time for EBMUD to respond to water emergencies which will minimize the amount of time customers are without water and to minimize the potential environmental impacts from water main breaks and/or sanitary sewer overflows. We recommend that instead of a blanket prohibition that this strategy be revised to consider essential public service and

include language for case-by-case exemptions as appropriate when there is a net benefit to the Project Area.

Draft Strategy #9: The City of Oakland develops a plan to limit the hours that trucks can operate in the community.
Comment: Please clarify the definition of “trucks” relevant to this strategy. EBMUD crews respond at any time of day—24 hours a day, seven days a week—to water infrastructure repairs (e.g., water main repairs). Delaying response to main breaks can result in impacts to customers, including loss of drinking water service, property damage from flooding and potential impacts to the environment. Further, EBMUD discharges are regulated under federal NPDES permits and require that EBMUD respond immediately to control the discharges to minimize impacts to receiving waters. Please ensure that this strategy includes exemption language for hour limitations for essential public services and that adoption of such a restriction will not impede compliance with other regulatory mandates.

Draft Strategy #67: The Air District proposes new regulations to reduce emissions from wastewater treatment plants and anaerobic digestion facilities, such as a regulation to reduce emissions of methane, reactive organic gases, and oxides of nitrogen by 2019.
Comment: Please add a clear reference to the specific regulation—Rule 13-4—that the Air District is developing for this intended purpose.

Draft Strategy #68: The Air District proposes a regulation to reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020.
Comment: It is EBMUD’s understanding after meeting with representatives of the Air District on August 28, 2019, that the intent of this strategy is to proposed amendments to existing Rule 8-5 and not to create a new regulation. EBMUD requests that the strategy be reworded to say: “The Air District proposes amendments to Rule 8-5 to further reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020.”

Draft Strategy #77: The California Office of Environmental Health Hazard Assessment, in partnership with the Steering Committee, the City of Oakland, CARB, and the Air District, studies setting a limit on West Oakland’s cumulative exposure to TACs.
Comment: EBMUD generates some emissions during the course of providing water and wastewater services. These are related to operations that are critical to EBMUD providing reliable water and wastewater services to the people in and outside the Project Area, such as individual wastewater treatment processes, or trucks responding to locations in the Project Area to repair a broken water main or to proactively replace aging pipelines. EBMUD strives to implement programs that extend beyond regulatory compliance stipulations and actively collaborates with regulatory agencies, local agencies, non-governmental organizations, and the public to understand their needs and balance those needs with its operations. EBMUD provides essential services 24 hours a day, 7 days a week while protecting public health and the environment. EBMUD requests that, before adopting a cumulative exposure limit, CARB work with EBMUD to better understand water and wastewater operations to ensure that the proposed new limit will not impede EBMUD’s critical services. EBMUD understands from discussion and materials provided at the July 10, 2019, Steering Committee meeting that the Air District will work with EBMUD and other stakeholders throughout the limit setting process.

Further Study Measure #4: The Air District will work with CARB and other agency and community partners to identify incentives to improve shortcut nitrogen removal processes at wastewater treatment plants to reduce emissions. Shortcut nitrogen removal processes may provide potential benefits in terms of energy, carbon, and chemical savings compared to conventional biological nitrogen removal.
Comment: EBMUD is the only wastewater treatment plant within the West Oakland study area and currently does not have “conventional biological nitrogen removal” in its wastewater treatment processes. Therefore it would be an ineffective use of the Air District’s limited resources to seek incentives to improve upon something that does not currently exist. Instead, EBMUD suggests the following language for this Further Study Measure: “The Air District will work with CARB and other agency and community partners to identify incentives for property owners within the study area to implement technologies that will improve upon existing technologies in use in order to reduce emissions targeted by the CAP.”

EBMUD looks forward to continued involvement in the West Oakland Steering Committee as the CAP is refined, the EIR is finalized, and as the team moves forward in to the implementation phase.

## Bay Area Air Quality Management District Owning Our Air Comment Card
### ~ West Oakland Community Action Plan: *Owning Our Air* ~
### Town Hall Meeting August 17, 2019

*Persons wishing to submit written comment are encouraged to do so.*

Name: BILL ABOUD: Email Address or Phone Number: BILL@ABTRUCK.COM

Organization Represented: AB TRUCKING

Address: 10 BURMA RD

City: OAKLAND State: CA Zip: 94607

PUBLIC COMMENT:

INTRODUCTION – 9,000 DRIVERS THAT WORK @ THE PORT
OVER 3,000 LIVE IN ~~[illegible]~~ LIA OVER
1,000 LIVE IN OAKLAND ZIP CODES
IT WOULD BE GREAT TO REFLECT THAT IN THE INTRO
TRUCKER ARE RESIDENTS!

Please leave completed comment card at the sign-in desk or with an Air District staff person.
Written comments on the plan will be accepted through September 9, 2019.


## Bay Area Air Quality Management District Owning Our Air Comment Card
### ~ West Oakland Community Action Plan: *Owning Our Air* ~
### Town Hall Meeting August 17, 2019

*Persons wishing to submit written comment are encouraged to do so.*


Name: BILL ABOUD: Email Address or Phone Number: BILL@ABTRUCK.COM

Organization Represented:

Address: 10 BURMA RD

City: OAKLAND State: CA Zip: 94607

PUBLIC COMMENT:

#35 LONG TERM LEASES FOR SMALL PORT SERVING TRUCKING COMPANIES
AS A PRIORITY TO ENCOURAGE INVESTMENT IN INFRASTRUCTURE AND HELP
GROW LOCAL BUSINESS.
ALL THE SMALL TRUCKING COMPANIES ARE ON A MONTH TO MONTH LEASES
TRIPLE NET LEASES THAT ARE THE MOST EXPENSIVE.
THE VENDOR LEASES ARE A SMALL PART OF THIS COMMENT.


Please leave completed comment card at the sign-in desk or with an Air District staff person.
Written comments on the plan will be accepted through September 9, 2019.

## Bay Area Air Quality Management District Owning Our Air Comment Card
## ~ West Oakland Community Action Plan: *Owning Our Air* ~
### Town Hall Meeting August 17, 2019

*Persons wishing to submit written comment are encouraged to do so.*

Name: SCOTT ANDREWS Email Address or Phone Number: SCOTT.ANDREWS@ACLIMA.IO

Organization Represented: ACLIMA (AB-617 MONITORING GRANT RECIPIENT WITH WOEIP)

Address: 10 LOMBARD ST. #200

City: S.F. State: CA Zip: 94111

PUBLIC COMMENT: REGARDING BASELINE CONDITIONS (PAGE 5-13), WE ARE ALMOST DONE WITH A NEW BLOCK-BY-BLOCK BASELINE MAP OF ALL OF WEST OAKLAND & WILL BE CREATING AN UPDATED MAP EACH QUARTER (FOREVER, WE HOPE) THAT CAN BE USED TO TRACK OUTCOMES OF STRATEGIES IMPLEMENTED OVER TIME. THE NEWEST QUARTERLY BASELINE MAP WILL BE AVAILABLE IN LATE AUG OR EARLY SEPT, AND INCLUDES AT LEAST 20 PASSES OF EVERY ROAD SEGMENT TO CREATE MEDIAN MEASUREMENTS. THANKS!

**Please leave completed comment card at the sign-in desk or with an Air District staff person.**
**Written comments on the plan will be accepted through September 9, 2019.**

## Bay Area Air Quality Management District Owning Our Air Comment Card
## ~ West Oakland Community Action Plan: *Owning Our Air* ~
### Town Hall Meeting August 17, 2019

*Persons wishing to submit written comment are encouraged to do so.*

Name: Maura Bonnarens Email Address or Phone Number: maura.bonnarens@ebmud.com

Organization Represented: EBMUD

Address: 2020 Wake Avenue

City: Oakland State: CA Zip: 94610

PUBLIC COMMENT: Please add to glossary the definition of "organic liquid storage tank" used in Strategy 68. It is our understanding the intent is that they are large tanks containing refined petroleum products, That should be clearly documented in the CAP.
(Same comment previosly submitted but no change made between Admin Draft and public draft.)

**Please leave completed comment card at the sign-in desk or with an Air District staff person.**
**Written comments on the plan will be accepted through September 9, 2019.**

Submitted at Steering Committee Meeting @ 8/7/19

**Bay Area Air Quality Management District Owning Our Air Comment Card**

**~ West Oakland Community Action Plan: *Owning Our Air* ~**

**Town Hall Meeting August 17, 2019**

*Persons wishing to submit written comment are encouraged to do so.*

Name: James Durnont

Email Address or Phone Number: James@Buildmomentum.io

Organization Represented: Grant Farm, Inc. d/b/a Momentum

Address: 1111 Broadway, Floor 3

City: Oakland State: CA Zip: 94607

PUBLIC COMMENT: Agree with the youth voice org.: $1MM for strategy 49 isn't enough if it includes ZE CHE. Bifurcate the CHE from that to increa impact + effectiveness on lawn + garden equipment transition to ZE.

Explore expanding Indirect Source Rules to create incentive systems that push land owners + ~~bus~~ larger businesses to adopt + encourage low + zero-emission technologies + services (EVSE, MHE, CHE, etc.). Model from SCAQMD Rule 2202

Please leave completed comment card at the sign-in desk or with an Air District staff person.

Written comments on the plan will be accepted through September 9, 2019.

As a resident of Emeryville (Adeline @ 46th) close to West Oakland, I would very much like to offer my support and time to help develop strategies for Implementation.

**CONFIDENTIAL AND DELIBERATIVE**

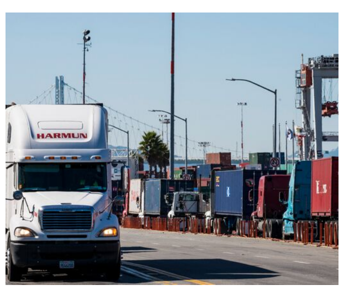
# FINAL ENVIRONMENTAL IMPACT REPORT

*OWNING OUR AIR*

# THE WEST OAKLAND COMMUNITY ACTION PLAN

State Clearinghouse No. 2019059062

September 2019

Bay Area Air Quality Management District

West Oakland Environmental Indicators Project
Know which way the wind blows

A joint plan by Bay Area Air Quality Management District and West Oakland Environmental Indicators Project

# ~~Draft~~ Final Environmental Impact Report for the

# AB 617 Owning Our Air: The West Oakland Community Action Plan

*Prepared for:*

Bay Area Air Quality Management District
375 Beale St., Suite 600
San Francisco, CA 94109
Contact: Ada Márquez
(415) 749-8673

*Prepared By:*

Environmental Audit, Inc.
1000-A Ortega Way
Placentia, CA  92870
Contact: Debra Bright Stevens
(714) 632-8521

~~July~~ September 2019

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## *PREFACE*

*This document constitutes the Final Environmental Impact Report (FEIR) for the West Oakland Community Action Plan. The Draft EIR was circulated for a 45 public review and comment period on July 25, 2019. The comment period ended on September 9, 2019. Eleven comment letters were received; ten letters were received by September 9, 2019 and one letter was received after the comment period. The comment letters and responses are included in Appendix D of this document. The comments were evaluated and minor modifications have been made to the Draft EIR such that it is now a FEIR. None of the modifications alter any conclusions reached in the Draft EIR, nor provide new information of substantial importance relative to the draft document that would require recirculation of the Draft EIR pursuant to CEQA Guidelines §15088.5. Therefore, this document is now a FEIR. Additions to the text of the EIR are denoted using underline. Text that has been eliminated is shown using ~~strike outs~~.*

# Table of Contents

## ~~Draft~~ Final Environmental Impact Report for the AB 617 Community Action Plan

Page No.

**CHAPTER 1 – INTRODUCTION AND EXECUTIVE SUMMARY**
1.1 Introduction .......... 1-1
1.2 California Environmental Quality Act .......... 1-1
1.2.1 Notice of Preparation/Initial Study .......... 1-2
1.2.2 Type of EIR .......... 1-2
1.2.3 Intended Use of this Document. .......... 1-2
1.2.4 Areas of Potential Controversy .......... 1-3
1.3 Executive Summary: Chapter 2 – Project Description .......... 1-3
1.4 Executive Summary: Chapter 3 – Environmental Setting, Impacts, and Mitigation Measures .......... 1-5
1.4.1 Air Quality .......... 1-6
1.4.2 Energy .......... 1-8
1.4.3 Greenhouse Gas Emissions .......... 1-9
1.4.4 Hazards and Hazardous Materials .......... 1-10
1.4.5 Utilities and Service Systems .......... 1-12
1.5 Executive Summary: Chapter 4 – Alternatives Analysis .......... 1-13
1.6 Executive Summary: Chapter 5 – References .......... 1-14

**CHAPTER 2 – PROJECT DESCRIPTION**
2.1 Introduction .......... 2-1
2.2 Background .......... 2-1
2.3 Agency Authority .......... 2-4
2.4 Project Location .......... 2-6
2.5 Objectives of the West Oakland Community Action Plan .......... 2-10
2.6 Project Description .......... 2-10
2.6.1 Stationary Source Strategies .......... 2-11
2.6.2 Mobile Source Strategies .......... 2-11
2.6.3 Other Mobile Source Strategies .......... 2-11
2.6.4 Land Use Strategies .......... 2-12
2.6.5 Health Programs .......... 2-12
2.6.6 Emission Reductions and Community Benefits .......... 2-20

Page No.

**CHAPTER 3 – ENVIRONMENTAL SETTING, IMPACTS, MITIGATION MEASURES AND CUMULATIVE IMPACTS**


3.1 Introduction. 3.1-1
3.1.1 Environmental Setting 3.1-1
3.1.2 Significance Criteria 3.1-2
3.1.3 Environmental Impacts. 3.1-2
3.1.4 Mitigation Measures. 3.1-3
3.1.5 Cumulative Impacts. 3.1-4
3.1.6 Overview of Analytical Approach. 3.1-4
3.2 Air Quality 3.2-1
3.2.1 Environmental Setting 3.2-1
3.2.2 Regulatory Setting 3.2-21
3.2.3 Significance Criteria 3.2-28
3.2.4 Evaluation of Air Quality Impacts 3.2-29
3.2.5 Mitigation Measures 3.2-42
3.2.6 Cumulative Impacts 3.2-43
3.3 Energy 3.3-1
3.3.1 Environmental Setting 3.3-1
3.3.2 Regulatory Setting 3.3-3
3.3.3 Significance Criteria 3.3-9
3.3.4 Evaluation of Energy Impacts. 3.3-9
3.3.5 Mitigation Measures. 3.3-13
3.3.6 Cumulative Energy Impacts 3.3-14
3.4 Greenhouse Gas Emissions. 3.4-1
3.4.1 Introduction. 3.4-1
3.4.2 Environmental Setting 3.4-3
3.4.3 Regulatory Setting 3.4-7
3.4.4 Significance Criteria 3.4-16
3.4.5 Evaluation of GHG/Climate Change Impacts. 3.4-17
3.4.6 Conclusion on GHG Emissions Impacts and Cumulative Impacts. 3.4-25
3.5 Hazards and Hazardous Materials. 3.5-1
3.5.1 Environmental Setting 3.5-1
3.5.2 Regulatory Setting 3.5-6
3.5.3 Significance Criteria 3.5-16
3.5.4 Evaluation of Hazards and Hazardous Materials Impacts 3.5-16
3.5.5 Mitigation Measures. 3.5-22
3.5.6 Cumulative Impacts 3.5-23
3.6 Utilities and Service Systems 3.6-1
3.6.1 Introduction 3.6-1
3.6.2 Environmental Setting 3.6-1
3.6.3 Regulatory Setting 3.6-6
3.6.4 Significance Criteria 3.6-10
3.6.5 Evaluation of Utilities and Service System Impacts 3.6-11
3.6.6 Mitigation Measures. 3.6-18

Page No.

3.6.7 Cumulative Utilities and Service System Impacts .............................. 3.6-18
3.7 Other CEQA Sections ........................................................................ 3.7-1
3.7.1 Growth Inducing Impacts ........................................................... 3.7-1
3.7.2 Significant Environmental Effects Which Cannot Be Avoided and Significant Irreversible Environmental Changes ............................ 3.7-3
3.7.3 Potential Environmental Impacts Found Not to Be Significant ............ 3.7-3

**CHAPTER 4 – ALTERNATIVES ANALYSIS**
4.1 Introduction ........................................................................ 4-1
4.2 Project Objectives ........................................................................ 4-2
4.3 Alternatives Rejected as Infeasible ........................................................ 4-2
4.4 Description of Project Alternatives ........................................................ 4-3
4.4.1 Alternative 1 – No Project Alternative ............................................ 4-3
4.4.2 Alternative 2 – District Only Strategies ............................................ 4-4
4.5 Environmental Impacts of Project Alternatives ........................................ 4-8
4.5.1 Alternative 1 – No Project Alternative ............................................ 4-8
4.5.2 Alternative 2 – District Only Strategies ............................................ 4-10
4.6 Conclusion ........................................................................ 4-13
4.7 Comparison of Alternatives ........................................................ 4-14

**CHAPTER 5 – REFERENCES**
5.1 References ........................................................................ 5-1
5.2 Organizations and Persons Consulted ........................................................ 5-4
5.3 List of Environmental Impact Report Preparers ........................................ 5-4

**APPENDICES**

APPENDIX A: Notice of Preparation and Initial Study
APPENDIX B: Emission Calculations
APPENDIX C: Technical Support Document
<u>APPENDIX D: Response to Comments on Draft EIR</u>

**FIGURES**:
Figure 2-1 Bay Area Air Quality Management District Jurisdiction .......................... 2-7
Figure 2-2 West Oakland Community Action Plan Regional and Vicinity Map ........................................................................ 2-8
Figure 2-3 West Oakland Community Action Plan Planning Boundary .................... 2-9
Figure 3.2-1 Cancer Risk Weighted Toxics Trends ................................................ 3.2-13
Figure 3.2-2 Sensitive Receptors in West Oakland ................................................ 3.2-16

**TABLES**:
Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Residual Impacts ........................................................................ 1-15
Table 2.6-1 West Oakland Community Action Plan Proposed Strategies .................. 2-13
Table 2.6-2 Air District Funded Projects to Further Reduce Diesel Particulate Matter and PM2.5 ................................................ 2-27

Page No.


Table 3.2-1 Federal and State Ambient Air Quality Standards ................................ 3.2-2
Table 3.2-2 Bay Area Air Pollution Summary - 2017 ............................................ 3.2-3
Table 3.2-3 Bay Area Air Quality Summary Days over Standards. ......................... 3.2-5
Table 3.2-4 Anthropogenic Air Emission Inventory 2015 ...................................... 3.2-9
Table 3.2-5 Particulate Emissions Inventory by Source, Annual Average 2015..... 3.2-10
Table 3.2-6 Summary of 2017 Air District Ambient Air Toxics Monitoring Data ........................................................................................ 3.2-15
Table 3.2-7 West Oakland Emission Inventory ...................................................... 3.2-18
Table 3.2-8 Annual Average Modeled Impact of Local Sources on Residential Cancer Risk in West Oakland........................................... 3.2-20
Table 3.2-9 Summary of Bay Area Air Toxics Hot Spots Program Risk Management Thresholds .................................................................... 3.2-26
Table 3.2-10 Strategies to be Implemented by the Air District with Potential Air Quality Impacts ............................................................. 3.2-30
Table 3.2-11 Emission Factors Associated with Typical Construction Equipment ......................................................................................... 3.2-31
Table 3.2-12 Estimated Construction Emissions for Enclosures.............................. 3.2-32
Table 3.2-13 Delivery Truck Emissions .................................................................. 3.2-33
Table 3.2-14 PG&E Air Emission Forecast............................................................. 3.2-37
Table 3.2-15 Potential Reduction in Fuel Use Associated with Implementation of the West Oakland Community Action Plan .................................... 3.2-38
Table 3.2-16 Ammonia Slip Calculation ................................................................. 3.2-39
Table 3.2-17 West Oakland Community Action Plan Predicted Emission Reductions .......................................................................... 3.2-40
Table 3.2-18 Operational Emissions Under Strategies that the Air District Would Implement Under the West Oakland Community Action Plan ............ 3.2-41
Table 3.3-1 Bay Area Utility Electricity Consumption by County for 2017 ............. 3.3-3
Table 3.3-2 Strategies with Potential Energy Impacts ............................................. 3.3-10
Table 3.3-3 Estimated Electricity Increases Associated with the West Oakland Community Action Plan................................................ 3.3-11
Table 3.3-4 PG&E Energy Sales Forecast ............................................................. 3.3-12
Table 3.4-1 Greenhouse Gases and Global Warming Potential................................. 3.4-4
Table 3.4-2 2015 BAAQMD Greenhouse Gas Emission Inventory .......................... 3.4-5
Table 3.4-3 Bay Area Emission Trends by Major Sources ........................................ 3.4-6
Table 3.4-4 Oakland Estimated GHG Emissions ...................................................... 3.4-7
Table 3.4-5 Control Strategies to be Implemented by the Air District with Potential GHG Impacts.......................................................................... 3.4-18
Table 3.4-6 GHG Emission Estimates for Typical Construction Equipment Assuming an 8-Hour Operational Day ................................................ 3.4-19
Table 3.4-7 West Oakland Community Action Plan GHG Construction Emission Summary ................................................................................. 3.4-20
Table 3.4-8 West Oakland Community Action Plan Potential Indirect GHG Emission Impacts Associated with Transportation Activities ............... 3.4-21

Page No.


Table 3.4-9 West Oakland Community Action Plan Predicted GHG Emission Reductions .................... 3.4-24
Table 3.4-10 West Oakland Community Action Plan Predicted GHG Emission Reductions .................... 3.4-25
Table 3.5-1 Hazardous Material Incidents 2018 by County .................... 3.5-4
Table 3.5-2 Hazardous Materials Incidents 2018 .................... 3.5-5
Table 3.5-3 Control Strategy with Potential Hazard/Hazardous Material Impacts .................... 3.5-17
Table 3.5-4 Overview of Regulations, Codes, and Standards Related to Hydrogen Infrastructure and Safety .................... 3.5-22
Table 3.6-1 Number of Class III Landfills Located within the Bay Area and Related Landfill Capacity .................... 3.6-2
Table 3.6-2 Class II Landfills Located within Alameda County and Related Landfill Capacity .................... 3.6-2
Table 3.6-3 Hazardous Waste Generation in Alameda County 2017 .................... 3.6-5
Table 3.6-4 Control Strategy with Potential Solid Waste Impacts .................... 3.6-11
Table 4-1 West Oakland Community Action Plan – Alternative 2, Air District Only Strategies .................... 4-5
Table 4-2 Comparison of Alternatives .................... 4-14

# CHAPTER 1

## INTRODUCTION AND EXECUTIVE SUMMARY

Introduction
California Environmental Quality Act
Executive Summary:  Chapter 2 – Project Description
Executive Summary: Chapter 3 –Environmental Setting, Impacts and Mitigation Measures
Executive Summary: Chapter 4 – Alternatives Analysis
Executive Summary:  Chapter 5 - References

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# 1.0 INTRODUCTION AND EXECUTIVE SUMMARY

## 1.1 INTRODUCTION

The Bay Area Air Quality Management District (District), in accordance with Assembly Bill 617, (AB 617) is proposing to implement the West Oakland Community Action Plan. AB 617 requires the adoption and implementation of community emissions reduction plans for targeted jurisdictions with disproportionate impacts from air pollution. Pursuant to AB 617, the Bay Area Air Quality Management District (Air District) and the West Oakland Environmental Indicators Project jointly developed a community emissions reduction plan, referred to as the Community Action Plan, for West Oakland. The proposed plan includes strategies at the community level to maximize emission reductions and reduce residents' cumulative exposure to criteria air pollutants, diesel particulate matter (Diesel PM), fine particulate matter ($PM_{2.5}$), and toxic air contaminants (TAC). The West Oakland Community Action Plan is an integrated community air quality plan to reduce the community's burden from air pollution and eliminate health risk disparities in West Oakland. The Community Action Plan documents the Steering Committee's effort to study air pollution in West Oakland, and to identify and to prioritize Action Strategies that once implemented, will work towards eliminating West Oakland's air pollution burden.

The government agencies with primary responsibility for implementing the strategies in the Community Action Plan include the Air District, California Air Resources Board (CARB), City of Oakland, Port of Oakland, Alameda County Public Health Department, California Department of Transportation (Caltrans), Alameda County Transit Commission (ACTC), and Metropolitan Transportation Commission.

## 1.2 CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., requires that the potential adverse environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid significant adverse environmental impacts of these projects be identified. The AB 617 West Oakland Community Action Plan is an integrated community air quality plan to reduce the community's air pollutant burden and eliminate health risk disparities in West Oakland.

Pursuant to CEQA, this Environmental Impact Report (EIR) has been prepared to address the potential adverse impacts associated with implementation of the proposed Community Action Plan. Prior to making a decision on the Community Action Plan, the Air District Board of Directors must review and certify the EIR as providing adequate information on the potential adverse environmental impacts of implementing the proposed Community Action Plan.

### 1.2.1 NOTICE OF PREPARATION/INITIAL STUDY

A Notice of Preparation for the West Oakland Community Action Plan (included as Appendix A of this EIR) was distributed to responsible agencies and interested parties for a 30-day review from May 14, 2019 to June 14, 2019. A notice of the availability of this document was distributed to other agencies and organizations and was placed on the Air District's web site, and was also published in newspapers throughout the area of the Air District's jurisdiction. Five comment letters were submitted on the NOP and are included in Appendix A of this EIR.

The NOP/IS identified the following environmental resources as being potentially significant, requiring further analysis in the EIR: air quality, energy, greenhouse gases, hazards and hazardous materials, utilities and service systems. The following environmental resources were considered to be less than significant in the Notice of Preparation and Initial Study: aesthetics, agriculture and forestry resources, biological resources, cultural resources, geology/soils, hydrology and water quality, land use/planning, mineral resources, noise, population/housing, public services, recreation, transportation/traffic, tribal cultural resources, and wildfires (see Appendix A).

### 1.2.2 TYPE OF EIR

In accordance with §15121(a) of the State CEQA Guidelines (California Administrative Code, Title 14, Division 6, Chapter 3), the purpose of an EIR is to serve as an informational document that: "will inform public agency decision-makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project." The EIR is an informational document for use by decision-makers, public agencies and the general public. The proposed project requires discretionary approval and, therefore, it is subject to the requirements of CEQA (Public Resources Code, §21000 et seq.).

The focus of this EIR is to address the environmental impacts of the implementation of the West Oakland Community Action Plan as identified in the Notice of Preparation and Initial Study (included as Appendix A of this EIR). The degree of specificity required in an EIR corresponds to the degree of specificity involved in the underlying activity described in the EIR (CEQA Guidelines §15146). West Oakland Community Action Plan would apply to sources within and adjacent to the community of West Oakland.

### 1.2.3 INTENDED USES OF THIS DOCUMENT

In general, a CEQA document is an informational document that informs a public agency's decision-makers, and the public generally, of potentially significant adverse environmental effects of a project, identifies possible ways to avoid or minimize the significant effects, and describes reasonable alternatives to the project (CEQA Guidelines §15121). A public agency's decision-makers must consider the information in a CEQA document prior to making a decision on the project. Accordingly, this EIR is intended to: (a) provide the Air District's Board of Directors and the public with information on the environmental effects of the proposed project;

and, (b) be used as a tool by the Air District's Board to facilitate decision making on the proposed project.

Additionally, CEQA Guidelines §15124(d)(1) requires a public agency to identify the following specific types of intended uses of a CEQA document:

1. A list of the agencies that are expected to use the EIR in their decision-making;
2. A list of permits and other approvals required to implement the project; and
3. A list of related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies.

Local public agencies, such as cities, and counties could be expected to tier off this EIR when considering land use and planning decisions related to projects that implement a Strategy in the West Oakland Community Action Plan, pursuant to CEQA Guidelines §15152. Strategies that would be implemented by other agencies may also require CEQA review. CARB is required to review and approve the Plan. There is no other State, federal or local permits required to adopt the Community Action Plan. However, implementation of some of the Strategies will require various permits from all levels of government.

### 1.2.4 AREAS OF POTENTIAL CONTROVERSY

In accordance with CEQA Guidelines §15123(b)(2), the areas of controversy known to the lead agency including issues raised by agencies and the public shall be identified in the EIR. As noted above, five comment letters were received on the Notice of Preparation and Initial Study. Issues and concerns raised in the comment letters included: (1) comments that the Plan must include new actions that go beyond existing efforts to reduce air pollutant disparities; (2) the EIR should clearly state that the EIR is for the Strategies under the Air District's authority; (3) more detailed information is needed to better understand some of the Strategies; and (4) concerns regarding impacts to wastewater utilities. Copies of the comment letters are provided in Appendix A.

## 1.3 EXECUTIVE SUMMARY: CHAPTER 2 – PROJECT DESCRIPTION

The West Oakland Community Action Plan is a joint effort between the West Oakland Environmental Indicators Project (Indicators Project) and the Air District, with direction from the West Oakland Community Action Plan Steering Committee. The Steering Committee also will work with various public agencies to implement the Plan Strategies. The City and the Port will be key partners. This work will include more investigation into the Strategies to understand authority, legality, effectiveness, and feasibility. The other agencies with the largest roles in implementation of the Plan include CARB, the City of Oakland, Alameda County Public Health Department, Alameda County Transportation Commission, Metropolitan Transportation Commission, and the California Department of Transportation. Commitment from and cooperation with these agencies is central to the success of the Plan.

The West Oakland Community Action Plan includes ~~84~~ 89 Strategies aimed at reducing emissions and exposure to emissions from air pollution sources within and adjacent to West Oakland air pollution sources. The Strategies in the Plan are summarized below.

**Stationary Source Strategies:** Strategies to control stationary sources include considering: (1) replacing stationary diesel engines with Tier 4 diesel or cleaner engines; (2) reformulation of vanishing oils and rust inhibitors; (3) reducing toxic air contaminant emissions from existing industrial sources including Schnitzer Steel and the East Bay Municipal Utility District's Wastewater Treatment Plant; (4) potential new or amended regulations to further reduce emissions from metal recycling and foundry operations; (5) developing a regulation to reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks; and (6) identifying incentives to reduce emissions from waste water treatment plants and anaerobic digestion facilities.

**Mobile Source Strategies:** The Plan includes strategies to reduce emissions from mobile sources including vehicles, trucks, locomotives, and ships. A number of strategies would encourage the early retirement of old vehicles, and the use of zero-emissions trucks, buses, and vehicles. Strategies to control emissions from locomotives and ships include: (1) increasing the use of shore-power or other emission control systems by vessels at berth in the Port of Oakland; (2) encouraging use of Tier 3 and 4 compliant diesel engines on tugs and barges; and (3) encouraging use of Tier 4 compliant engines on locomotives. A number of strategies would increase enforcement on a variety of different activities including illegal parking, excess idling, and not using appropriate truck routes.

**Other Mobile Source Strategies:** The Plan encourages other strategies to reduce emissions from mobile sources including: (1) encouraging car sharing for low-income individuals; (2) providing pedestrian and bicycle improvements to increase use of public transit, e.g., BART; (3) increasing street sweeping to minimize the re-entrainment into the air of particulates that collect on streets and freeways; (4) developing safe routes to school to minimize conflicts between pedestrians and trucks/vehicles; and (5) considering improvements to public transit along Grand Avenue.

**Land Use Strategies:** Land use strategies are aimed at modifying land uses to limit exposure to emissions. Under this category, the Plan includes strategies to reduce exposure to emissions by: (1) relocating sources away from sensitive receptors; (2) accelerating the relocation of auto and truck-related businesses that are non-conforming land uses; (3) developing regulations to prohibit certain freight businesses and truck yards in portions of West Oakland; (4) increasing urban tree planting and vegetative biofilters; (5) adopting development impact fees to fund various environmental mitigations; (6) installing solid barriers between buildings and air pollution sources (e.g., freeways) to reduce exposure to air pollution; (7) increasing electrical infrastructure to encourage zero emissions vehicles/trucks; and (8) improving and updating the complaint processes, enforcement procedures and coordination with other public agencies to better respond to odors and open burning complaints.

**Health Program Strategies:** Health Program strategies are aimed at generally reducing exposure to air pollution. These strategies could include: (1) the installation of high efficiency air filtration systems on buildings to reduce exposure; (2) relocating exhaust stacks to reduce local exposure to air pollutants; (3) providing additional air monitoring to better detect sources of air pollution; and (4) better reporting of health data to identify public health impacts.

Implementation of the Community Action Plan, once approved, will be the responsibility of the Air District and the Indicators Project with support and coordination of a number of governmental agencies including the City of Oakland, CARB, Port of Oakland, and the Alameda County Public Health Department.

The Steering Committee with the District developed targets to improve air quality and address exposure disparities. The Plan targets will assist the Steering Committee in determining whether it is on track to meet the Plan's goal. Simultaneously, the Plan will reduce disproportionate air quality impacts between West Oakland and the Bay Area. The Plan has a five-year proposed implementation schedule from 2020 to 2024. The targets can be described as follows:

- **By 2025**, throughout West Oakland, all neighborhoods will experience conditions of the ***average*** West Oakland residential neighborhood, as they existed during the base year (2017).
- **By 2030,** throughout West Oakland, all neighborhoods will experience conditions of the **least** impacted residential neighborhood during the base year (2017), i.e., the "cleanest" neighborhood in West Oakland.

## 1.4 EXECUTIVE SUMMARY: CHAPTER 3 – ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

This chapter of the ~~Draft~~ Final EIR describes the existing environmental setting in the Bay Area, analyzes the potential environmental impacts of the West Oakland Community Action Plan, and recommends mitigation measures (when significant environmental impacts have been identified). The chapter provides this analysis for each of the environmental areas identified in the Initial Study (see Appendix A), including: (1) Air Quality; (2) Energy; (3) Greenhouse Gases; (4) Hazards and Hazardous Materials; and (5) Utilities and Service systems. Included for each impact category is a discussion of the environmental setting, significance criteria, whether the Plan will result in any significant impacts (either from the Plan individually or cumulatively in conjunction with other projects), and feasible project-specific mitigation (if necessary and available).

The West Oakland Community Action Plan also includes Strategies proposed to be implemented primarily or exclusively by other agencies, such as the City of Oakland and CARB. The West Oakland Community Action Plan includes these control measures because they involve activities by other agencies in the region that have the potential to further the same clean air goals for West Oakland that the Air District, and other agencies and organizations, are seeking to achieve under the Plan. Including them in the Plan serves to provide a comprehensive picture of all such activities throughout the region. These activities by other agencies are not dependent on approval of the Strategies that are under the authority of the Air District. Further, the Air District's approval of the Strategies will not authorize or commit those agencies to any action. As these actions and activities by independent agencies are not Air District actions and will occur independently of the District's approval of the Strategies under their authority, they are not direct or indirect effects resulting from approval of the Plan that must be analyzed in this document. Accordingly, the EIR does not address implementation actions by other agencies that are independent of the Air District's implementation actions under the Community Action Plan.

## 1.4.1 AIR QUALITY

### 1.4.1.1 Air Quality Setting

It is the responsibility of the Air District to ensure that state and federal ambient air quality standards (AAQS) are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), particulate matter ($PM_{10}$ and $PM_{2.5}$), sulfur dioxide ($SO_2$), and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. California has also established standards for sulfate, secondary annual $PM_{2.5}$ specifically for visibility, hydrogen sulfide, and vinyl chloride.

Air quality conditions in the San Francisco Bay Area have improved since the Air District was created in 1955. The Air District is in attainment of the State AAQS for CO, $NO_2$, and $SO_2$. However, the Air District does not comply with the State 24-hour $PM_{10}$ standard, annual $PM_{10}$ standard, and annual $PM_{2.5}$ standard. The Air District is unclassifiable/attainment for the federal CO, $NO_2$, $SO_2$, lead, and $PM_{10}$ standards. A designation of unclassifiable/attainment means that the U.S. EPA has determined to have sufficient evidence to find the area either is attaining or is likely attaining the federal AAQS.

In 2017, no monitoring stations measured an exceedance of any of State or federal AAQS for CO and $SO_2$. There was one exceedance of the federal $NO_2$ AAQS at one monitoring station in 2017, although the area did not violate the federal AAQS. All monitoring stations were in compliance with the federal $PM_{10}$ standards. The State 24-hour $PM_{10}$ standard was exceeded on six days in 2017, at the San Jose monitoring station.

The Bay Area is designated as a non-attainment area for the federal and state 8-hour ozone standard and the federal 24-hour $PM_{2.5}$ standard. The state and federal 8-hour ozone standards were exceeded on 6 days in 2017 at one site or more in the Air District; most frequently in the Eastern District (Livermore, Patterson Pass, and San Ramon) and the Santa Clara Valley. The federal 24-hour $PM_{2.5}$ standard was exceeded at one or more Bay Area station on 18 days in 2017, most frequently in the Napa, San Rafael, Vallejo, and San Pablo.

### 1.4.1.2 Air Quality Impacts

Construction activities may be associated with some Strategies that the Air District would implement. The Strategies which may result in construction activities include Strategy ~~#63~~

#68 (potential construction of enclosures). Construction activities may also be associated with other Strategies that the Air District would implement (Strategy ~~#61~~ #66, implementation of a bonnet system for ships and Strategy ~~#70~~ #75 the installation of high efficiency air filtration systems) but the details of those construction activities are unknown and, therefore, speculative or expected to be very minor.

Based on the construction emissions, it is concluded that construction emissions associated with the Strategies that the Air District expects to implement under the West Oakland Plan would be below the Air District significance thresholds for criteria pollutants and would, therefore, be less than significant. Construction emissions are temporary as construction emissions would cease following completion of construction activities. Any future projects proposed to implement these strategies by other government agencies, would require further environmental analyses per CEQA.

The implementation of the Strategies by the Air District would result in a minor increase in emissions associated with the potential delivery of materials to supply air emission control systems that would be implemented as part of the Plan. The potential emission increases are expected to be offset with emission decreases that would occur due to implementation of the Plan (see Table 3.2-18). Based on the evaluation of the Strategies that the Air District would implement as part of the West Oakland Community Action Plan, the emission reductions associated with the Plan are expected to exceed the potential air quality increases and there would be no net emission increases. Therefore, air quality impacts would be less than significant.

Implementation of the Strategies in the West Oakland Community Action Plan by the Air District is not expected to generate significant adverse project-specific air quality impacts and is not expected to exceed the applicable significance thresholds (result in an increase in emissions). These thresholds represent the levels at which a project's individual emissions would result in a cumulatively considerable contribution to the Air District's existing air quality conditions for individual projects. As a result, air quality impacts from the proposed project are not considered to be cumulatively considerable pursuant to CEQA Guidelines §15064 (h)(1). Emission reductions from the Air District's 2017 Clean Air Plan, in conjunction with the Strategies in the West Oakland Community Plan, are expected to far outweigh any potential secondary emission increases associated with implementation of the Strategies in the West Oakland Community Action Plan, providing a beneficial impact on air quality and public health.

## 1.4.2 ENERGY

### 1.4.2.1 Energy Setting

Power plants in California provided approximately 70.65 percent of the total in-state electricity demand in 2017, of which 29.65 percent came from renewable sources such as biomass, solar, and wind power. The Pacific Northwest provided another 13.65 percent of total electricity demand and the remaining 15.69 percent was imported from the Southwest. The total electricity used in California in 2017 was 292,039 gigawatts (GWh)[1].

The contribution between in-state and out-of-state power plants depends upon, among other factors, the precipitation that occurred in the previous year and the corresponding amount of hydroelectric power that is available. The installed capacity of the 1,520 in-state power plants [greater than 0.1 megawatts (MW)[2]] totaled 88,003 MW. The Pittsburg Generating Station, located in Contra Costa County, is currently the only facility located within Air District jurisdiction that ranks within the top ten power generating facilities in California. Smaller power plants and cogeneration facilities are located throughout the Bay Area. Pacific Gas and Electric (PG&E) is the primary supplier of electricity to northern California, including the Bay Area.

Local electricity distribution service is provided to customers within the Air District by privately-owned utilities such as PG&E. Many public-owned utilities, such as Alameda Power and Telecom, East Bay Municipal Utility District, Silicon Valley Power, and the Santa Clara Electric Department also provide service. PG&E is the largest electricity utility in the Bay Area, with a service area that covers all, or nearly all, of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties. PG&E provides over 90 percent of the total electricity demand in the Air District. Alameda County consumed 11,113 million kilowatt hours of electricity in 2017.

### 1.4.2.2 Energy Impacts

Increasing penetration of zero and near-zero vehicles and electrifying sources of emissions (e.g., ships at berth) could increase future demand for electricity in the Bay Area and other areas of California that provide electricity to the Bay Area. Estimates of the potential increase in electricity use are provided where sufficient information is available to estimate the number of pieces of equipment or vehicles that would be required under each of the Strategies. In most cases, that information is not available and cannot be determined at this time. The potential increased demand for electricity to implement Strategies in the Plan that would electrify on-road and off-road mobile sources is expected to be less than one gigawatt-hour (GWh) in the year 2021 and one GWh by 2023.

PG&E has forecasted the potential load impacts on electricity demand that would be expected to occur from increased charging of electric vehicles in the future. PG&E has estimated that meeting the state's goal of five million electric vehicles (or two million within PG&E's service territory) by 2030 would increase the current electrical demand for electric vehicles of approximately 160 GWh in 2018 to 5,982 GWh in 2030 (see Table 3.3-4). PG&E plans to add resources to supply sufficient electricity to its customers for electric vehicles as well as from population growth. Most of the increases will come for addition bioenergy, solar, and wind resources due to the Renewable Portfolio Standard requirements.

[1] A gigawatt equals one billion ($10^9$) watts of electricity.
[2] A megawatt equals one million watts.

While the electricity use associated with electric vehicles is expected to increase, PG&E predicts that its overall sales in electricity would remain the same or increase slightly (up to eight percent). The expected increases in energy efficiency and solar photovoltaic production are expected to offset a majority of the growth in electric vehicles, as well as economic and population driven growth (PG&E, 2018)

The potential increase in electric vehicles under the Strategies in the West Oakland Community Action Plan are within the range of vehicles that PG&E has forecast for its service area of two million vehicles. In addition to the vehicles, electricity may also be supplied to the Port and Schnitzer Steel to power marine vessels while at berth. The electricity to power a marine vessel is estimated to be 0.42 GWh, which is a very small increase in overall electricity use (less than 0.0005 percent). Therefore, implementation of the Strategies in the West Oakland Community Action Plan is not expected to result in significant impacts to energy/electricity, over those already contemplated in the PG&E service areas. Further, energy impacts associated with the Plan are not cumulatively significant and would not make a considerable contribution to a cumulatively significant energy impact.

### 1.4.3 GREENHOUSE GAS EMISSIONS

#### 1.4.3.1 Greenhouse Gas Emissions Setting

Global climate change refers to changes in average climatic conditions on the earth as a whole, including temperature, wind patterns, precipitation and storms. Global warming, a related concept, is the observed increase in the average temperature of the earth's surface and atmosphere. One identified cause of global warming is an increase of GHGs in the atmosphere. The six major GHGs identified by the Kyoto Protocol are carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), sulfur hexafluoride ($SF_6$), haloalkanes (HFCs), and perfluorocarbons (PFCs), plus black carbon.

It is the increased accumulation of GHGs in the atmosphere that may result in global climate change. Climate change involves complex interactions and changing likelihoods of diverse impacts. Due to the complexity of conditions and interactions affecting global climate change, it is not possible to predict the specific impact, if any, attributable to GHG emissions associated with a single project, which is why GHG emission impacts are considered to be a cumulative impact.

Fuel combustion activities account for approximately 82 percent of the GHGs emitted in the State. Transportation sources generate approximately 40 percent of the total GHG emissions in the District. The remaining 60 percent of the total District GHG emissions are from stationary and area sources. Under "business as usual" conditions, GHG emissions are expected to grow in the future due to population growth and economic expansion.

The City of Oakland has completed a Draft Energy and Climate Action Plan, which includes an updated analysis of community-wide emissions. Oakland estimates that it emitted approximately 3.4 million metric tons of $CO_2$ equivalent ($CO_2e$) emissions in 2005 from all areas sources and highway transportation sources. Of these emissions, transportation generated the most emissions (50 percent), following by building energy use (37 percent) and methane from solid waste landfills (four percent).

#### 1.4.3.2 Greenhouse Gas Emissions Impacts

Implementation of the Strategies in the West Oakland Community Action Plan by the Air District would result in a minor increase in GHG emission increases associated with construction emissions and the potential delivery of materials to supply air emission control systems that would be implemented as part of the Plan. The potential GHG emission increases are expected to be offset with emission decreases that would occur due to implementation of the Plan, such as a reduction in fuel use due to implementation of zero and near-zero vehicles and potential electrification of marine vessels at berth.

Based on the evaluation of the Strategies that the Air District would implement as part of the West Oakland Community Action Plan, the GHG emission reductions associated with the Plan are expected to exceed the potential GHG emission increases and there would be no net GHG emission increases. Therefore, GHG impacts would be less than significant. Further, GHG impacts are not cumulatively significant and would not make a considerable contribution to cumulatively significant GHG impacts.

### 1.4.4 HAZARDS AND HAZARDOUS MATERIALS

#### 1.4.4.1 Hazards and Hazardous Materials Setting

Within West Oakland, there are a total of 123 reported contaminated sites. Nearly 65 percent of these reported contaminated sites have been closed by the respective oversight agencies. Of those sites that remain open, remediation efforts are still needed before new development can occur. Within those closed case sites, the level of prior clean-up efforts may vary and may be appropriate only for commercial or industrial uses, may have deed restrictions preventing sensitive uses, or may stipulate additional agency oversight should development be considered.

The majority of reported environmental cases within West Oakland are attributed to leaking underground storage tanks, most of which contain, or used to contain petroleum products, e.g., gasoline. However, there are also a number of reported cases of more complex and hazardous incidents where toxic chemicals have been spilled or released into the soils and groundwater, resulting in potential health and safety concerns for residents and employees of the area.

The potential for hazards exist in the production, use, storage and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Currently, hazardous materials are transported throughout the Bay Area in great quantities via all modes of transportation including rail, highway, water, air, and pipeline.

In 2018, there were a total of 1,396 hazardous materials incidents reported in the nine counties regulated by the Air District, with the most incidents (380) reported in Alameda County, followed by Contra Costa County (245). Hazardous materials incidents during transportation, in residential areas, and at waterways were the most common locations, respectively, for hazardous materials incidents.

#### 1.4.4.2 Hazards and Hazardous Materials Impacts

Control measures have the potential to create hazards and hazardous materials impacts. Strategies could result in an increase in the use and transport of hazardous materials (e.g., ammonia). The use of aqueous ammonia or urea would minimize potential hazards associated with ammonia use as it would not be expected to form a vapor cloud and migrate offsite, impacting residential areas.

Strategies in the Plan could increase the use of hydrogen fuel cells. Hydrogen is non-toxic and disperses more readily in air than gasoline or diesel. The health hazards associated with hydrogen are approximately equivalent or less than the hazards associated with conventional fuels. Further regulations, codes and standards related to hydrogen infrastructure safety address all key aspects of the system design, construction, operation, and maintenance. Compliance with these requirements should reduce the potential hazards associated with hydrogen use to less than significant.

Implementation of the Strategies in the Plan could require construction activities within sites that have been contaminated. Any required treatment, remediation or disposal of contaminated soil or groundwater would be required to comply with all local, State, and federal regulations that address releases, air quality impacts (dust and hydrocarbon vapors), personal protection, and transportation requirements. With the compliance with the required local, State and federal regulations for treatment, remediation or disposal of contaminated soil or groundwater, the hazards to the public or the environment from hazardous materials at sites required for implementation of the Strategies in the West Oakland Community Action Plan, are expected to be less than significant.

The West Oakland Community Action Plan is not expected to result in significant hazards and hazardous materials impacts. Therefore, hazards and hazardous materials impacts associated with the Plan are not significant, are not cumulatively significant and would not make a considerable contribution to cumulatively significant hazards/hazardous materials impacts. The Air District concludes that the Plan will not result in any significant hazards or hazardous materials impacts, individually or cumulatively.

### 1.4.5 UTILITIES AND SERVICE SYSTEMS

#### 1.4.5.1 Solid and Hazardous Waste Setting

There are a total of 14 active landfills within the nine counties that make up the Bay Area, with a total capacity of over 42,600 tons per day. Two active landfills are located within Alameda

County with a total capacity of 13,668 tons per day, the Altamont Landfill and Vasco Road Landfill. The Altamont Landfill is a Subtitle D-approved landfill providing non-hazardous Class II and Class III disposal and one of the largest landfill operations in Northern California. It accepts for disposal all non-hazardous municipal solid wastes (MSW), non-hazardous industrial and special wastes, de-watered wastewater treatment plant sludge (biosolids), treated auto shredder wastes, contaminated soils, liquids for solidification, asbestos wastes, yard waste for composting, and construction/demolition debris.

The Vasco Road Landfill is a 246-acre Class III municipal refuse disposal site and accepts residential, commercial, municipal garbage, but also recyclables and green waste. A portion of the landfill is Subtitle D-approved and meets the criteria and design requirements for a Class II waste management unit. It accepts for disposal construction materials and debris, metals, organics, paper, plastic, and tires.

There are no hazardous waste disposal sites within the Bay Area. Hazardous waste generated at area facilities, which is not reused on-site, or recycled, is disposed of at a licensed in-state hazardous waste disposal facility. Two such facilities in California are the Chemical Waste Management Kettleman Hills facility in King's County, and the Laidlaw Environmental Services facility in Buttonwillow (Kern County). Hazardous waste can also be taken to out-of-state facilities for treatment/disposal.

The most common types of hazardous waste generated in Alameda County include contaminated soils from site remediation efforts, asbestos-containing waste, organic solids, inorganic solid waste, oil/water separation sludge, and waste/mixed oils. Not all hazardous wastes generated are disposed of in a hazardous waste facility or incinerator. Many of the wastes generated, including waste oil, are recycled.

### 1.4.5.2 Utilities and Service Systems Impacts

The District's Strategies of feasibility studies, grants/incentives for future programs of energy upgrades and high efficiency air filtration systems, and investigation on the conversion of sources from conventional to zero emission sources and cleaner engines will have less than significant impacts on solid/hazardous waste. The amount of solid and hazardous waste generated is expected to be minimal and not expected to exceed the capacity of designated landfills. There will be an increase in wastes generated from the increased use of zero and near-zero emission vehicles and the subsequent generation of batteries, and other types of waste from mobile sources and air pollution control technology. However, due to the recycling value of the materials involved, most of the generated wastes would be recycled. Therefore, the potential solid/hazardous waste impacts were found to be less than significant impacts. Utility and service system impacts associated with the Plan are not cumulatively significant and would not make a considerable contribution to cumulatively significant utilities and service systems impacts.

# 1.5 EXECUTIVE SUMMARY: CHAPTER 4 – ALTERNATIVES ANALYSIS

This EIR provides a discussion of alternatives to the proposed project as required by CEQA. Pursuant to the CEQA guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project but would avoid or substantially lessen any of the significant effects of the project, and provide means for evaluating the comparative merits of each alternative (CEQA, Guidelines, §15126.6(a)). In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative (CEQA Guidelines §15126.6(a)). The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation. An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative (CEQA Guidelines, §15126.6(f)(3). Because no significant impacts have been identified for the proposed project, alternatives are not required to be analyzed in this EIR. However, in order to provide a full environmental review and fulfill the intent of CEQA, an alternatives analysis has been prepared. Two alternatives were evaluated in the EIR.

**Alternative 1 – No Project Alternative:** CEQA requires the evaluation of the No Project Alternative, which consists of what would occur if the proposed project was not approved; in this case, not adopting the West Oakland Community Action Plan. There would be no Strategies to control stationary or mobile emission sources. The land use Strategies to limit exposure to emissions would also not be implemented, nor would the health programs to limit exposure to and improve the health of residents and sensitive receptors in West Oakland. Alternative 1 would not comply with AB 617, which directs communities and air districts to work together to address air pollution and related health effects in overburdened communities, like West Oakland.

**Alternative 2 – District Only Strategies:** Under Alternative 2, only the Strategies for which the Air District has jurisdiction would be implemented. Alternative 2 would only partially meet the requirements of AB 617, as the Strategies to be implemented by other agencies would not occur at this time.

Alternative 1, the No Project Alternative, would reduce potential impacts associated with the proposed project as no Strategies in the Plan would be implemented. Alternative 1 would also eliminate any criteria or TAC emission reductions and eliminate the beneficial impacts of the Plan and would not achieve any of the project objectives. Alternative 2 would have essentially the same impacts as the proposed project because the same Strategies evaluated as part of the project would be implemented under Alternative 2. Alternative 2 would not result in any significant impacts and would be expected to achieve some of the emission reductions in the project objectives, but not all. Alternative 2 would be considered the environmentally superior alternative as it would achieve more of the project objectives and emissions reductions than Alternative 1.

The proposed project would be considered the preferred alternative as it would be expected to achieve all of the project objectives and emission reductions associated with the implementation of the Plan and would be expected to reduce the emissions and related health impacts to the West Oakland Community more effectively than Alternative 2. Therefore, the proposed project is the preferred alternative.

## 1.6 EXECUTIVE SUMMARY: CHAPTER 5 – REFERENCES

Chapter 5 provides the references for the EIR.

**TABLE 1-1**

**Summary of Environmental Impacts, Mitigation Measures and Residual Impacts**

| Impact | Mitigation Measures | Residual Impacts |
|---|---|---|
| **Air Quality** | | |
| The estimated criteria pollutant emission reductions from the Plan are expected to outweigh any potential secondary emission increases associated with the Plan, providing a beneficial impact on air quality. | None Required | Air quality impacts are less than significant. |
| It is expected that the Plan Strategies would result in an overall reduction in toxic air contaminant emissions. | None Required | Emissions of toxic air contaminants would be less than significant. |
| **Energy** | | |
| The potential increase in electricity associated with the Plan is less than PG&E has already forecast for its service area. No significant impacts to energy are expected due to implementation of the Plan. | None Required | Energy impacts are less than significant. |
| **Greenhouse Gas Emissions** | | |
| The estimated GHG emission reductions from the Plan are expected to outweigh the potential GHG emission increases associated with the Plan, providing a beneficial impact on climate change. | None required. | GHG emissions are expected to remain less than significant. |

## TABLE 1-1

### Summary of Environmental Impacts, Mitigation Measures and Residual Impacts

| Impact | Mitigation Measures | Residual Impacts |
|---|---|---|
| **Hazards and Hazardous Materials** | | |
| Hazard impacts associated with the use and transport of hazards materials for new air pollution control equipment are expected to be less than significant assuming the use of aqueous ammonia in SCRs. | None Required | Hazards impacts from use of new air pollution control equipment would be less than significant. |
| Use of hydrogen fuel cells is not expected to result in significant impacts as compliance with regulations, codes, and standard related to hydrogen infrastructure addresses all key safety aspects of the design, construction, operation and maintenance of these facilities. | None required. | Hazards associated with the use hydrogen fuel cells would be less than significant. |
| Construction activities at contaminated sites would require compliance with local, State and federal regulations for treatment, remediation and disposal of contaminated materials, reducing impacts to less than significant. | None required | Hazards associated with construction activities at contaminated sites would be less than significant. |
| **Utilities and Service Systems** | | |
| Solid and hazardous waste impacts due to implementation of the Plan are expected to be less than significant, as waste that may be generated would be largely recyclable. | None required. | Utilities and service system (solid and hazardous waste) impacts associated with the Plan are expected to remain less than significant. |

# CHAPTER 2

## PROJECT DESCRIPTION

Introduction
Background
Agency Authority
Project Location
Objectives of the West Oakland Community Action Plan
Project Description

# 2.0 PROJECT DESCRIPTION

## 2.1 INTRODUCTION

Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) asks communities and air districts to work together to address air pollution and related health effects in overburdened communities like West Oakland. AB 617's community-focused approach provides a new framework for addressing the long-standing disparities in air pollution and related health effects across the state.

AB 617 requires the adoption and implementation of emissions reduction plans for communities with disproportionate impacts from air pollution. Pursuant to AB 617, the Bay Area Air Quality Management District (Air District) and the West Oakland Environmental Indicators Project jointly developed a community emissions reduction plan, referred to as the Community Action Plan, for West Oakland. The proposed plan includes strategies at the community level to maximize emission reductions and reduce residents' cumulative exposure to criteria air pollutants, diesel particulate matter (Diesel PM), fine particulate matter ($PM_{2.5}$), and toxic air contaminants (TAC). The West Oakland Community Action Plan is an integrated multi-pollutant community air quality plan to eliminate air pollution disparities and improve public health in West Oakland. The Community Action Plan documents the Steering Committee's effort to study air pollution in West Oakland, and identifies and prioritizes Action Strategies that once implemented, will work towards eliminating West Oakland's air pollution burden.

The government agencies with primary responsibility for implementing the strategies in the Community Action Plan include the Air District, California Air Resources Board (CARB), City of Oakland, Port of Oakland, Alameda County Public Health Department, CalTrans, Alameda County Transportation Commission, and Metropolitan Transportation Commission.

## 2.2 BACKGROUND

AB 617 directs CARB, in consultation with local air districts, to identify and select communities that have a high cumulative exposure burden to air pollution. Once selected, these communities will work with local air districts on community emission reduction programs and/or air quality monitoring requirements. With the adoption of AB 617, the state acknowledges that many communities around California continue to experience disproportionate impacts from air pollution. AB 617 requires all of the following and more:

1. Air Districts in nonattainment areas must implement Best Available Retrofit Control Technologies (BARCT) on all sources subject to the AB 32 Cap-and-Trade Program. The Air District approved their BARCT update schedule in December 2018.

2. CARB must establish and maintain a clearinghouse of best available control technology (BACT), and BARCT.
3. Air pollution violation maximum penalties were increased and will adjust with inflation.
4. CARB was required to prepare an air monitoring plan for all areas of the state by October 1, 2018.
5. Based on air monitoring plan information, CARB must select communities with high cumulative exposure burden to both toxic and criteria air pollutants by July 1, 2019.
    a. Each air district with a high cumulative burden community must deploy a community air monitoring system in that community within one year, and provide the air quality data to CARB for publication.
6. By January 1, 2020, and each January 1 thereafter, CARB will select additional communities with high cumulative exposure burden.
    a. Each air district with a high burden community must deploy a community air monitoring system in that community within one year, and provide the air quality data to CARB for publication.
7. CARB must prepare a state-wide strategy to reduce emissions of toxic and criteria pollutants in communities affected by high cumulative exposure burden, by October 1, 2018, and update the strategy every five years. Criteria for the state-wide strategy recognized that disadvantaged communities and sensitive receptors are a priority, and include:
    a. A methodology for assessing and identifying contributing sources, and estimating their relative contribution to elevated exposure (source apportionment).
    b. Assessment of whether an air district should update and implement the risk reduction audit and emissions reduction plan for any facility if the facility causes or significantly contributes to the high cumulative exposure burden.
    c. Assessment of available measures for reducing emissions including BACT, BARCT, and toxics best available control technology (TBACT).
8. CARB selected locations for preparation of Community Emission Reduction Plans by October 1, 2018. CARB will select additional locations annually thereafter.
    a. Within one year, the air districts will adopt Community Emission Reduction Plans in consultation with CARB, individuals, community-based organizations, affected sources, and local governmental bodies.
    b. By October 2019, air districts adopt programs in first-year communities selected for community emissions reduction programs.
    c. The air districts' deadline to adopt the community emissions reduction programs is one year from community selection, which is October 1, 2019 for the first set of communities selected.
    d. The Community Emission Reduction Plans must be consistent with the state-wide strategy, and include emission reduction targets, specific

reduction measures, a schedule for implementation of the measures, and an enforcement plan.

e. The Community Emission Reduction Plans must be submitted to CARB for review and approval.
f. The Community Emission Reduction Plans must achieve emission reductions in the community, based on monitoring or other data.
g. The air districts must prepare an annual report summarizing the results and actions taken to further reduce emissions.

9. CARB will provide grants to community-based organizations for technical assistance and to support community participation in identification of communities with high exposure burden, and development and implementation of the Community Emission Reduction Plans.

AB 617 represents a significant enhancement to the approach CARB and local air districts take in addressing local air quality issues. The Air District has begun implementing programs that follow on from AB 617; these programs include the Community Air Risk Evaluation (CARE) Program, Health Risk Assessments for the AB 2588 Air Toxics "Hot Spots" Program, and Air District Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities. However, AB 617 presents additional requirements and establishes challenging goals and timelines for implementation.

In August 2018, the District submitted the Community Health Protection Program to CARB which recommended the communities for the first five years of the state's Community Air Protection Program. The Air District recommended that West Oakland be eligible for a Community Action Plan in the first year of the AB 617 program. Maritime-freight industries, rail, large distribution centers, a concrete batch plant, a peaker power plant, metal facilities, small to medium industrial and manufacturing operations, major freeways and busy roadways used as trucking routes all impact the West Oakland community. These sources contribute to high levels of particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) concentrations and elevated cancer risk from toxic air contaminants. West Oakland is considered one of the most impacted areas in the San Francisco Bay Area due to the area's many sources of diesel particulate matter. As such, CARB approved West Oakland as a first-year priority community in the Bay Area. In addition, CARB approved Richmond for a Community Air Monitoring Plan. The currently proposed project will implement the required community emission reduction plan required under AB 617, which is referred to as the West Oakland Community Action Plan herein.

## 2.3 AGENCY AUTHORITY

CEQA, Public Resources Code §21000 et seq., requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid or eliminate significant adverse impacts of these projects be identified and implemented. To fulfill the purpose and intent of CEQA, the Air District is the lead agency for this project and has prepared the Notice of Preparation of a Draft Environmental Impact Report (DEIR) and Initial Study for the proposed West Oakland Community Action Plan.

The Lead Agency is the "public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment." (Public Resources Code Section 21067). It was determined that the Air District has the primary responsibility for supervising or approving the project as a whole and is the most appropriate public agency to act as lead agency (See CEQA Guidelines Section 15051).

The Plan calls upon government agencies, community members, business owners, and others to commit resources and funding to implement the Plan. The Strategies build on and complement planning activities in West Oakland by a variety of public agencies over the past fifteen years. Steering Committee members, community members, and business owners may need to write letters and emails, make telephone calls, and attend agency public meetings to communicate to various public agencies their continued support for Plan implementation.

Although strategies beyond the authority of the Air District are included within the Plan for informational purposes, the City and other agencies have complete discretion over the commitment of staff time, resources, funding, and ultimately, which strategies to implement. The Steering Committee also will work with various public agencies to implement the Plan Strategies. The City and the Port will be key partners. This work will include more investigation into the Strategies to understand authority, legality, effectiveness, and feasibility. The agencies with the largest roles in implementation are described below, including examples of Strategies applicable to each agency. Commitment from and cooperation with these agencies is central to the success of the Plan.

**Air District**

The Air District is the regional agency responsible for assuring clean air in the San Francisco Bay Area. The Air District regulates emissions from stationary sources, issues and enforces permits, provides grants and incentives, provides technical and policy guidance, engages with communities, and more. Stationary sources in West Oakland include the East Bay Municipal Utility District wastewater treatment plant; recycling facilities like Schnitzer Steel, CASS, and California Waste Solutions, gas stations, back-up diesel generators, and auto-body shops. For the Plan, the Air District will implement strategies that include enhancing existing and adopting new regulations, enhancing compliance and enforcement, funding emissions- and exposure-reducing projects, and working with community and agency partners to advocate for, study, and implement innovative ways to decrease emissions and exposure to emissions in West Oakland. (Strategies #14, #24, ~~#43~~ #48, ~~#44~~ #49, ~~#48~~ #53, ~~#61~~ #66, ~~#63~~ #68, and ~~#64~~ #69).

**California Air Resources Board (CARB)**
CARB is the state agency responsible for establishing the state's air quality standards to protect human health, regulating mobile and other sources, and overseeing activities of regional air districts. CARB regulates motor vehicle fuel specifications, emission standards for on- and off-road vehicles, and consumer product emissions. AB 617 directs CARB to work with local air districts in California to address the disproportionate air quality and health challenges in communities like West Oakland. For the Plan, CARB will adopt and enforce regulations for mobile sources such as heavy-duty trucks and light-duty vehicles that travel through West Oakland and on the surrounding roadways and freeways, and for sources at the Port of Oakland, such as cargo equipment, port trucks, locomotives, and ocean-going ships and harbor craft in the San Francisco Bay (Strategies #28, #29, #30, ~~#55~~ #60, and ~~#57~~ #62).

**City of Oakland**
The City of Oakland is the local agency responsible for land-use and transportation decisions. The City Council makes land-use decisions by adopting general and specific plans, zoning regulations, and certifying environmental reports for land-use projects, such as housing, commercial, and industrial developments. The West Oakland Specific Plan is an example of a land-use plan that the City has adopted. The West Oakland Truck Management Plan is an example of a measure required by an environmental report on a land-use development project and an example of City transportation authority. For the Plan, the City of Oakland will implement strategies that address air pollution impacts from land use and transportation, such as Strategies #1 and #4-11.

**Port of Oakland**
The Port of Oakland is the local agency responsible for managing the Oakland seaport, Oakland International Airport, and Jack London Square. The City of Oakland's Charter establishes the Port of Oakland as an independent department with its own governing board. The Seaport Air Quality 2020 and Beyond Plan is an example of the Port's effort to manage operations at and air pollution from the Port. For the Plan, the Port will be encouraged to implement strategies that address air pollution from Port and Port tenant activities, such as the movement of inbound and outbound freight on cargo equipment, port trucks, locomotive, and ocean-going ships and harbor craft in the San Francisco Bay (Strategies #19, ~~#32~~ #37, ~~#38~~ #43, ~~#58~~ #63, ~~#59~~ #64, and ~~#60~~ #65).

**Alameda County Public Health Department**
The Alameda County Public Health Department is the county department responsible for providing public health services. The Health Department delivers services such as access to quality medical care services, disease prevention education and control, community education and outreach, and health policy development. The Healthy Development Guidelines is an example of the policy work that the Public Health Department delivers. For the Plan, the Public Health Department will implement strategies such as those that help the community access health services and educate the community about health risks,

treatment, and prevention (Strategies #~~79~~ #84, #~~80~~ #85, and #~~81~~ #86).

**Alameda County Transportation Commission (ACTC)**
The Alameda County Transportation Commission (ACTC) is the county agency responsible for managing the county's one-cent transportation sales tax funds and funding transportation projects and programs. The ACTC is responsible for delivering the County's bicycle, pedestrian, highway improvements, road, and transit projects. For the Plan, the ACTC will implement Plan Strategies, such as those that advocate for improved bicycling and pedestrian infrastructure in West Oakland (Strategies #~~39~~ #44, #~~40~~ #45, #~~41~~ #46, #~~42~~ #47, and #~~84~~ #89).

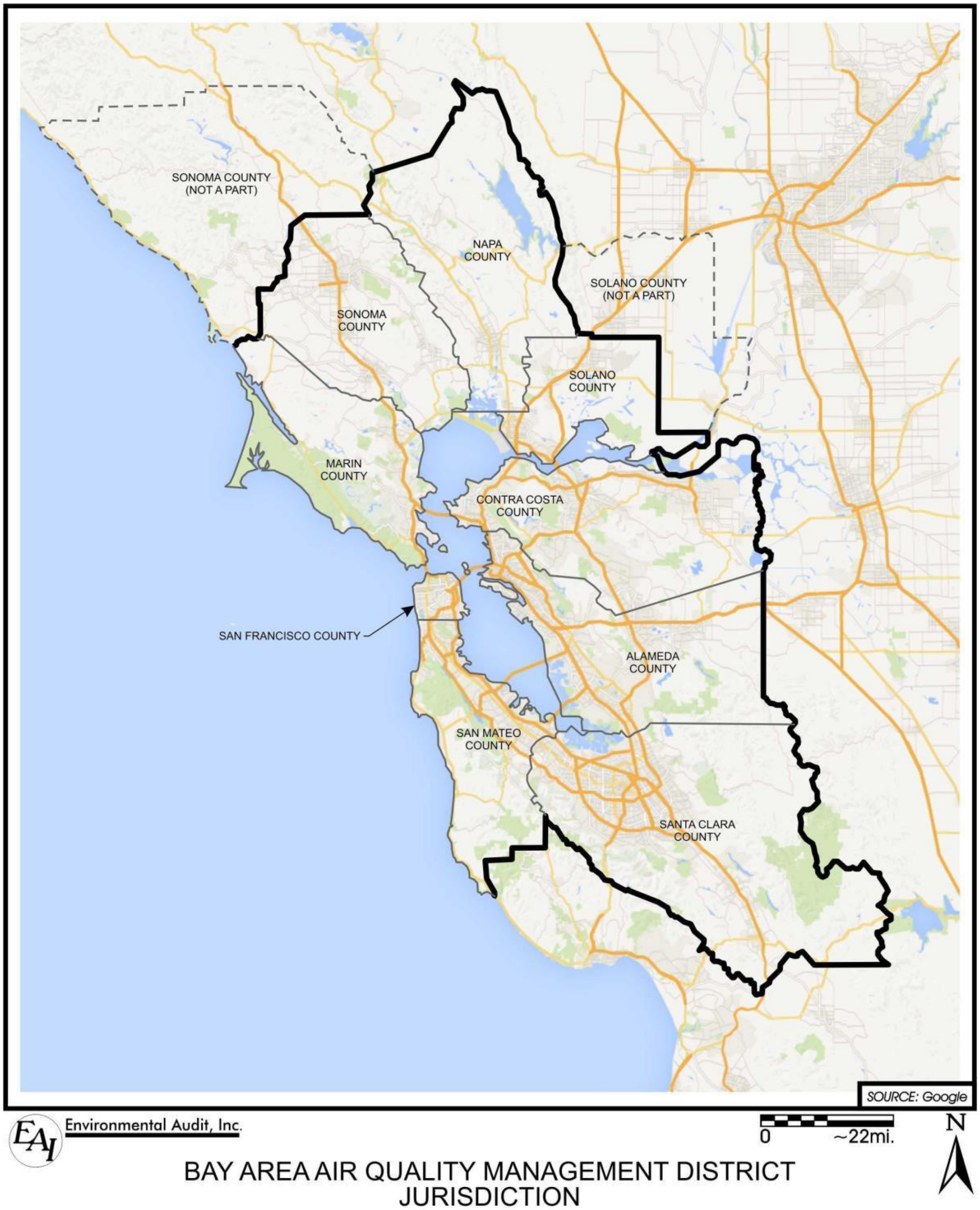
**Metropolitan Transportation Commission (MTC)**
The Metropolitan Transportation Commission (MTC) is the regional agency responsible for transportation planning, financing, and coordinating for the nine-county San Francisco Bay Area. The San Francisco Bay Area Goods Movement Plan and MTC Resolution No. 4244: Goods Movement Investment Strategy are examples of MTC's effort to plan, finance, and coordinate transportation in the Bay Area. For the Plan, MTC will help implement Strategies that extend car sharing to low income individuals and groups (Strategy #~~41~~ #46).

**California Department of Transportation (Caltrans)**
The California Department of Transportation (Caltrans) is the state agency responsible for maintaining and improving state highways and transportation projects. For the Plan, Caltrans will implement Plan Strategies such as studies to determine the feasibility of vegetative biofilters between the Prescott neighborhood and Interstate 880 and work with West Oakland Environmental Indicators Project and the Air District to address air quality issues from truck parking leases on Caltrans right-of-way (Strategies #7, #16 and #~~84~~ #89).

## 2.4 PROJECT LOCATION

The Air District has jurisdiction of an area encompassing 5,600 square miles. The Air District includes all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties, and portions of southwestern Solano and southern Sonoma counties. The San Francisco Bay Area is characterized by a large, shallow basin surrounded by coastal mountain ranges tapering into sheltered inland valleys. The combined climatic and topographic factors result in increased potential for the accumulation of air pollutants in the inland valleys and reduced potential for buildup of air pollutants along the coast. The Basin is bounded by the Pacific Ocean to the west and includes complex terrain consisting of coastal mountain ranges, inland valleys and bays (see Figure 2-1).

The proposed Community Action Plan will apply to West Oakland, which is part of the City of Oakland (see Figure 2-2). West Oakland is bounded by the Port of Oakland, the Union Pacific rail yard, and Interstates 80, 580, 880, and 980 (see Figure 2-3).

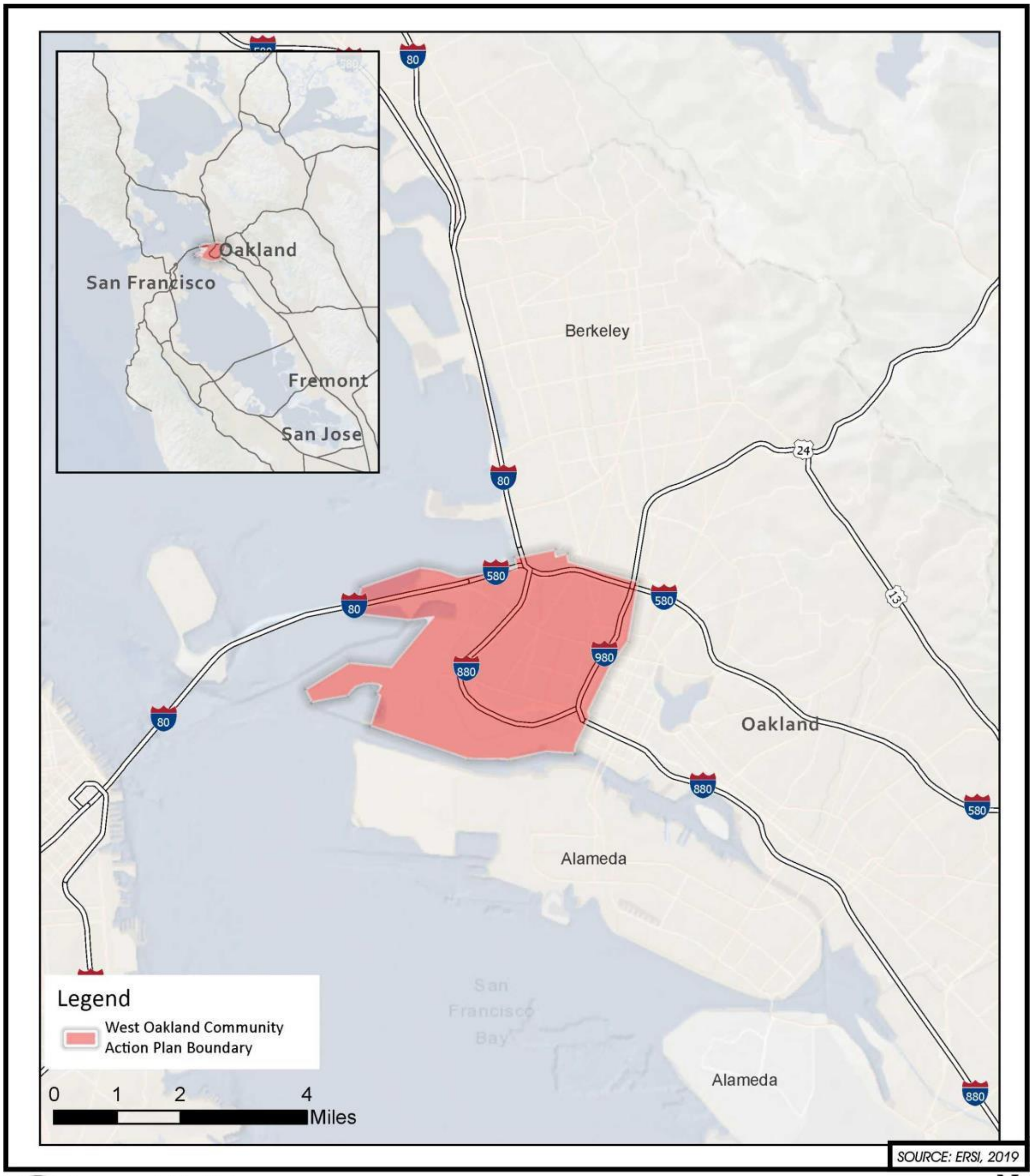



BAY AREA AIR QUALITY MANAGEMENT DISTRICT
JURISDICTION

Project No. 3100

Figure 2- 1

N:\3100\BAAQMD Map.cdr




Environmental Audit, Inc.

WEST OAKLAND COMMUNITY ACTION PLAN
REGIONAL AND VICINITY MAP

Project No. 3100

Figure 2- 2

N:\3100\Regional Map.cdr


WEST OAKLAND COMMUNITY ACTION PLAN
PLANNING BOUNDARY

Project No. 3100

Figure 2- 3

N:\3100\Planning Boundary.cdr

## 2.5 OBJECTIVES OF THE WEST OAKLAND COMMUNITY ACTION PLAN

The objectives of the West Oakland Community Action Plan are to provide the following benefits:

1. For the Air District and West Oakland community to work together to address the disparities in air pollution and related health effects in the West Oakland community.
2. To reduce criteria pollutant and toxic air contaminant emissions from stationary sources of air pollution sources within and adjacent to West Oakland.
3. To reduce criteria pollutant and toxic air contaminant emissions from mobile sources, such as heavy-duty trucks and light-duty vehicles that travel in West Oakland and on surrounding freeways and streets;
4. To reduce criteria pollutant and toxic air contaminant emissions from mobile sources that serve the Port of Oakland, such as cargo equipment, port trucks, locomotives, ocean-going ships, and harbor craft in the San Francisco Bay; and
5. To improve the health of residents, workers, and visitors to West Oakland through a reduction in emissions and exposure to air pollutants.

## 2.6 PROJECT DESCRIPTION

The West Oakland Community Action Plan is a joint effort between the West Oakland Environmental Indicators Project (Indicators Project) and the Air District, with direction from the West Oakland Community Action Plan Steering Committee. The West Oakland Environmental Indicators Project has a long history of community planning and advocacy to reduce residents' exposure to diesel particulate matter (Diesel PM), fine particulate matter ($PM_{2.5}$), and toxic air contaminants (TACs). The Steering Committee members are local stakeholders, including residents, community and local business leaders, and government agency representatives.

The Community Action Plan was developed through monthly meetings with the West Oakland Steering Committee, which began working on the Plan in July 2018. The Plan provides strategies for addressing the long-standing disparities in air pollution and related health effects in West Oakland. Once implemented, the Plan will work towards eliminating West Oakland's air pollution burden.

The goal of the Community Action Plan is to reduce emissions from air pollution sources within and adjacent to West Oakland air pollution sources, including:

1. Stationary sources in West Oakland and adjacent to West Oakland, such as the East Bay Municipal Utility District wastewater treatment plant; recycling facilities such as Schnitzer Steel, CASS, and California Waste Solutions, Incorporated; gas stations, back-up diesel generators, and auto-body shops;

2. Mobile sources, such as heavy-duty trucks and light-duty vehicles that travel in West Oakland and on the surrounding freeways; and
3. Mobile sources that serve the Port of Oakland, such as cargo equipment, port trucks, locomotives, ocean-going ships, and harbor craft in the San Francisco Bay.

The proposed strategies included in the Community Action Plan are summarized in Table 2.6-1. A summary of those strategies is provided below.

### 2.6.1 STATIONARY SOURCE STRATEGIES

The Plan includes strategies to further control emissions from stationary sources in West Oakland. Strategies to control stationary sources include considering: (1) replacing stationary diesel engines with Tier 4 diesel or cleaner engines; (2) new regulations to reduce emissions from ~~reformulation of~~ vanishing oils and rust inhibitors; (3) reducing toxic air contaminant emissions from existing industrial sources including Schnitzer Steel and the East Bay Municipal Utility District's Wastewater Treatment Plant; (4) potential new or amended regulations to further reduce emissions from metal recycling and foundry operations; (5) developing a regulation to reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks; (6) investigate the potential replacement of the Dynegy Power Plant with cleaner energy; and (7) identifying incentives to emissions from waste water treatment plants and anaerobic digestion facilities. The District will also consider developing a magnet source regulation to reduce emissions from freight operations.

### 2.6.2 MOBILE SOURCE STRATEGIES

The Plan includes strategies to reduce emissions from mobile sources including vehicles, trucks, locomotives, and ships. A number of strategies would encourage the early retirement of old vehicles, increased use of zero emissions trucks, buses, and vehicles operating in West Oakland. Strategies to control emissions from locomotives and ships include: (1) increasing the use of shore-power or other emission control systems by vessels at berth in the Port of Oakland; (2) encouraging use of Tier 3 and 4 compliant diesel engines on tugs and barges; and (3) encouraging use of Tier 4 compliant engines on locomotives. A number of strategies would increase enforcement on a variety of different activities including illegal parking, excess idling, and not using appropriate truck routes.

### 2.6.3 OTHER MOBILE SOURCE STRATEGIES

The Plan encourages other strategies to reduce emissions from mobile sources including: (1) encouraging car sharing for low-income individuals; (2) providing pedestrian and bicycle improvements to increase use of public transit, e.g., BART; (3) increasing street sweeping to minimize the re-entrainment into the air of particulates that collect on streets and freeways; (4) developing safe routes to school to minimize conflicts between pedestrians and trucks/vehicles; and (5) considering improvements to public transit along

Grand Avenue.

### 2.6.4 LAND USE STRATEGIES

Land use strategies are aimed at modifying land uses to limit exposure to emissions. Under this category, the Plan includes strategies to reduce exposure to emissions by: (1) relocating California Waste Systems and CASS to move sources away from sensitive receptors; (2) additional participate of the Air District in CEQA documents; (3) studying the potential health outcomes of allowing truck traffic on I-580; (4) identify locations outside West Oakland for heavier industrial businesses currently in West Oakland; (5) accelerating the relocation of auto, truck-related businesses and other businesses that are non-conforming land uses; (6) revise business licensing procedures and conduct surveys to require the disclosure of truck visits and truck parking; (7) developing regulations to prohibit certain freight businesses and truck yards in portions of West Oakland; (8) limit the hours of truck operations within the community; (9) increasing urban tree planting and vegetative biofilters along streets/truck routes to help reduce exposure to emissions; (10) adopting development impact fees to fund various environmental mitigations; (11) provide funding and financial incentives for improvements; ~~including green infrastructure and transportation improvements; (6) installing solid barriers between buildings and air pollution sources (e.g., freeways) to reduce exposure to air pollution;~~ (7) increasing electrical infrastructure to encourage zero emissions vehicles/trucks and stationary sources; and (8) improving and updating the complaint processes, enforcement procedures and coordination with other public agencies to better respond to odors and open burning complaints.

### 2.6.5 HEALTH PROGRAMS

Health Program strategies are aimed at generally reducing exposure to air pollution. These strategies could include: (1) the installation of high efficiency air filtration systems on buildings to reduce exposure; (2) relocating exhaust stacks to reduce local exposure to air pollutants; (3) providing additional air monitoring to better detect sources of air pollution; (4) set limits on cumulative exposure to TAC emissions; and (5) better reporting of health data to identify public health impacts, as well as improvements.

Implementation of the Community Action Plan, once approved, will be the responsibility of the Air District and the Indicators Project with the support and coordination of a number of governmental agencies including the City of Oakland, Port of Oakland, and CARB the Alameda County Public Health Department, and others.

## TABLE 2.6-1

## West Oakland Community Action Plan ~~Proposed~~ Strategies

| # | Strategies | Authority |
|---|---|---|
| | **Land Use** | |
| 1 | The City of Oakland continues working with California Waste Solutions and CASS, Inc. to relocate operations to the former Oakland Army Base and works with the property owners and local residents to redevelop the former sites in West Oakland with new business and light industrial uses that fit into a green economy. | City of Oakland |
| 2 | The Air District will continue to engage in environmental review processes for development projects in West Oakland, such as the Oakland A's Ballpark and the MacArthur Maze Vertical Clearance Project, including coordinating with community partners and lead agency staff, providing data and technical assistance, and reviewing and commenting on CEQA documents through 2025. | Air District |
| 3 | The Air District will study the potential air pollution and health outcomes of allowing truck traffic on I-580 and designating a truck lane on I-880. Allowing truck traffic on I-580 would require legislative approval, re-engineering, and re-construction. | Air District |
| 4 | Consistent with measures in the West Oakland Specific Plan, the City of Oakland identifies locations outside of West Oakland for heavier industrial businesses currently in West Oakland that contribute to air pollution emissions and negative health outcomes in West Oakland. | City of Oakland |
| 5 | The City of Oakland and Port of Oakland amends existing Ordinances, Resolutions, or Administrative policies to accelerate relocation of truck yards and truck repair, service, and fueling businesses in West Oakland currently located within the freeway boundaries that do not conform with the zoning designations adopted in the West Oakland Specific Plan. | City of Oakland, Port of Oakland |
| 6 | The City of Oakland uses incentives and subsidies to relocate businesses away from West Oakland that do not conform with the zoning designations adopted in the West Oakland Specific Plan. The Air District will provide emissions data and technical support to assist the City in these efforts and to ensure that any relocated businesses do not cause exposure issues at the new location. | City of Oakland, Air District |
| 7 | The City of Oakland revises business licensing procedures to require current and proposed businesses to disclose truck visits per day and works with Caltrans to determine the number of trucks that park in the Caltrans right-of-way near West Oakland. Caltrans works with WOEIP and the Air District to address air quality issues from truck parking leases, such as by modifying leases to allow for collecting surveys and partnering with the Air District and CARB to allow enforcement access. | City of Oakland, Caltrans |
| 8 | The City of Oakland amends existing City Ordinances and Administrative policies to list new truck yards and truck service, repair and fueling businesses as prohibited uses within the area of West Oakland that is inside the freeways (excluding the Port, OAB, and 3rd St. corridor of Jack London Square from Brush St. to Union St.). | City of Oakland |
| 9 | The City of Oakland develops a plan to limit the hours that trucks can operate in the community. | City of Oakland |
| 10 | The City of Oakland creates a comprehensive, area-wide urban canopy and vegetation plan that identifies locations that trees can be added and maintained, such as parks and along Caltrans' right-of-ways~~,~~ and develops a plan to protect existing trees that reduce exposure to air pollution emissions in West Oakland. This includes partnering with local nonprofit groups, ~~and~~ encouraging trees on private property, and working with the community on tree maintenance and (as needed) removal. The development of the Oakland Urban Forest Master Plan will inform this work. | City of Oakland, Caltrans |
| 11 | The City of Oakland works with local groups to train residents to maintain biofilters. | City of Oakland |

| # | Strategies | Authority |
|---|---|---|
| 12 | The Air District and the West Oakland Environmental Indicators Project intends to implement the green infrastructure project currently under development between Interstate I-880 and the Prescott neighborhood in West Oakland by 2021. | Air District |
| 13 | The City of Oakland conducts a study regarding development fees for environmental mitigations. | City of Oakland |
| 14 | The Air District provides subsidized loans for local small businesses to install energy storage systems (e.g. batteries, fuel cells) to replace stationary sources of pollution (e.g. back-up generators). | Air District |
| 15 | The City of Oakland continues requiring new developments to provide infrastructure for electrical vehicle charging stations. | City of Oakland |
| 16 | The City of Oakland, in partnership with the Steering Committee, CARB and the Air District, studies the exposure reduction benefit of requiring solid or vegetative barriers to be incorporated into site design between buildings and sources of air pollution (for example, a freeway). | City of Oakland, CARB, Caltrans, Air District |
| 17 | The City of Oakland adopts policies to lessen air quality impacts of residential and office buildings through the reduction or elimination of natural gas systems. | City of Oakland |
| 18 | The Air District advocates for more electrical infrastructure and power storage, including development of (1) fast-charging facilities, (2) truck charging stations and (3) better land use support for electric trucks by 2025. | PG&E |
| 19 | The Port of Oakland adopts an Electrical Infrastructure Plan for the maritime waterfront areas of Oakland. This Plan seeks to remove barriers to adoption of zero-emission trucks, such as cost, land, and ownership of charging equipment. | Port of Oakland |
| 20 | The City of Oakland revises development requirements to require the implementation of as many transportation demand management (TDM) strategies as feasible by developers of new buildings. | City of Oakland |
| 21 | The Air District works with the City and Port of Oakland and other agency and local partners to create a Sustainable Freight Advisory Committee to provide recommendations to each agency's governing board or council. The Committee's scope includes: air quality issues, enhanced/increased enforcement of truck parking and idling, improved referral and follow-up to nuisance and odor complaints related to goods movement, improvements to the Port appointment system, charging infrastructure and rates, developing land-use restrictions in industrial areas, <u>funding,</u> and consideration of video surveillance to enforce truck parking, route, and idling restrictions. | Air District, Port of Oakland, City of Oakland |
| 22 | The City of Oakland adopts more stringent air quality construction and operations requirements. | City of Oakland |
| 23 | The City adds the AB 617 Steering Committee Co-Chairs to the official lists to receive notification of "Applications on File" for discretionary planning projects and "Meeting Agendas" of the Planning Commission and its five subcommittees, and the Landmarks Preservation Board. | City of Oakland |
| 24 | The Air District works with agency and local partners to improve referral and follow-up on nuisance and odor complaints by 2021. This work includes updates to complaint processes, enforcement procedures, and coordination with other public agencies regarding odors, backyard burning, and other complaints. | Air District |
| 25 | To address potential changes in local pollution exposure, the City of Oakland works with local community groups to address gentrification and the pricing out of long-term residents caused by gentrification. This effort includes meetings with local community groups and incentives and loans targeted to existing businesses and residents. Funding for this effort is identified as needed. | City of Oakland |

| # | Strategies | Authority |
|---|---|---|
| 26 | The City and Port of Oakland will work to establish permanent locations for parking and staging of Port related trucks and cargo equipment, i.e. tractors, chassis, and containers. Such facilities will provide long-term leases to parking operators and truck owner-operators at competitive rates. Such facilities will be at the City or Port logistics center or otherwise not adjacent to West Oakland residents. | City of Oakland, Port of Oakland |
| 27 | The City of Oakland and other appropriate local agencies limit fugitive dust from construction activity through better enforcement of existing regulations and permit requirements. | City of Oakland |
| | **Mobile Sources** | |
| 28 | The California Air Resources Board develops improvements to the existing truck and bus inspection and maintenance programs. Potential improvements include increasing warranty requirements, adding a lower in-use emissions performance level, increasing inspections in West Oakland, using aggregated GPS and other telecommunication records to identify locations of idling trucks and buses, and partnering with the Air District to develop a system using on-board diagnostic and remote sensing devices to identify and fix faulty emissions abatement devices on trucks and buses. | CARB |
| 29 | The California Air Resources Board develops the following regulations to increase the number of zero-emission trucks and buses operating in West Oakland:<br>• The Advanced Clean Trucks regulation to transition to zero-emission technology those truck fleets that operate in urban centers, have stop-and-go driving cycles, and are centrally maintained and fueled.<br>• Amendment to the drayage truck regulation to transition the drayage truck fleet to zero emissions. | CARB |
| 30 | The California Air Resources Board, in partnership with the Steering Committee, WOEIP and the Air District, conduct a pilot study to assess local idling impacts from trucks and buses. The Steering Committee, WOEIP and the Air District advocate for "Clean Idle" trucks and buses to idle no more than 5 minutes when in West Oakland. | CARB |
| 31 | The California Air Resources Board develops amendments to the transport refrigeration unit (TRU) regulation to transition the TRU fleet to zero emission operations by requiring both zero-emission technology and supporting infrastructure. | CARB |
| 32 | The California Air Resources Board develops amendments to the existing cargo handling equipment regulation, which includes yard trucks, rubber-tired gantry cranes, and top handlers, that may reduce idling and transition the various types of equipment to zero emission operation. | CARB |
| 33 | The California Air Resources Board develops a handbook that identifies best practices for the siting, design, construction, and operation of freight facilities to minimize community exposure to air pollution. | CARB |
| 34 | The California Air Resources Board develops regulations to expand California-specific standards for new light-duty vehicles, impacting 2026 and later model year vehicles, to increase the number of new zero emission and plug-in hybrid electric vehicles sold in California and increase the stringency of fleet-wide emission standards for greenhouse gases and criteria pollutants. | CARB |
| 35 | The California Air Resources Board develops new standards for small off-road engines (SORE), which are spark-ignition engines rated at or below 19 kilowatts and used primarily for lawn, garden, and other outdoor power equipment. | CARB |
| ~~31~~ 36 | The City of Oakland requires industrial and warehouse facilities to provide electrical connections for electric trucks and transport~~ation~~ refrigeration units in support of CARB regulations. | City of Oakland |

| # | Strategies | Authority |
|---|---|---|
| ~~32~~ 37 | The Port of Oakland, as part of the 2020 and Beyond Seaport Air Quality Plan, supports the transition to zero-emission drayage truck operations, including setting interim year targets out to 2035, coordinating an extensive zero-emission truck commercialization effort, working with the City of Oakland to amend local ordinances to increase the allowable weight limits for single-axle, zero-emission trucks on local streets located within the Port and the Oakland Army Base/Gateway areas, and developing an investment plan for needed upgrades to the Port's electrical infrastructure. The Port of Oakland also works with the California Public Utilities Commission and the California Energy Commission to study the development of time-of-day electric rate structures favorable to truck operators. | Port of Oakland |
| ~~33~~ 38 | The City of Oakland, consistent with the West Oakland Truck Management Plan: 1) improves training for police officers, community resource officers, and parking control technicians who issue truck and trailer parking tickets; 2) changes the parking regulations so they are easier to enforce; 3) increases truck parking fines; 4) targets enforcement at specific times and locations; and 5) improves signage directing drivers to available truck parking. | City of Oakland |
| ~~34~~ 39 | The City of Oakland, consistent with the West Oakland Truck Management Plan: 1) improves signage regarding existing truck routes; 2) works with businesses on preferred routes to use when destinations are not located on truck routes; and 3) adds to, or changes, truck routes and prohibited streets. | City of Oakland |
| ~~35~~ 40 | The City of Oakland, consistent with the West Oakland Truck Management Plan, implements, in consultation with West Oakland residents, traffic calming measures to keep truck traffic off residential streets. | City of Oakland |
| ~~36~~ 41 | The Air District works with CARB to streamline the process for providing financial incentives for fueling infrastructure, and for low and zero-emission equipment. The Air District increases outreach and assistance to individual owner-operators and small companies by providing two workshops and enhanced outreach in West Oakland by 2022. | Air District |
| ~~37~~ 42 | The City and Port of Oakland award long-term leases to vendors that will deliver trucker services (including mini-market and convenience stores, fast food, and fast casual restaurants), and parking to keep trucks off West Oakland streets. | City of Oakland, Port of Oakland |
| ~~38~~ 43 | The Port of Oakland studies the effects on truck flow and congestion due to increasing visits from larger container ships, the feasibility of an off-terminal container yard that utilizes zero-emission trucks to move containers to and from the marine terminals, and the potential efficiency gains from increasing the number of trucks hauling loaded containers on each leg of a roundtrip to the Port. | Port of Oakland |
| ~~39~~ 44 | The Alameda County Transportation Commission works with West Oakland residents and businesses to develop mitigations to short- and long-term impacts caused by the construction of the 7th St Grade Separation East Project and the implementation of other elements of the GoPort Initiative. | ACTC |
| ~~40~~ 45 | The City of Oakland collaborates with AC Transit, BART, Emery-Go-Round, and the local community to implement the broad array of transit improvements identified in the West Oakland Specific Plan. | City of Oakland, AC Transit, BART, City of Emeryville |
| ~~41~~ 46 | The City of Oakland collaborates with MTC and ACTC to consider a program for extending car sharing to low-income individuals and groups. | City of Oakland, MTC, ACTC |

| # | Strategies | Authority |
|---|---|---|
| ~~42~~ 47 | AC Transit implements the Grand Avenue transit improvements identified in its Bus Rapid Transit Plan, as well as mitigations if the improvements cause increases in truck and auto idling on Grand Avenue. | AC Transit |
| ~~43~~ 48 | The Air District plans to offer up to $7 million per year to replace older autos through the Vehicle Buy Back program, and up to $4 million per year through the Clean Cars for All program to replace older autos and provide an incentive for a hybrid electric, plug-in hybrid electric, battery electric vehicle, or Clipper Card for public transit. | Air District |
| ~~44~~ 49 | The Air District offers financial incentives to replace box and yard diesel trucks with zero emission trucks owned by West Oakland businesses every year. | Air District |
| ~~45~~ 50 | The Air District plans to offer financial incentives to upgrade tugs and barges operating at the Port of Oakland with cleaner engines every year. | Air District, Port of Oakland |
| ~~46~~ 51 | The Air District plans to offer financial incentives to upgrade line-haul, passenger, and switcher (yard) locomotives with cleaner engines every year. | Air District |
| ~~47~~ 52 | The Air District plans to offer financial incentives to support the development of a hydrogen refueling station and the purchase of trucks and off-road equipment powered by fuel cells every year. | Air District |
| ~~48~~ 53 | The Air District offers financial incentives to replace long-haul diesel trucks with zero-emission trucks owned by West Oakland businesses every year. | Air District |
| ~~49~~ 54 | The Air District will award up to $1 million in funding incentives to pay for the cost of purchasing cleaner equipment in West Oakland, potentially including: electric lawn and garden equipment, battery electric Transport~~ation~~ Refrigeration Units, and cargo-handling equipment, by 2021. | Air District |
| ~~50~~ 55 | The Bay Area Rapid Transit District will develop a bike station with controlled access at the West Oakland BART Station. | BART |
| ~~51~~ 56 | The City of Oakland implements the broad array of bicycle and pedestrian improvements identified in the West Oakland Specific Plan, the 2019 Oakland Bike Plan, and the 2017 Oakland Walks Pedestrian Plan. | City of Oakland |
| ~~52~~ 57 | Through the Pilot Trip Reduction Program, the Air District offers incentives for the purchase of electric bicycles for bike share programs. | Air District |
| ~~53~~ 58 | The Oakland Unified School District and the City of Oakland, as part of the Safe Routes to Schools Program in West Oakland, begin twice a day street closures next to public schools in West Oakland to keep cars and trucks away from arriving and departing students. | Oakland Unified School District, City of Oakland |
| ~~54~~ 59 | The City of Oakland increases the frequency of street sweeping to decrease road dust, particularly on streets adjacent to schools, on designated truck routes, and on streets near freeways. The California Department of Transportation increases the frequency of street sweeping along the I-880, I-980, and I-580 freeways. Consideration is given to technology and techniques that avoid re- suspending road dust. | City of Oakland Caltrans |
| ~~55~~ 60 | The California Air Resources Board develops amendments to the At-Berth Air Toxics Control Measure to further reduce ship emissions at berth by strengthening the regulation to cover more vessel visits and types of ships. | CARB |
| ~~56~~ 61 | The California Air Resources Board develops amendments to the Commercial Harbor Craft Air Toxics Control Measure to achieve additional control of harbor craft emissions. The Steering Committee, WOEIP, and the Air District advocate for early compliance of harbor craft operating near West Oakland. | CARB |

| # | Strategies | Authority |
|---|---|---|
| ~~57~~ 62 | The California Air Resources Board develops regulations to reduce idling emissions from locomotives at rail yards with an emphasis on reducing emissions from locomotives not pre-empted under the federal Clean Air Act. The Steering Committee, WOEIP, and the Air District advocate for early compliance for locomotives operating in West Oakland. | CARB |
| ~~58~~ 63 | The Port of Oakland implements a Clean Ship Program to increase the frequency of visits by ships with International Maritime Organization Tier 2 and Tier 3 engines. | Port of Oakland |
| ~~59~~ 64 | The Port of Oakland implements a Clean Locomotive Program to increase the number of U.S. EPA Tier 4 compliant locomotives used by the UP, BNSF, and OGRE railways to provide service in and out of the Port of Oakland. | Port of Oakland |
| ~~60~~ 65 | The Port of Oakland studies the feasibility of using electric switcher locomotives at the two Port railyards. | Port of Oakland |
| ~~61~~ 66 | The Air District works with ~~Schnizter~~ Schnitzer Steel to study the feasibility of installing a shore-power or bonnet system to capture and abate vessel emissions at the West Oakland facility by 2021. | Air District |
| ~~62~~ 67 | The Air District intends to seek authority in 2021 to reduce emissions and risk from magnet sources, such as the Port of Oakland, freight operations and warehouse distribution centers. | Air District |
| | **Stationary Sources** | |
| ~~63~~ 68 | The Air District proposes amendments to existing regulations to further reduce emissions from metal recycling and foundry operations, such as changes to: 1) Rule 6-4: Metal Recycling and Shredding Operations, which requires metal recycling and shredding facilities to minimize fugitive PM emissions through the development and implementation of facility Emission Minimization Plans; and 2) Rule 12-13: Foundry and Forging Operations, which requires metal foundries and forges to minimize fugitive emissions of PM and odorous substances through the development and implementation of facility Emission Minimization Plans by 2025. | Air District |
| ~~64~~ 69 | The Air District's Rule 11-18: Reduce Risk from TACS at Existing Facilities requires selected Bay Area facilities to reduce risk or install best available retrofit control technology for toxics on all significant sources of toxic emissions. Based on the results of the ~~Technical Assessment~~ facility-specific health risk assessment, the Air District may require Schnitzer Steel and the East Bay Municipal Utility District to adopt a Risk Reduction Plan if the health risk ~~determined by the facility-wide health risk assessment~~ exceeds a risk action level per the requirements of Rule 11-18 implementation. | Air District |
| ~~65~~ 70 | The Air District intends to provide incentives to replace existing diesel stationary and standby engines (fire pumps, dryers, conveyor belts, cranes) with Tier 4 diesel or cleaner engines. Priority is given to upgrading Tier 0, 1 & 2 engines located closest to schools, senior citizen centers, childcare facilities, and hospitals. | Air District |
| ~~66~~ 71 | The Air District proposes new regulations to reduce emission sources from autobody and other coating operations, including the use of vanishing oils and rust inhibitors by 2025. | Air District |
| ~~67~~ 72 | The Air District proposes new regulations to reduce emissions from wastewater treatment plants and anaerobic digestion facilities, such as a regulation to reduce emissions of methane, reactive organic gases, and oxides of nitrogen by ~~2019~~ 2020. | Air District |
| ~~68~~ 73 | The Air District proposes ~~a regulation~~ amendments to existing Regulation 8-5 to further reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020. Organic liquid storage tanks are defined in Regulation 8-5. | Air District |

| # | Strategies | Authority |
|---|---|---|
| ~~69~~ 74 | The Air District advocates for a plan that East Bay Clean Energy and PG&E are spearheading to replace the Dynegy Power Plant with a cleaner and more reliable source of energy by 2022. The proposed location for this initiative is the Oakland C, Oakland L, Maritime Port of Oakland, and Schnitzer Steel substation pocket, which is located within PG&E's Oakland distribution planning area. Eligible resource types include: (1) in-front-of-the-meter renewable generation; (2) in-front-of-the-meter energy storage, and (3) behind-the-meter energy storage. EBCE is seeking to procure the energy, resource adequacy (RA), and renewable energy credits (RECs) associated with these local resources, while PG&E will focus on meeting Oakland's transmission reliability needs. | East Bay Clean Energy, PG&E |
| | **Health Programs** | |
| ~~70~~ 75 | The Air District intends to develop and fund a program to reduce exposure to air pollution at schools, day care facilities, senior centers, health facilities, public facilities, apartments and homes in West Oakland by 2021. This ~~s~~Strategy includes policies or grants for building energy efficiency upgrades to reduce infiltration of pollutants and the installation of high-efficiency air filtration systems (rated MERV 14 or higher). | Air District |
| ~~71~~ 76 | The City of Oakland works with local and agency partners to implement regional and local adoption of the State Department of Public Health's Health In All Policies program. | City of Oakland |
| ~~72~~ 77 | Consistent with the ~~Oakland~~ Healthy Development Guidelines, the City of Oakland implements a project-wide smoking ban in Oakland at new developments. | City of Oakland |
| ~~73~~ 78 | Consistent with the State's Building Energy Efficiency Standards for air filtration in effect as of January 1, 2020, the City of Oakland requires newly constructed buildings of four or more habitable floors to include air filtration systems equal to or greater than MERV 13 (ASHRAE Standard 52.2), or a particle size efficiency rating equal to or greater than 50 percent in the 0.3-1.0 µm range and equal to or greater than 85 percent in the 1.0-3.0 µm range (AHRI Standard 680). | City of Oakland |
| ~~74~~ 79 | The City of Oakland works with agency and community partners to undertake participatory budgeting with West Oakland community members to allocate local health improvement grants that reduce emissions or exposure to emissions. | City of Oakland |
| ~~75~~ 80 | The Air District researches actions that are potentially exposure-reducing, such as: 1) an engineering evaluation of exhaust stacks and/or vents to determine if relocation will reduce local exposure; (2) a study to determine if smart air filtration systems can reduce exposure by in-taking air during daily non-peak vehicle travel times, such as between midnight and four a.m.; and (3) a study of the potential air quality benefits of a centralized package delivery site such as personal lockers by 2025. | Air District |
| ~~76~~ 81 | The City of Oakland works with local businesses, partner agencies, and community members to develop a Green Business Strategic Plan to attract, retain, and support innovative green companies in West Oakland. This effort includes coordination with State and local agencies to develop criteria for green business certification for new and existing businesses. | City of Oakland |
| ~~77~~ 82 | The California Office of Environmental Health Hazard Assessment, in partnership with the Steering Committee, the City of Oakland, CARB, and the Air District, studies setting a limit on West Oakland's cumulative exposure to TACs. | OEHHA |
| ~~78~~ 83 | The City of Oakland works with community partners to implement the Healthy Development Guidelines for new building projects. | City of Oakland |
| ~~79~~ 84 | The Alameda County Public Health Department expands its Asthma Management programs. | Alameda County Public Health Department |

| # | Strategies | Authority |
|---|---|---|
| ~~80~~ 85 | The City of Oakland works with Alameda County Public Health Department to improve access to medical services within West Oakland. This work expands existing programs such as: (1) Child Health and Disability Prevention Program free health check-ups for infants through teens; (2) Asthma Management at schools; (3) Building Blocks for Health Equity which works to correct inequity in health outcomes for children; (4) Urban Male Health Initiative which is charged with reducing the premature mortality of men and boys in Alameda County; and (5) Alameda County Health Improvement Plan to develop and implement a five-year county plan to improve health and achieve health equity. | City of Oakland, Alameda County Public Health Department |
| ~~81~~ 86 | The Alameda County Public Health Department works with agency and local partners to investigate the use of green building approaches in housing construction and renovation that will reduce emissions and exposure to air pollution emissions. This work examines weatherization/energy efficiency and renewable energy services. This work draws from the Contra Costa County Health Department's pilot effort in cooperation with the Regional Asthma Management Program. | Alameda County Public Health Department |
| ~~82~~ 87 | CARB conducts a technology assessment of commercial cooking rules and control strategies and proposes incentives and/or a Suggested Control Measure for commercial cooking. The Air District offers incentives and/or proposes a regulation to reduce emissions from commercial cooking. | Air District, CARB |
| ~~83~~ 88 | The City of Oakland ~~revises~~ studies revising standard conditions of approval ~~for conditional use permits~~ and/or similar requirements for large projects to require "opt-up" to East Bay Community Energy's Brilliant 100 carbon-free electricity supply. | City of Oakland |
| ~~84~~ 89 | The Alameda ~~County Transportation Commission~~ CTC and Caltrans will continually engage with the community, at a minimum through participation in quarterly meetings of the WOCAP implementation committee, ~~starting with the early planning and budgeting stages of transportation projects that are being developed by ACTC in West Oakland~~ on early project planning and delivery for projects in West Oakland where Alameda CTC and Caltrans is the project sponsor in order to ensure projects do not increase transportation impacts on residents. These projects will undergo appropriate reviews to assess the environmental and health impacts, and potential local benefits, and adopt associated mitigation measures so they do not result in a net increase in air pollution or health inequities for residents most impacted by the county's freight transportation system in West Oakland. | ACTC, Caltrans~~,~~ ~~Air District~~ |

## 2.6.6 EMISSION REDUCTIONS AND COMMUNITY BENEFITS

Guidelines section 15124(b) states the project description may also discuss the project benefits. In addition, Public Resources Code Section 21082.4, AB 2782 (Friedman 2018 CEQA), authorizes lead agencies in describing and evaluating projects in an environmental document, to consider specific economic, legal, social, technological, or other benefits of the project and the negative impacts of denying the Project. Without the implementation of this Community Air Action Plan, the District might be in non-compliance with AB 617 and CARB's Community Air Protection Blueprint, which is the process for meeting statewide strategies to reduce emissions of criteria air pollutants, toxic air contaminants, and develop community emissions reduction programs and/or air monitoring plans.[1] Scientific, government, and academic research provides substantial evidence environmental inequities persist in disadvantaged communities.[2]

Pursuant to AB 617, the Plan will protect and improve community health by striving to eliminate disparities in exposure to local air pollution. This proposed Community Action Plan for the community of West Oakland, further advances the goals and objectives of the District's 2017 Clean Air Plan, *Spare the Air, Cool the Climate*. Both Plans, protect public health, and strengthen efforts to reduce emissions of fine particulate matter (PM) and toxic air contaminants. The implementation of the ~~84~~ 89 control strategies is expected to result in overall air pollutant emission reductions and reinforce the District's commitment to protect public health in the most vulnerable communities. Similar to the Air District's 2017 Clean Air Plan, this Community Action Plan can inspire action, as an example of collaboration between numerous stakeholders to implement solutions to improve air quality, protect the climate, and eliminate disparities in exposure to air pollution.

The Steering Committee in partnership with the District developed targets to improve air quality and address exposure disparities. The Plan targets will assist the Steering Committee in determining whether it is on track to meet the Plan's goals. Simultaneously, the Plan will reduce disproportionate air quality impacts between West Oakland and rest of the Bay Area. The Plan has a five-year proposed implementation schedule from 2020 to 2024. The targets can be described as follows:

1. By 2025, throughout West Oakland, all neighborhoods will experience conditions of the ***average*** West Oakland residential neighborhood, as they existed during the base year (2017).

[1] https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/community-air-protection-blueprint

[2] For example, a study by Morello-Frosch et al., (2016), results revealed California's Cap-and-Trade Program inadequately protects public health and environmental equity goals. https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002604. In 2016, the environmental justice community lobbied for the approval of six major environmental justice bills: SB 1000 (Levya 2016) Planning for Healthy Communities Act; AB 2722 (Burke and Arambula 2016) Transformative Climate Communities; SB 32 (Pavley 2016) 2030 Greenhouse Gas Reduction Targets; AB 197 (E. Garcia 2016) Equity & Transparency in Climate Act; AB 1550 (Gomez 2016) Increased Climate Investments; and AB 1937 (Gomez 2016) EJ in Power Plant Siting.

2. By 2030, throughout West Oakland, all neighborhoods will experience conditions of the **least** impacted residential neighborhood during the base year (2017), i.e., the "cleanest" neighborhood in West Oakland.

These targets define the desired future conditions, which are based on the baseline (2017) model year findings. These conditions reflect the impact of local sources, holding aside the regional background. Targets address emissions and exposure from local sources only.

Targets for diesel particulate matter, particulate matter, and cancer risk include the following:

Diesel Particulate Matter (diesel PM) Target

1. By 2025, local emission sources will contribute to the average West Oakland residential neighborhood a concentration of diesel PM of no more than 0.25 ug/$m^3$ (micrograms per cubic meter).
2. By 2030, local emission sources will contribute to the average West Oakland residential neighborhood a concentration of diesel particulate matter (diesel PM) of no more than ~~0.12~~ 0.13 ug/$m^3$.

Particulate Matter 2.5 ($PM_{2.5}$) Target

1. By 2025, local emission sources will contribute to the average West Oakland residential neighborhood a concentration of $PM_{2.5}$ of no more than 1.7 ug/$m^3$.
2. By 2030, local emission sources will contribute to the average West Oakland residential neighborhood a concentration of $PM_{2.5}$ of no more than 1.2 ug/$m^3$.

Cancer Risk Target

1. By 2025, local emission sources will contribute to the average West Oakland residential neighborhood a cancer risk of no more than 200 in a million.
2. By 2030, local emission sources will contribute to the average West Oakland residential neighborhood a cancer risk of no more than ~~120~~ 110 in a million.

One of the benefits of the Plan is to provide financial incentives to reduce air pollutants. A UC Berkeley study (Harley, 2012) found that between 2009 and 2013, the average emission rate from Port diesel trucks declined 76% for black carbon, a major component of diesel PM. The average emission rate for nitrogen oxides, which contribute to the creation of PM and ozone, declined by 53%.[3] Several factors contributed to this decline, including more stringent CARB mobile vehicle emission requirements, changes in practices at the Port of Oakland, and normal "fleet turnover" in the state, as individuals and businesses replaced older, dirtier equipment and vehicles with newer, cleaner equipment and vehicles. Incentive programs played a critical role, too. Since 2009, the Air District has awarded over $39 million in incentive dollars for particulate filters and truck replacements at the Port.

[3] https://www.portofoakland.com/press-releases/press-release-372/ and http://its.berkeley.edu/btl/2012/winter/harley

The Air District also offers incentive dollars to purchase newer and less-polluting equipment and vehicles operating in and around West Oakland. For example, Strategies call for the Air District to commit money to retire or replace older light-duty autos (Strategy #~~43~~ #48); replace diesel trucks with zero-emissions trucks (Strategy #~~44~~ #49 and #~~48~~ #53); upgrade tugs and barges operating at the Port of Oakland (Strategy #~~45~~ #50); and upgrade line-haul, passenger, and switcher (yard) locomotives with cleaner engines (Strategy #~~46~~ #51).

The Air District has made progress in these areas. See, for example, Table 2.6-2 for a sample list of projects the Air District has funded to purchase equipment that will assist to further reduce diesel particulate matter and $PM_{2.5}$ in West Oakland air over the next five years.

The Steering Committee will track the progress made towards the implementation of these strategies and targets, and the reduction of local disparities. This proposed project (the Plan) will provide an interdisciplinary, multifaceted approach to bring community groups, government agencies, and public citizens together to work toward reducing environmental disparities and protecting human health.

**Table 2.6-2**

**Examples of Air District Funded Projects to Further Reduce Diesel Particulate Matter and $PM_{2.5}$**

| Project | Grantee Name | Incentive Funds Awarded | Grantee Contribution | Total Project Cost | PM2.5 Emissions Reduced (tpy) |
|---|---|---|---|---|---|
| One switcher locomotive | Oakland Global Rail Enterprise | $1,080,500 | $1,139,500 | $2,220,000 | 0.040 |
| Two main engines in a tug boat (Sandra Hugh) | Amnav Maritime Corporation | $743,000 | $743,656 | $ 1,486,656 | 1.130 |
| Two main engines in a tug boat (Revolution) | Amnav Maritime Corporation | $743,000 | $743,656 | $ 1,486,656 | 1.130 |
| Two auxiliary engines in a tug boat (Sandra Hugh) | Amnav Maritime Corporation | $134,000 | $16,068 | $150,068 | 0.019 |
| Two auxiliary engines in a tug boat (Revolution) | Amnav Maritime Corporation | $134,000 | $16,068 | $150,068 | 0.019 |
| 13 hybrid cranes | SSA Terminals | $5,011,500 | $885,183 | $ 5,896,683 | 0.166 |
| On-road | Alameda-Contra Costa Transit District | $1,011,000 | $5,464,000 | $ 6,475,000 | 0.002 |
| Two main and two auxiliary engines in a Tug boat (Z-3) | Harley Marine Services, Inc. Vessel: Z-Three | $1,613,500 | $186,943 | $1,800,443 | 0.364 |
| Two main and two auxiliary engines in a Tug boat (Z-5) | Harley Marine Services, Inc. Vessel Z-Four | $1,613,500 | $186,943 | $1,800,443 | 0.364 |
| Two main and two auxiliary engines in a Tug boat | Harley Marine Services, Inc. Vessel Z-Five | $1,613,500 | $186,943 | $1,800,443 | 0.364 |
| | | | | | |

# CHAPTER 3

## ENVIRONMENTAL SETTING, IMPACTS, MITIGATION MEASURES, AND CUMULATIVE IMPACTS

Introduction
Air Quality
Energy
Greenhouse Gas Emissions
Hazards and Hazardous Materials
Utilities and Service Systems
Growth Inducing Impacts
Significant Environmental Effects Which Cannot be Avoided
Environmental Effects Not Found to be Significant

# 3.0 ENVIROMENTAL SETTING, IMPACTS, MITIGATION MEASURES AND CUMULATIVE IMPACTS

## 3.1 INTRODUCTION

This chapter of the ~~Draft~~ Final EIR describes the existing environmental setting in the Bay Area, analyzes the potential environmental impacts and benefits[1] associated with the Community Action Plan for West Oakland, and recommends mitigation measures (when significant environmental impacts have been identified). The chapter provides this analysis for each of the environmental areas identified in the Initial Study prepared by the Air District for the Community Action Plan for West Oakland (BAAQMD, 2019) (see Appendix A). The Initial Study concluded that the following resource areas required further environmental impact analyses: Air Quality, Energy (electricity), Greenhouse Gas Emissions, Hazards and Hazardous Materials, and Utilities and Service Systems.[2]

The potential impacts identified in the Initial Study will be evaluated in this EIR. Included for each impact category is a discussion of the: (1) Environmental Setting; (2) Regulatory Setting; (3) Significance Criteria; (4) Environmental Impacts; (5) Mitigation Measures (if necessary and available); and (6) Cumulative Impacts. A description of each subsection follows.

### 3.1.1 ENVIRONMENTAL SETTING

CEQA Guidelines §15360 (Public Resources Code Section 21060.5) defines "environment" as "the physical conditions that exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance." CEQA Guidelines §15125(a) requires that an EIR include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting is intended to be no longer than is necessary to gain an understanding of the significant effects of the proposed project and its alternatives.

This chapter describes the existing environment in the Bay Area as it exists at the time the environmental analysis commenced (2019) to the extent that information is available. Where data for 2019 are not available, the data from the year closest to 2019 is used to

[1] AB 2782 CEQA 21082.4.In describing and evaluating a project in an environmental review document prepared pursuant to this division, the lead agency may consider specific economic, legal, social, technological, or other benefits, including regionwide or statewide environmental benefits, of a proposed project and the negative impacts of denying the project. Any benefits or negative impacts considered pursuant to this section shall be based on substantial evidence in light of the whole record.
[2] CEQA Guidelines §15063 (a)(b)(1) Initial Study

define the baseline. The analyses included in this chapter focus on those aspects of the environmental resource areas that could be adversely affected by the implementation of the proposed West Oakland Community Action Plan as determined in the Notice of Preparation and Initial Study (see Appendix A), and not those environmental resource areas determined to have no potential adverse impact from the proposed project. The Notice of Preparation and Initial Study (see Appendix A) determined that Air Quality, Energy, Greenhouse Gas Emissions, Hazards and Hazardous Materials, and Utilities and Service Systems (solid waste) associated with the proposed project could potentially be significant, either individually or cumulatively and required further detailed analyses in this EIR.

### 3.1.2 SIGNIFICANCE CRITERIA ((§15064.7 THRESHOLDS OF SIGNIFICANCE)

This section identifies the criteria used to determine when physical changes to the environment created as a result of the proposed project approval would be considered significant. The levels of significance for each environmental resource were established by identifying significance criteria. These criteria are based upon those presented in the California Environmental Quality Act (CEQA) environmental checklist and the Air Districts CEQA Air Quality Guidelines (BAAQMD, 2017a).

The significance determination under each impact analysis is made by comparing the proposed project impacts with the conditions in the environmental setting and comparing the difference to the significance criteria.

### 3.1.3 ENVIRONMENTAL IMPACTS

The CEQA Guidelines also require the EIR to identify significant environmental effects that may result from a proposed project (CEQA Guidelines §15126.2(a)). Direct and indirect significant effects of a project on the environment must be identified and described, with consideration given to both short- and long-term impacts. The potential impacts associated with each resource are either quantitatively analyzed where possible or qualitatively analyzed where data are insufficient to quantify impacts. The impacts are compared to the significance criteria to determine the level of significance.

The impact sections of this chapter focus on those impacts that are considered potentially significant per the requirements of CEQA. An impact is considered significant if it leads to a "substantial, or potentially substantial, adverse change in the environment." Impacts from the project fall within one of the following categories:

**Beneficial:** Impacts will have a positive effect on the resource.[3]

**No Impact:** There would be no impact to the identified resource as a result of the project.

[3] CEQA §15149 and AB 2782 CEQA

**Less than Significant:** Some impacts may result from the project; however, they are judged to be less than significant. Impacts are frequently considered less than significant when the changes are minor relative to the size of the available resource base or would not change an existing resource. A "less than significant impact" applies where the environmental impact does not exceed the significance threshold.

**Potentially Significant but Mitigation Measures Can Reduce Impacts to Less Than Significant:** Significant adverse impacts may occur; however, with proper mitigation, the impacts can be reduced to less than significant.

**Potentially Significant or Significant Impacts:** Adverse impacts may occur that would be significant even after mitigation measures have been applied to minimize their severity. A "potentially significant or significant impacts" applies where the environmental impact exceeds the significance threshold, or information was lacking to make a finding of insignificance.

It is important to note that CEQA may also apply to individual projects at the time any permits are submitted in the future in response to the regulation or regulations that may be approved by the Board. The potential for any control equipment or other design modifications to affected facilities to have secondary adverse environmental impacts will be evaluated at that time.

### 3.1.4 MITIGATION MEASURES

If significant adverse environmental impacts are identified, the CEQA Guidelines require a discussion of measures that could either avoid or substantially reduce any adverse environmental impacts to the greatest extent feasible (CEQA Guidelines §15126.4). The analyses in this chapter describe the potential for significant adverse impacts and identify mitigation measures where appropriate. This section describes feasible mitigation measures that could minimize potentially significant or significant impacts that may result from project approval. CEQA Guidelines (§15370) defines mitigation to include:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.

2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

3. Rectifying the impact by repairing, rehabilitating or restoring the impacted environment.

4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

5. Compensating for the impact by replacing or providing substitute resources or environments, including through permanent protection of such resources in the form of conservation easements.

In accordance with CEQA statutes (§21081.6), a mitigation and monitoring program would be required to be adopted to demonstrate and monitor compliance with any mitigation measures identified in this EIR. The program would identify specific mitigation measures to be undertaken, when the measure would be implemented, and the agency responsible for oversight, implementation and enforcement.

### 3.1.5 CUMULATIVE IMPACTS

CEQA Guidelines §15130(a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. An EIR evaluating the environmental impact of air quality regulations essentially evaluates the cumulative impacts associated with a variety of regulatory activities. As such, this EIR evaluates the cumulative environmental impacts associated with implementation of the proposed Strategies that the District may implement under the West Oakland Community Action Plan. The area evaluated for cumulative air impacts in this EIR is the area within West Oakland as identified in Figures 2-2 and 2-3.

### 3.1.6 OVERVIEW OF ANALYTICAL APPROACH

The West Oakland Community Action Plan is designed to be a comprehensive Plan for the District and other agencies and community groups to use to implement strategies to reduce West Oakland residents' exposure to diesel PM, $PM_{2.5}$, and Toxic Air Contaminant (TAC) emissions. To implement the Plan, the Air District, the West Oakland Environmental Indicators Project and other public agencies propose to draw on a full repertoire of tools and resources. This repertoire includes the District's principal regulatory tool, which is its rulemaking authority granted to it under the California Health & Safety Code to adopt mandatory regulations requiring stationary-source facilities to take action to reduce their air emissions. It also includes the District's grants and incentives programs, which provide monetary incentives for implementing voluntary actions to reduce emissions. And it also includes the District's role in promoting sound policy development and healthy air choices throughout all sectors of our economy and society. This last tool encompasses efforts such as providing technical support to other agencies as they develop and implement their own policies and programs to help achieve clean air; promoting best practices by developing model ordinances, guidance documents and other similar documents; outreach and education efforts to engage with community groups and other organizations; and advocacy in support of legislative and regulatory action at the federal, state and local levels to promote the District's air quality and public health goals.

To facilitate the analysis of the potential impacts from implementation of the strategies in the Community Action Plan, the District has organized the strategies into four categories; (1) stationary-source regulatory actions; (2) grants and incentive actions; (3) technical support, education outreach, and advocacy actions; and (4) strategies to be implemented by other agencies. The following discussion outlines each of these categories in general.

### 3.1.6.1 Stationary Source Regulatory Action

The principal type of activity that the Air District will engage in under the West Oakland Community Action Plan is to explore, research and/or adopt, if appropriate, mandatory regulations and rules requiring stationary-source facilities to take actions to reduce their air emissions, pursuant to the District's rulemaking authority under the California Health & Safety Code. The enhanced rules and regulations that the Air District proposes to develop under the Community Action Plan will help to reduce emissions in West Oakland. These proposed regulatory measures are evaluated to determine whether they could also result in any significant ancillary adverse environmental impacts.

The West Oakland Community Action Plan proposes a number of Strategies that would reduce emissions of diesel PM, $PM_{2.5}$, and TAC emissions. Potential stationary source strategies include reducing reactive organic gas (ROG) and TAC emissions from modification to existing regulations to further reduce emissions from metal recycling and foundry operations; and installing shore-power or a "bonnet" system on ships that visit the Schnitzer Steel marine terminal. The potential impacts of these types of Strategies are evaluated in Chapter 3 of the EIR as their implementation could result in future physical impacts.

In addition to new and modified rules and regulations, some of the Air District's proposed stationary source regulatory actions will enhance enforcement of existing regulations. These regulatory actions do not require any new or modified equipment at any facilities and as such, they are not expected to result in adverse physical environmental impacts. Strategy #21 which would create a Sustainable Freight Advisory Committee, that could include enhanced enforcement of truck parking and idling, and Strategy #24, which would also result in improved referral and follow-up of nuisance and odor complaints, both fall into this category of no adverse impacts. As this measure would not have any physical environmental impacts, it not addressed in the subsequent environmental analysis. Other similar Strategies include Strategy #2 (technical assistance reviewing and commenting on CEQA documents), Strategy #12 (implement the green infrastructure project currently under development between I-880 and the Prescott neighborhood), Strategy #24 (improved follow-up on nuisance and odor complaints), and Strategy ~~#52~~ #57 (incentives to purchase electric bikes).

For a number of other proposed stationary source control measures, it is not clear at this point what type of regulatory action (if any) the Air District may take to implement them. For example, several Strategies involve potential rules where further study is needed to determine whether it is possible to obtain additional emissions reductions, and if so, how that would be accomplished. Such measures include Strategy ~~#68~~ #73 to further control emissions from storage tanks, and Strategy ~~#66~~ #71 to control emissions from autobody and other coating operations, including vanishing oils and rust inhibitors.

For these types of measures, it is not possible to evaluate with any specificity whether there may be a significant environmental impacts arising from the Air District's implementation actions, as the implementation actions themselves and/or any resulting physical changes to the environment are not yet known with any specificity. In such situations, CEQA does not require a CEQA document to engage in speculation about what might or might not occur from such strategies. CEQA Guidelines Section 15145 provides that "[i]f, after thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact." Accordingly, speculative implementation strategies of this type are not addressed in detail in the environmental analyses. The Air District has projected what implementation of the Community Action Plan may involve as precisely as is reasonably possible at the current stage of development and, wherever there are specific implementation actions and specific physical changes to the environment that are likely or reasonably possible to occur, they and their environmental impacts are evaluated in detail. But where it is not possible at this stage to project the nature or extent of an implementation action or any resulting environmental impacts beyond mere speculation, they are not evaluated, and indeed cannot be evaluated, in accordance with CEQA Guidelines Section 15145. In addition to the examples cited above, other measures which are considered too speculative to determine if any environmental impacts might occur at this stage include Strategy #3 (evaluate air pollution and health outcomes of allowing truck traffic on I-580 and a truck lane on I-880); as well as some of the measures that would encourage zero emission mobile sources.

### 3.1.6.2 Grants and Incentives

In addition to the stationary source regulatory measures proposed as part of the Community Action Plan, the Air District is also proposing to use its grants and incentives programs to fund projects in furtherance of the Plan's goals of reducing air pollution and protecting public health. The main vehicles for funding strategies are: the Air District's Transportation Fund for Clean Air (TFCA), which funds cost-effective projects aimed at reducing on-road motor vehicle emissions in the Bay Area, including vehicle replacement projects that fund the replacement of older, higher-emitting vehicles with cleaner zero emission vehicles or partial zero emission vehicles; the Carl Moyer Program; the Mobile Source Incentive Fund; and the Goods Movement Program.

The Air District is proposing to use the grants and incentive program to further the Plan's goals of reducing emissions in West Oakland. These Strategies call for using grant funding to target emissions reductions to be obtained from the transportation section, either by promoting emissions-free alternatives to motor vehicle travel such as walking and bicycling, or by promoting less-polluting vehicular transportation such as zero-emission mobile sources and public transit. In Strategy ~~#43~~ #48, the Air District would use up to $7 million per year to scrap older vehicles through the Vehicle Buy Back program and, up to $4 million per year through the Clean Cars for All program to replace older vehicles and provide an incentive for a zero emission vehicle or to get a Clipper Card for public transit.

A number of other strategies would also provide financial incentives to reduce emissions including loans for local businesses to install energy storage systems to replace stationary sources of pollution (e.g., back-up generators) (Strategy #14); financial incentives to replace diesel trucks with zero emission trucks (Strategy ~~#44~~ #49); financial incentives to replace long-haul diesel trucks (Strategy ~~#48~~ #53); financial incentives to upgrade tugs, barges, and locomotives with cleaner engines (Strategy ~~#45~~ #50 and ~~#46~~ #51); financial incentives to support development of hydrogen refueling stations and the purchase of trucks and off- road equipment powered by fuel cells (Strategy ~~#47~~ #52); financial incentives for the purchase of electric bicycles (Strategy ~~#52~~ #57); financial incentives to pay for cleaner equipment, e.g., electric lawn and garden equipment, batteries for transportation refrigeration units, and cargo-handling equipment (Strategy ~~#49~~ #54); and incentives and grants for building energy efficiency upgrades and high efficiency air filtration systems (Strategy ~~#70~~ #75).

For these types of implementation actions, it is only possible to evaluate the Plan's potential environmental impacts in highly general terms. Strategies ~~#36~~ #41 and ~~#47~~ #52 may require construction activities to install electric charging stations, for example, but more information on the location and number of stations is needed to evaluate the magnitude of the impacts. Strategies ~~#45~~ #50, ~~#46~~ #51, ~~#48~~ #53, ~~49~~ #54, and ~~#65~~ #70 could fund the purchase and replacement of older internal combustion engines with newer engines. The disposal of older engines, vehicles, trucks, etc., could have an adverse impact associated with removing hazardous waste (anti-freeze, gasoline, oil) from the vehicles, but more information is needed specifically about how and where such activities would occur before a detailed analysis of potential impacts could be conducted. In addition, if electric vehicles are purchased with the grant funding there could be potential impacts associated with electricity production and supply. However, it is not possible to evaluate whether there could be any environmental impacts from individual projects the Air District might fund, or the nature and extent of any such impacts, as there are no specific projects at this point that have been proposed for grant funding and the availability of the funding, in most cases, is unknown. Given the unspecified nature of the particular activities that the Air District would fund through these strategies, there is no way to evaluate at this point whether there could potentially be any significant environmental impacts associated with them. Therefore, these impacts have been evaluated in a qualitative manner.

CEQA Guidelines §15145, as stated above, provides that "[i]f, after thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact." That is also the case here with respect to evaluating impacts from some projects that the Air District may fund under the Community Action Plan. It is not possible at this stage to determine – beyond mere speculation – the nature, extent, location, or timing of any activities that may result from projects funded under the Plan and, therefore, it is not possible to evaluate whether any such activities may generate a significant impact. In such situations, CEQA does not contemplate an attempt to assess the significance of purely speculative impacts. Potential environmental impacts will be addressed as the Air District implements the Plan and it becomes clear what specific projects the District may support. When specific projects are proposed, they may be subjected to an applicable CEQA environmental analysis before they can be implemented. At that point, the specific details about the project, including what types of activity will be required and what the potential environmental impacts could be, will be evaluated. The future CEQA analysis will be able to conduct a full analysis of any potential environmental impacts at that time, as the nature, extent, amount of funding, location, timing, and duration of the activity will be known. For these reasons, the impacts analysis in Chapter 3 does not evaluate potential impacts from any projects that the Air District may fund through its grants and incentives programs, where the impacts are speculative.

### 3.1.6.3 Technical Support, Educational Outreach and Advocacy

The third category of actions the Air District is proposing in the West Oakland Community Action Plan involves measures to promote sound policy development and healthy air quality choices throughout all sector of the economy and society. These activities include promoting best practices by public agencies and other entities through information resources, model ordinances, guidance documents, etc.; outreach and education to engage with community groups and other organizations; and advocacy in support of legislative and regulatory action at the federal and state levels in order to promote the District's air quality and public health goals.

The Air District's technical support, educational and advocacy efforts are aimed at supporting and encouraging other agencies, organizations, businesses and individuals as they take action to address air pollution and climate change concerns in areas outside of the Air District's direct regulatory authority. The District regularly participates with such entities to support them in developing plans, policies and programs that are aligned with the Air District's clean air goals. The Air District has partnered and participated in multiple collaborative policy and planning efforts, such as: (1) *Plan Bay Area* in conjunction with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG); (2) CARB's *2016 Mobile Source Strategy*; (3) MTC's regional *Goods Movement Plan*; and (4) the *Bay Area Goods Movement Collaborative* convened by MTC and the Alameda County Transportation Commission.

Portions of the West Oakland Community Action Plan would continue and expand technical support, educational and advocacy efforts. For example, Strategy #2 continues the District's engagement in the environmental review process for development projects in West Oakland, providing data and technical assistance to lead agencies. The Air District provides this support through resources it has developed through its CEQA Guidelines document, and its *Planning Healthy Places* guidance document, among others. The Community Action Plan calls on the Air District to continue and enhance these efforts in West Oakland going forward.

The Air District also focuses advocacy efforts on supporting legislative and regulatory initiatives to promote clean air and climate protection. The West Oakland Community Action Plan includes actions for the Air District to seek authority to reduce emissions and risk from magnet sources such as freight operations and warehouse distribution centers.

Finally, the Air District also engages in education and outreach efforts aimed at encouraging members of the public to generally make positive lifestyle choices to help improve air quality. For example, the Air District's existing "Spare the Air Every Day" Program encourages members of the public to reduce motor vehicle travel and other pollutant-emitting activities, when high ozone levels are predicted. The proposed West Oakland Community Action Plan incorporates education and outreach efforts through strategies that would provide education on measures that could reduce the use of energy and lead to more energy efficient buildings.

These technical support, education and advocacy efforts are not expected to result in any significant environmental impacts. Providing policy input by participating in the development of other agencies' plans and initiatives in those agencies' own regulatory areas, as the District has done with CARB's *Mobile Source Strategy* and MTC's *Goods Movement Plan*, does not involve any activities that could generate environmental impacts. Nor does providing technical support for implementing such plans and initiatives once they are adopted, for example identifying best practices to mitigate air quality impacts from infill development. And the same is true for other educational outreach and advocacy efforts the Air District will engage in under the proposed Plan, such as continuing to review and comment on CEQA documents, and providing educational programs to promote informed lifestyle choices related to clean air.

To the extent that the Air District's technical support, educational and advocacy efforts are aimed at promoting sound policy choices by other governmental agencies and private individuals, it is not possible to assess with any level of specificity how the District's efforts would result in specific actions by such third-parties that would result in physical changes to the environment. The Air District obviously hopes that its efforts will help influence positive outcomes. But it is not possible to predict beyond speculation what actions any other agency or private individual may take or not take as a result of the District's efforts, compared to what would occur absent any District action. As a result, it is not possible to assess whether there would be any physical changes to the environment that might occur as a result of the District's efforts under the Plan, let alone the extent of any potential adverse impacts associated with any such changes. Accordingly, under CEQA Guidelines Section 15145, such speculative impacts from the District's technical support, educational and advocacy efforts are not evaluated in Chapter 3.

### 3.1.6.4 Actions by Other Agencies

Finally, to be comprehensive, the West Oakland Community Action Plan also includes Strategies proposed to be implemented primarily or exclusively by other agencies, such as the City of Oakland and CARB. The major portion of the Strategies would be implemented by agencies other than the Air District.

The West Oakland Community Action Plan includes these control measures because they involve activities by other agencies in the region that further the same clean air goals for West Oakland that the Air District, and other agencies and organizations, are seeking to achieve under the Plan. Including them in the Plan serves to provide a comprehensive picture of all such activities throughout the region. These activities by other agencies are included for information purposes only, however. They are not dependent on approval of the Strategies that are under the authority of the Air District. Further, the Air District's approval of the Strategies will not authorize or commit those agencies to any action. As these actions and activities by independent agencies are not Air District actions and will occur independently of the District's approval of the Strategies under their authority, they are not direct or indirect effects resulting from approval of the Plan that must be analyzed in this document. Accordingly, Chapter 3 does not address implementation actions by other agencies that are independent of the Air District's implementation actions under the Community Action Plan.

# CHAPTER 3.2

## AIR QUALITY IMPACTS


Introduction
Environmental Setting
Regulatory Setting
Significance Criteria
Air Quality Impacts

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# 3.2 AIR QUALITY

This subchapter of the EIR evaluates the potential air quality impacts associated with implementation of the West Oakland Community Plan, which aims to reduce residents' exposure to diesel PM, fine particulate matter, and TACs.

As discussed in the Initial Study, in accordance with AB 617, the Community Action Plan was developed through monthly meetings with the West Oakland Steering Committee and provides strategies to reduce exposure to air pollution and related health effects in West Oakland. Certain Strategies have the potential to increase emissions of other pollutants, such as GHGs and criteria pollutants. Adverse impacts include increased emissions associated with construction activities and combustion sources from certain types of air pollution control equipment. The Notice of Preparation and Initial Study (see Appendix A) determined that air quality impacts of the proposed project are potentially significant. Project-specific and cumulative adverse air quality impacts associated with the proposed rule amendments have been evaluated in Chapter 3.2.4 through 3.2.6 of this EIR.

## 3.2.1 ENVIRONMENTAL SETTING

### 3.2.1.1 Criteria Pollutants

Ambient Air Quality Standards

It is the responsibility of the Air District to ensure that state and federal ambient air quality standards (AAQS) are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), particulate matter ($PM_{10}$ and $PM_{2.5}$), sulfur dioxide ($SO_2$), and lead (Pb). These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. California has also established standards for sulfate, annual $PM_{2.5}$ specifically for visibility, hydrogen sulfide, and vinyl chloride. The state and national NAAQS for each of these pollutants and their effects on health are summarized in Table 3.2-1.

## TABLE 3.2-1

## Federal and State Ambient Air Quality Standards

| | STATE STANDARD | FEDERAL PRIMARY STANDARD | MOST RELEVANT EFFECTS |
|---|---|---|---|
| AIR POLLUTANT | CONCENTRATION/ AVERAGING TIME | CONCENTRATION/ AVERAGING TIME | |
| Ozone | 0.09 ppm, 1-hr. avg. ><br>0.070 ppm, 8-hr | No Federal 1-hr standard<br>0.070 ppm, 8-hr avg. > | (a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage |
| Carbon Monoxide | 9.0 ppm, 8-hr avg. ><br>20 ppm, 1-hr avg. > | 9 ppm, 8-hr avg.><br>35 ppm, 1-hr avg.> | (a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses |
| Nitrogen Dioxide | 0.030 ppm, annual avg.<br>0.18 ppm, 1-hr avg. > | 0.053 ppm, ann. avg.><br>0.100 ppm, 1-hr avg. | (a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration |
| Sulfur Dioxide | 0.04 ppm, 24-hr avg.><br>0.25 ppm, 1-hr. avg. > | No Federal 24-hr Standard><br>0.075 ppm, 1-hr avg.> | (a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma |
| Suspended Particulate Matter ($PM_{10}$) | 20 µg/m$^3$, ann. arithmetic mean ><br>50 µg/m$^3$, 24-hr average> | No Federal annual Standard<br>150 µg/m$^3$, 24-hr avg.> | (a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children |
| Suspended Particulate Matter ($PM_{2.5}$) | 12 µg/m$^3$, annual arithmetic mean><br>No State 24-hr Standard | 12.0 µg/m$^3$, annual arithmetic mean><br>35 µg/m$^3$, 24-hour average> | Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children. |
| Sulfates | 25 µg/m$^3$, 24-hr avg. >= | No Federal Standard | (a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage |
| Lead | 1.5 µg/m$^3$, 30-day avg. >=<br>No State Calendar Quarter Standard<br>No State 3-Month Rolling Avg. Standard | No Federal 30-day avg. Standard<br>1.5 µg/m$^3$, calendar quarter><br>0.15 µg/m$^3$ 3-Month Rolling average | (a) Increased body burden; (b) Impairment of blood formation and nerve conduction |
| Visibility-Reducing Particles | In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10am – 6pm PST) | No Federal Standard | Visibility based standard, not a health based standard. Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent |

U.S. EPA requires CARB and Air Districts to measure the ambient levels of air pollution to determine compliance with the NAAQS. To comply with this mandate, the Air District monitors levels of various criteria pollutants with over 30 monitoring stations within the San Francisco Bay Area. A summary of the most recent monitoring data in the Bay Area (2017) and number of days exceeding state and federal ambient air standards at the Air District monitoring stations are presented in Table 3.2-2.

**TABLE 3.2-2**
**Bay Area Air Pollution Summary – 2017**

| MONITORING STATIONS | OZONE | | | | | | CARBON MONOXIDE | | | NITROGEN DIOXIDE | | | | SULFUR DIOXIDE | | | | PM 10 | | | | PM 2.5 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max 1-Hr | Cal 1-Hr Days | Max 8-Hr | Nat 8-Hr Days | Cal 8-Hr Days | 3-Yr Avg | Max 1-Hr | Max 8-Hr | Nat/ Cal Days | Max 1-Hr | Ann Avg | Nat 1-Hr Days | Cal 1-Hr Days | Max 1-Hr | Max 24-Hr | Nat 1-Hr Days | Cal 24-Hr Days | Ann Avg | Max 24-Hr | Nat 24-Hr Days | Cal 24-Hr Days | Max 24-Hr | Nat 24-Hr Days | 3-Yr Avg | Ann Avg | 3-Yr Avg |
| **North Counties** | (ppb) | | | | | | (ppm) | | | (ppb) | | | | (ppb) | | | | ($\mu g/m^3$) | | | | ($\mu g/m^3$) | | | | |
| Napa | 98 | 1 | 84 | 2 | 2 | 63 | 5.6 | 4.7 | 0 | 53 | 7 | 0 | 0 | - | - | - | - | - | - | - | - | 199.1 | 13 | 35 | 13.7 | 10.9 |
| San Rafael | 88 | 0 | 63 | 0 | 0 | 58 | 2.6 | 1.6 | 0 | 53 | 10 | 0 | 0 | - | - | - | - | 17.7 | 94 | 0 | 2 | 74.7 | 8 | 27 | 9.7 | 8.2 |
| Sebastopol | 87 | 0 | 71 | 1 | 1 | 53 | 2.1 | 1.6 | 0 | 35 | 5 | 0 | 0 | - | - | - | - | - | - | - | - | 81.8 | 4 | 21 | 8.1 | 6.5 |
| Vallejo | 105 | 1 | 88 | 2 | 2 | 61 | 3.1 | 2.1 | 0 | 49 | 8 | 0 | 0 | 5.9 | 2.17 | 0 | 0 | - | - | - | - | 101.9 | 9 | 30 | 11.6 | 9.5 |
| **Coast/Central Bay** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Berkeley Aquatic Pk* | 58 | 0 | 49 | 0 | 0 | * | 2.2 | 1.7 | 0 | 123 | 16 | 1 | 0 | - | - | - | - | - | - | - | - | 52.0 | 7 | * | 9.1 | * |
| Laney College Fwy | - | - | - | - | - | - | 1.9 | 1.3 | 0 | 68 | 17 | 0 | 0 | - | - | - | - | - | - | - | - | 70.8 | 8 | 27 | 11.6 | 10.1 |
| Oakland | 136 | 2 | 100 | 2 | 2 | 54 | 3.2 | 2.2 | 0 | 65 | 10 | 0 | 0 | - | - | - | - | - | - | - | - | 70.2 | 7 | 24 | 9.4 | 7.9 |
| Oakland-West | 87 | 0 | 68 | 0 | 0 | 48 | 6.0 | 2.1 | 0 | 52 | 13 | 0 | 0 | 16.9 | 2.2 | 0 | 0 | - | - | - | - | 56.0 | 7 | 28 | 12.8 | 10.6 |
| Richmond | - | - | - | - | - | - | - | - | - | - | - | - | | 16.0 | 2.9 | 0 | 0 | - | - | - | - | - | - | - | - | - |
| San Francisco | 87 | 0 | 54 | 0 | 0 | 47 | 2.5 | 1.4 | 0 | 73 | 11 | 0 | 0 | - | - | - | - | 22.0 | 77 | 0 | 2 | 49.9 | 7 | 27 | 9.7 | 8.3 |
| San Pablo | 104 | 3 | 80 | 2 | 2 | 52 | 2.5 | 1.9 | 0 | 48 | 8 | 0 | 0 | 8.3 | 2.7 | 0 | 0 | 20.3 | 95 | 0 | 4 | 71.2 | 9 | 30 | 10.8 | 9.3 |
| **Eastern District** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bethel Island | 90 | 0 | 71 | 1 | 2 | 68 | 1.6 | 1.0 | 0 | 34 | 5 | 0 | 0 | 5.3 | 3.5 | 0 | 0 | 16.3 | 52 | 0 | 1 | - | - | - | - | - |
| Concord | 82 | 0 | 70 | 0 | 0 | 66 | 1.7 | 1.3 | 0 | 41 | 7 | 0 | 0 | 13.2 | 2.6 | 0 | 0 | 13.3 | 41 | 0 | 0 | 89.4 | 6 | 26 | 12.0 | 8.9 |
| Crockett | - | - | - | - | - | - | - | - | - | - | - | - | - | 23.5 | 5.6 | 0 | 0 | - | - | - | - | - | - | - | - | - |
| Fairfield | 80 | 0 | 62 | 0 | 0 | 63 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Livermore | 109 | 5 | 86 | 6 | 6 | 75 | - | - | - | 45 | 9 | 0 | 0 | - | - | - | - | - | - | - | - | 41.5 | 2 | 25 | 8.5 | 8.2 |
| Martinez | - | - | - | - | - | - | - | - | - | - | - | - | - | 15.9 | 3.1 | 0 | 0 | - | - | - | - | - | - | - | - | - |
| San Ramon | 92 | 0 | 75 | 2 | 2 | 68 | - | - | - | 31 | 5 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **South Central Bay** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hayward | 139 | 2 | 110 | 3 | 4 | 65 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Redwood City | 115 | 2 | 86 | 2 | 2 | 56 | 2.8 | 1.4 | 0 | 67 | 11 | 0 | 0 | - | - | - | - | - | - | - | - | 60.8 | 6 | 23 | 9.1 | 7.7 |
| **Santa Clara Valley** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gilroy | 96 | 1 | 84 | 1 | 1 | 64 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 48.4 | 2 | 18 | 75.5 | 6.1 |
| Los Gatos | 93 | 0 | 75 | 3 | 3 | 66 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| San Jose | 121 | 3 | 98 | 4 | 4 | 67 | 2.1 | 1.8 | 0 | 68 | 12 | 0 | 0 | 3.6 | 1.1 | 0 | 0 | 21.6 | 70 | 0 | 6 | 49.7 | 6 | 27 | 9.5 | 9.3 |
| San Jose Freeway | - | - | - | - | - | - | 2.6 | 1.8 | 0 | 77 | 17 | 0 | 0 | - | - | - | - | - | - | - | - | 48.4 | 8 | 28 | 10.8 | 9.5 |
| San Martin | 96 | 1 | 86 | 3 | 3 | 69 | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Total Days over Standard** | | 6 | | 6 | 6 | | | | 0 | | | 1 | 0 | | | 0 | 0 | | | 0 | 6 | | 18 | | | |

Source: BAAQMD, 2018.
*Near-road air monitoring at Berkeley Aquatic Park began on July 1,2016. Therefore, 3-year average statistics for ozone and $PM_{2.5}$ are not available.
(ppb) = parts per billion (ppm) = parts per million, ($\mu g/m^3$) = micrograms per cubic meter
.

The 2017 air quality data from the Air District monitoring stations are presented in Table 3.2-2. No monitoring stations measured an exceedance of any of State or federal AAQS for CO and $SO_2$. There was one exceedance of the federal $NO_2$ AAQS at one monitoring station in 2017, although the area did not violate the NAAQS. All monitoring stations were in compliance with the federal $PM_{10}$ standards. The State 24-hour $PM_{10}$ standard was exceeded on six days in 2017, at the San Jose monitoring station (see Table 3.2-2).

The Bay Area is designated as a non-attainment area for the federal and state 8-hour ozone standard and the federal 24-hour $PM_{2.5}$ standard. The state and federal 8-hour ozone standards were exceeded on 6 days in 2017 at one site or more in the Air District; most frequently in the Eastern District (Livermore, Patterson Pass, and San Ramon) and the Santa Clara Valley (see Table 3.2-2). The federal 24-hour $PM_{2.5}$ standard was exceeded at one or more Bay Area station on 18 days in 2017, most frequently in the Napa, San Rafael, Vallejo, and San Pablo.

The air quality data for West Oakland shows that the area is in compliance with the state and federal standards for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM10. The West Oakland area exceeded the $PM_{2.5}$ federal 24-hour standard on seven days in 2017. However, the 24-hour design value was attained; therefore, in compliance with both $PM_{2.5}$ NAAQS.

Air quality conditions in the San Francisco Bay Area have improved since the Air District was created in 1955. The long-term trend of ambient concentrations of air pollutants and the number of days on which the region exceeds (AAQS) have generally declined, although some year-to-year variability primarily due to meteorology, causes some short-term increases in the number of exceedance days (see Table 3.2-3). The Air District is in attainment of the State AAQS for CO, $NO_2$, and $SO_2$. However, the Air District does not comply with the State 24-hour $PM_{10}$ standard, annual $PM_{10}$ standard, and annual $PM_{2.5}$ standard. The Air District is unclassifiable/attainment for the federal CO, $NO_2$, $SO_2$, Pb, and $PM_{10}$ standards. A designation of unclassifiable/attainment means that the U.S. EPA has determined to have sufficient evidence to find the area either is attaining or is likely attaining the NAAQS.

## TABLE 3.2-3

### Bay Area Air Quality Summary
### Days over Standards

| YEAR | OZONE | | | CARBON MONOXIDE | | | | NOx | | SULFUR DIOXIDE | | $PM_{10}$ | | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8-Hr | 1-Hr | 8-Hr | 1-Hr | | 8-Hr | | 1-Hr | | 1-Hr | 24-Hr | 24-Hr* | | 24-Hr |
| | Nat | Cal | Cal | Nat | Cal | Nat | Cal | Nat | Cal | Nat | Cal | Nat | Cal | Nat |
| 2008 | 19 | 9 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 5 | 12 |
| 2009 | 11 | 11 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 |
| 2010 | 11 | 8 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 |
| 2011 | 9 | 5 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 8 |
| 2012 | 8 | 3 | 8 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 3 |
| 2013 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 13 |
| 2014 | 9 | 3 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 |
| 2015 | 12 | 7 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 9 |
| 2016 | 15 | 6 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2017 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 18 |

Source: BAAQMD, 2018

### 3.2.1.2 Criteria Pollutant Health Effects

#### 3.2.1.2.1 Ozone

Ozone is not emitted directly from pollution sources. Instead ozone is formed in the atmosphere through complex chemical reactions between hydrocarbons, or reactive organic gases (ROG, also commonly referred to as reactive organic gases (ROG), and nitrogen oxides (NOx), in the presence of sunlight. ROG and NOx are referred to as ozone precursors.

Ozone, a colorless gas with a sharp odor, is a highly reactive form of oxygen. High ozone concentrations exist naturally in the stratosphere. Some mixing of stratospheric ozone downward through the troposphere to the earth's surface does occur; however, the extent of ozone mixing is limited. At the earth's surface in sites remote from urban areas ozone concentrations are normally very low (0.03-0.05 ppm). While ozone is beneficial in the stratosphere because it filters out skin-cancer-causing ultraviolet radiation, ground level ozone is harmful, is a highly reactive oxidant, which accounts for its damaging effects on human health, plants and materials at the earth's surface.

Ozone is harmful to public health at high concentrations near ground level. Ozone can damage the tissues of the lungs and respiratory tract. High concentrations of ozone irritate the nose, throat, and respiratory system and constrict the airways. Ozone also can aggravate other respiratory conditions such as asthma, bronchitis, and emphysema, causing increased hospital admissions. Repeated exposure to high ozone levels can make people more susceptible to respiratory infection and lung inflammation and permanently damage lung tissue. Ozone can also have negative cardiovascular impacts, including chronic hardening of the arteries and acute triggering of heart attacks. Children are most at risk as they tend to be active and outdoors in the summer when ozone levels are highest. Seniors and people with respiratory illnesses are also especially sensitive to ozone's effects. Even healthy adults can be affected by working or exercising outdoors during high ozone levels.

The propensity of ozone for reacting with organic materials causes it to be damaging to living cells, and ambient ozone concentrations in the Bay Area are occasionally sufficient to cause health effects. Ozone enters the human body primarily through the respiratory tract and causes respiratory irritation and discomfort, makes breathing more difficult during exercise, reducing the respiratory system's ability to remove inhaled particles and fight infection while long-term exposure damages lung tissue. People with respiratory diseases, children, the elderly, and people who exercise heavily are more susceptible to the effects of ozone.

Plants are sensitive to ozone at concentrations well below the health-based standards and ozone is responsible for significant crop damage. Ozone is also responsible for damage to forests and other ecosystems.

3.2.1.2.2 Reactive Organic Gases (ROGs)

It should be noted that there are no state or national ambient air quality standards for ROGs because they are not classified as criteria pollutants. ROGs are regulated, however, because ROG emissions contribute to the formation of ozone. They are also transformed into organic aerosols in the atmosphere, contributing to higher $PM_{2.5}$, $PM_{10,}$ and lower visibility levels.

Although health-based standards have not been established for ROGs, health effects can occur from exposures to high concentrations of ROGs because of interference with oxygen uptake. In general, ambient ROG concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon components classified as ROG emissions are thought or known to be hazardous. Benzene, for example, one hydrocarbon component of ROG emissions, is known to be a human carcinogen.

ROG emissions result primarily from incomplete fuel combustion and the evaporation of paints, solvents and fuels. Mobile sources are the largest contributors to ROG emissions. Stationary sources include processes that use solvents (such as manufacturing, degreasing, and coating operations) and petroleum refining, and marketing. Area-wide ROG sources include consumer products, pesticides, aerosol and architectural coatings, asphalt paving and roofing, and other evaporative emissions.

#### 3.2.1.2.3 Carbon Monoxide (CO)

CO is a colorless, odorless, relatively inert gas. It is a trace constituent in the unpolluted troposphere, and is produced by both natural processes and human activities. In remote areas far from human habitation, carbon monoxide occurs in the atmosphere at an average background concentration of 0.04 ppm, primarily as a result of natural processes such as forest fires and the oxidation of methane. Global atmospheric mixing of CO from urban and industrial sources creates higher background concentrations (up to 0.20 ppm) near urban areas. The major source of CO in urban areas is incomplete combustion of carbon-containing fuels, mainly gasoline used in mobile sources. Consequently, CO concentrations are generally highest in the vicinity of major concentrations of vehicular traffic.

CO is a primary pollutant, meaning that it is directly emitted into the air, not formed in the atmosphere by chemical reaction of precursors, as is the case with ozone and other secondary pollutants. Ambient concentrations of CO in the District exhibit large spatial and temporal variations, due to variations in the rate at which CO is emitted, and in the meteorological conditions that govern transport and dilution. Unlike ozone, CO tends to reach high concentrations in the fall and winter months. The highest concentrations frequently occur on weekdays at times consistent with rush hour traffic and late night during the coolest, most stable atmospheric portion of the day.

When CO is inhaled in sufficient concentration, it can displace oxygen and bind with the hemoglobin in the blood, reducing the capacity of the blood to carry oxygen. Individuals most at risk from the effects of CO include heart patients, fetuses (unborn babies), smokers, and people who exercise heavily. Normal healthy individuals are affected at higher concentrations, which may cause impairment of manual dexterity, vision, learning ability, and performance of work. The results of studies concerning the combined effects of CO and other pollutants in animals have shown a synergistic effect after exposure to CO and ozone.

#### 3.2.1.2.4 Particulate Matter ($PM_{10}$ & $PM_{2.5}$)

Particulate matter, or PM, consists of microscopically small solid particles or liquid droplets suspended in the air. PM can be emitted directly into the air or it can be formed from secondary reactions involving gaseous pollutants that combine in the atmosphere. Particulate pollution is primarily a problem in winter, accumulating when cold, stagnant weather comes into the Bay Area. PM is usually broken down further into two size distributions, $PM_{10}$ and $PM_{2.5}$. Of great concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. Respirable particles (particulate matter less than about 10 micrometers in diameter) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of $PM_{10}$ and $PM_{2.5}$.

A consistent correlation between elevated ambient particulate matter ($PM_{10}$ and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. Studies have reported an association between long-term exposure to air pollution dominated by fine particles ($PM_{2.5}$) and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in fine particulate matter concentration levels have also been related to hospital admissions for acute respiratory conditions, to school and kindergarten absences, to a decrease in respiratory function in normal children and to increased medication use in children and adults with asthma. Studies have also shown lung function growth in children is reduced with long-term exposure to particulate matter. The elderly, people with pre-existing respiratory and/or cardiovascular disease and children appear to be more susceptible to the effects of $PM_{10}$ and $PM_{2.5}$.

#### 3.2.1.2.5 Nitrogen Dioxide ($NO_2$)

$NO_2$ is a reddish-brown gas with a bleach-like odor. Nitric oxide (NO) is a colorless gas, formed from the nitrogen ($N_2$) and oxygen ($O_2$) in air under conditions of high temperature and pressure which are generally present during combustion of fuels; NO reacts rapidly with the oxygen in air to form $NO_2$. $NO_2$ is responsible for the brownish tinge of polluted air. The two gases, NO and $NO_2$, are referred to collectively as nitrogen oxides or NOx. In the presence of sunlight, $NO_2$ reacts to form nitric oxide and an oxygen atom. The oxygen atom can react further to form ozone, via a complex series of chemical reactions involving hydrocarbons. Nitrogen dioxide may also react to form nitric acid ($HNO_3$) which reacts further to form nitrates, which are a component of $PM_{10}$.

$NO_2$ is a respiratory irritant and reduces resistance to respiratory infection. Children and people with respiratory disease are most susceptible to its effects.

#### 3.2.1.2.6 Sulfur Dioxide ($SO_2$)

$SO_2$ is a colorless gas with a sharp odor. It reacts in the air to form sulfuric acid ($H_2SO_4$), which contributes to acid precipitation, and sulfates, which are a component of $PM_{10}$ and $PM_{2.5}$. Most of the $SO_2$ emitted into the atmosphere is produced by the burning of sulfur-containing fuels.

At sufficiently high concentrations, $SO_2$ affects breathing and the lungs' defenses, and can aggravate respiratory and cardiovascular diseases. Asthmatics and people with chronic lung disease or cardiovascular disease are most sensitive to its effects. $SO_2$ also causes plant damage, damage to materials, and acidification of lakes and streams.

### 3.2.1.3 Current Emissions Inventory

An emission inventory is a detailed estimate of air pollutant emissions from a range of sources in a given area, for a specified time period. Future projected emissions incorporate current levels of control on sources, growth in activity in the Air District and implementation of future programs that affect emissions of air pollutants.

3.2.1.3.1 Ozone

NOx and ROG emissions are decreasing state-wide and in the San Francisco Bay Area since 1975 and are projected to continue to decline. ROG emissions result primarily from incomplete fuel combustion and the evaporation of paints, solvents and fuels. Mobile sources are the largest contributors to ROG emissions. Stationary sources include processes that use solvents (such as manufacturing, degreasing, and coating operations) and petroleum refining and marketing. Area-wide ROG sources include consumer products, pesticides, aerosol and architectural coatings, asphalt paving and roofing, and other evaporative emissions. About 42 percent of anthropogenic ROG emissions in the Bay Area are from mobile source emissions, while 26 percent are from petroleum and solvent evaporation (see Table 3.2-4) (BAAQMD, 2017).

**TABLE 3.2-4**

**Anthropogenic Air Emission Inventory 2015**
**(tons per day)**

| Source | ROG | NOx |
|---|---|---|
| On-Road Motor Vehicles | 59.6 | 128.1 |
| Other Mobile Sources | 49.2 | 122.2 |
| Petroleum & Solvent Evaporation | 67.3 | -- |
| Industrial and Commercial | 15.4 | 3.0 |
| Combustion | 13.0 | 44.7 |
| Other Sources | 54.4 | 1.2 |

Source: BAAQMD, 2017

Approximately 84 percent of NOx emissions in the Bay Area are produced by the combustion of fuels. Mobile sources of NOx include motor vehicles, aircraft, trains, ships, recreation boats, industrial and construction equipment, farm equipment, off-road recreational vehicles, and other equipment. NOx and ROG emissions have been reduced for both stationary and mobile sources due to more stringent regulations from CARB and the District, respectively (see Table 3.2-4) (BAAQMD, 2017).

3.2.1.3.2 Particulate Matter

Particulate matter (both $PM_{10}$ and $PM_{2.5}$) is a diverse mixture of suspended particles and liquid droplets (aerosols). PM includes elements such as carbon and metals; compounds such as nitrates, organics, and sulfates; and complex mixtures such as diesel exhaust, wood smoke, and soil. Unlike the other criteria pollutants which are individual chemical compounds, PM includes all particles that are suspended in the air. PM is both directly emitted (referred to as direct PM or primary PM) and also formed in the atmosphere through reactions among different pollutants (this is referred to as indirect or secondary PM).

PM is generally characterized on the basis of particle size. Ultra-fine PM includes particles less than 0.1 microns in diameter. Fine PM ($PM_{2.5}$) consists of particles 2.5 microns or less in diameter. $PM_{10}$ consists of particles 10 microns or less in diameter. Total suspended particulates (TSP) includes suspended particles of any size.

Combustion of fossil fuels and biomass, primarily wood, from various sources are the primary contributors of directly-emitted Bay Area $PM_{2.5}$ (BAAQMD, 2017). Biomass combustion concentrations are about 3-4 times higher in winter than during the other seasons, and its contribution to peak $PM_{2.5}$ is greater. The increased winter biomass combustion sources reflect increased residential wood-burning during the winter season. The inventory of $PM_{10}$ and $PM_{2.5}$ emission sources is provided in Table 3.2-5.

**TABLE 3.2-5**

**Particulate Emissions Inventory by Source, Annual Average 2015**
**(tons per day)**

| Source | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|
| Residential Wood-Burning | 12.0 | 11.8 |
| Geological Dust | 49.1 | 6.6 |
| On-Road Motor Vehicles | 12.0 | 5.6 |
| Other Mobile Sources | 5.5 | 5.6 |
| Industrial Combustion | 6.5 | 6.1 |
| Industrial/Commercial Processes | 7.6 | 4.7 |
| Accidental Fires | 4.4 | 3.8 |
| Commercial Cooking | 2.2 | 1.9 |
| Animal Waste | 9.8 | 0.9 |

Source: BAAQMD, 2017

### 3.2.1.4 Non-Criteria Pollutants Health Effects

Although the primary mandate of the Air District is attaining and maintaining the national and state Ambient Air Quality Standards for criteria pollutants within the Air District jurisdiction, the Air District also has a general responsibility to control, and where possible, reduce public exposure to airborne toxic compounds. TACs are a set of airborne pollutants defined by the state of California that may pose a present or potential hazard to human health. A wide range of sources from industrial plants to motor vehicles emit TACs, like $PM_{2.5}$. TACs can be emitted directly and can also be formed in the atmosphere through reactions among different pollutants. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis or genetic damage; or short-term acute affects such as eye watering, respiratory irritation, running nose, throat pain, and headaches. TACs are separated into carcinogens and non-carcinogens based on the nature of the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. Non-carcinogenic substances differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is expected to occur. These levels are determined on a pollutant-by-pollutant basis. The air toxics program was established as a separate and complementary program designed to evaluate and reduce adverse health effects resulting from exposure to TACs.

The major elements of the District's air toxics program are outlined below.

1. Preconstruction review of new and modified sources for potential health impacts, and the requirement for new/modified sources with TAC emissions that exceed a specified threshold to use BACT. Common stationary sources in this category include gasoline stations, dry cleaners, and diesel backup generators, among others.

2. The Air Toxics Hot Spots Program, designed to identify industrial and commercial facilities that may result in locally elevated ambient concentrations of TACs, to report significant emissions to the affected public, and to reduce unacceptable health risks.

3. The District's Community Air Risk Evaluation (CARE) Program has been implemented to identify areas where air pollution contributes most to health impacts and where populations are most vulnerable to air pollution; to reduce the health impacts in these areas; and to engage the community and other agencies to develop additional actions to reduce local health impacts.

4. Control measures designed to reduce emissions from source categories of TACs, including rules originating from the state Toxic Air Contaminant Act and the federal Clean Air Act.

5. The TAC emissions inventory, a database that contains information concerning routine and predictable emissions of TACs from permitted stationary sources.

6. Ambient monitoring of TAC concentrations at a number of sites throughout the Bay Area.

7. The District's Regulation 11, Rule 18: Reduction from Air Toxic Emissions at Existing Facilities which was adopted November 15, 2017. This rule requires the

District to conduct screening analyses for facilities that report TAC emissions within the District and calculate health prioritization scores based on the amount of TAC emissions, the toxicity of the TAC pollutants, and the proximity of the facilities to local communities. The District will conduct health risk assessments (HRAs) for facilities that have priority scores above a certain level. Based on the health risk assessment, facilities found to have a potential health risk above the risk action level would be required to reduce their risk below the action level, or install Best Available Retrofit Control Technology for Toxics on all significant sources of toxic emissions.

#### 3.2.1.4.1 TAC Health Effects

TACs can cause or contribute to a wide range of health effects. Acute (short-term) health effects may include eye and throat irritation. Chronic (long-term) exposure to TACs may cause more severe effects such as neurological damage, hormone disruption, developmental defects, and cancer. CARB has identified roughly 200 TACs, including diesel particulate matter (diesel PM or DPM) and environmental tobacco smoke.

Unlike criteria pollutants which are subject to ambient air quality standards, TACs are primarily regulated at the individual emissions source level based on risk assessment. Human outdoor exposure risk associated with an individual air toxic species is calculated as its ground-level concentration multiplied by an established unit risk factor for that air toxic species. Total risk due to TACs is the sum of the individual risks associated with each air toxic species.

Occupational health studies have shown diesel PM to be a lung carcinogen as well as a respiratory irritant. Benzene, present in gasoline vapors and also a byproduct of combustion, has been classified as a human carcinogen and is associated with leukemia. 1,3-butadiene, produced from motor vehicle exhaust and other combustion sources, has also been associated with leukemia. Reducing 1,3-butadiene also has a co-benefit in reducing the air toxic acrolein.

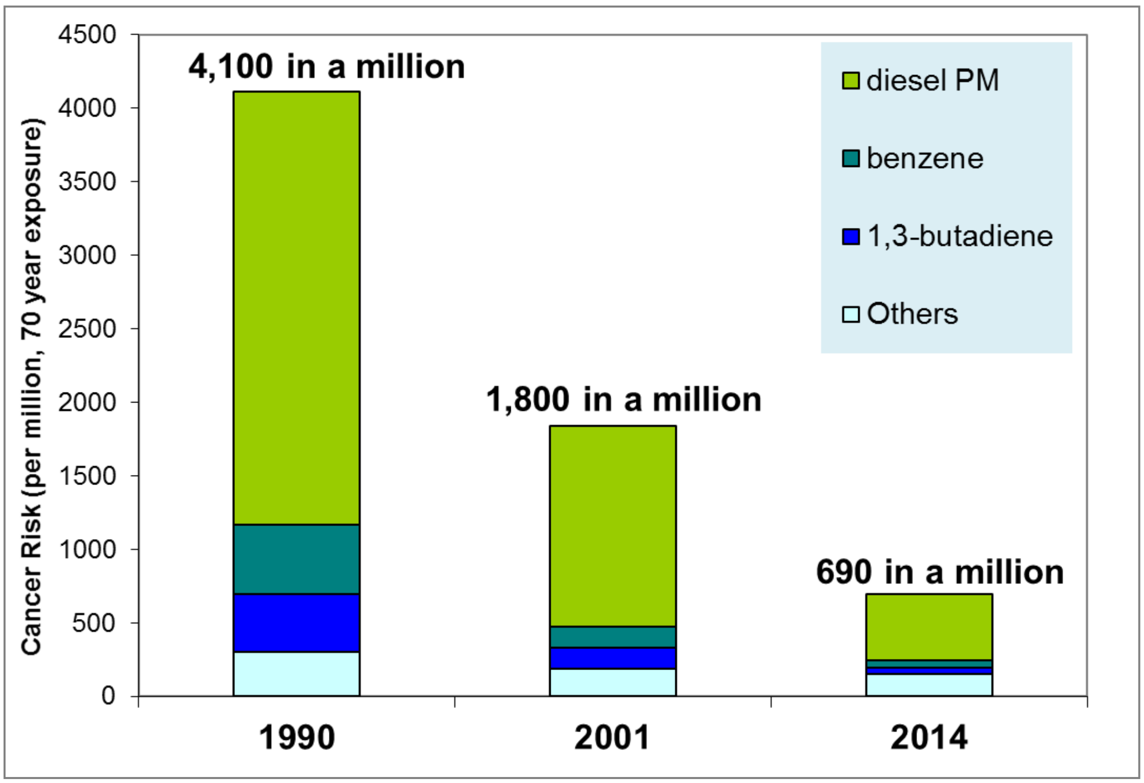
Acetaldehyde and formaldehyde are emitted from fuel combustion and other sources. They are also formed photo-chemically in the atmosphere from other compounds. Both compounds have been found to cause nasal cancers in animal studies and are also associated with skin and respiratory irritation. Human studies for carcinogenic effects of acetaldehyde are sparse but, in combination with animals studies, sufficient to support classification as a probable human carcinogen. Formaldehyde has been associated with nasal sinus cancer and nasopharyngeal cancer, and possibly with leukemia.

The primary health risk of concern due to exposure to TACs is the risk of contracting cancer. The carcinogenic potential of TACs is a particular public health concern because many scientists currently believe that there are not "safe" levels of exposure to carcinogens without some risk to causing cancer. The proportion of cancer deaths attributable to air pollution has not been estimated using epidemiological methods.

Based on ambient air quality monitoring, and using OEHHA cancer risk factors,[4] the estimated lifetime cancer risk for Bay Area residents, over a 70-year lifespan from all TACs combined, declined from 4,100 cases per million in 1990 to 690 cases per million people in 2014, as shown in Figure 3.2-1. This represents an 80 percent decrease between 1990 and 2014 (BAAQMD, 2016).

The cancer risk related to diesel PM, which accounts for most of the cancer risk from TACs, has declined substantially over the past 15-20 years as a result of ARB regulations and Air District programs to reduce emissions from diesel engines. However, diesel PM still accounts for roughly 60 percent of the total cancer risk related to TACs.

**FIGURE 3.2-1 Cancer-Risk Weighted Toxics Trends**




Source: BAAQMD, ~~2016~~ 2017 Clean Air Plan

[4] See CARB's Risk Management Guidance for Stationary Sources of Air Toxics, Discussion Draft, May 27, 2015, https://www.arb.ca.gov/toxics/rma/rma_guidancedraft052715.pdf and the Office Environmental Health Hazard Assessment's toxicity values at http://oehha.ca.gov/media/CPFs042909.pdf. The cancer risk estimates shown in Figure 3.2-1 are higher than the estimates provided in documents such as the Bay Area 2010 Clean Air Plan and the April 2014 CARE report entitled *Improving Air Quality and Health in Bay Area Communities*. It should be emphasized that the higher risk estimates shown in Figure 3.2-1 are due solely to changes in the methodology used to estimate cancer risk, and not to any actual increase in TAC emissions or population exposure to TACs.

#### 3.2.1.4.2 Air Toxics Emission Inventory

The Air District maintains a database that contains information concerning emissions of TACs from permitted stationary sources in the Bay Area. This inventory, and a similar inventory for mobile and area sources compiled by CARB, is used to plan strategies to reduce public exposure to TACs. The detailed emissions inventory is reported in the Air District Toxic Air Contaminant Control Program, 2010 Annual Report (BAAQMD, 2015). The 2010 emissions inventory continues to show decreasing emissions of many TACs in the Bay Area.

#### 3.2.1.4.3 Ambient Monitoring Network

Table 3.2-6 contains a summary of average ambient concentrations of TACs measured at monitoring stations in the Bay Area by the District in 2017.

## TABLE 3.2-6

## Summary of 2017 Air District Ambient Air Toxics Monitoring Data

| Compound | Max. Conc. (ppb) (1) | Min. Conc. (ppb) (2) | Mean Conc. (ppb) (3) |
|---|---|---|---|
| 1,3-Butadiene | 0.541 | 0.000 | 0.012 |
| Acetaldehyde | 5.680 | 0.480 | 1.982 |
| Acetone | 29.901 | 0.345 | 4.072 |
| Acetonitrile | 3.799 | 0.000 | 0.088 |
| Acyrlonitrile | 0.323 | 0.000 | 0.001 |
| Benzene | 3.123 | 0.000 | 0.221 |
| Carbon Tetrachloride | 0.130 | 0.024 | 0.098 |
| Chloroform | 0.115 | 0.000 | 0.023 |
| Dichloromethane | 1.791 | 0.000 | 0.159 |
| Ethyl Alcohol | 91.740 | 0.236 | 5.455 |
| Ethylbenzene | 1.136 | 0.000 | 0.138 |
| Ethylene Dibromide | 0.000 | 0.000 | 0.000 |
| Ethylene Dichloride | 0.000 | 0.000 | 0.000 |
| Formaldehyde | 7.290 | 0.480 | 2.707 |
| Freon-113 | 0.205 | 0.051 | 0.070 |
| Methyl Chloroform | 1.226 | 0.000 | 0.006 |
| Methyl Ethyl Ketone | 5.743 | 0.000 | 0.259 |
| Tetrachloroethylene | 0.337 | 0.000 | 0.003 |
| Toluene | 3.925 | 0.000 | 0.503 |
| Trichloroethylene | 0.328 | 0.000 | 0.001 |
| Trichlorofluoromethane | 0.593 | 0.194 | 0.248 |
| Vinyl Chloride | 0.000 | 0.000 | 0.000 |
| m/p-Xylene | 2.929 | 0.000 | 0.236 |
| o-Xylene | 1.446 | 0.000 | 0.108 |

Source: BAAQMD, 2018a

NOTES: Table 3.2-6 summarizes the results of the Air District gaseous toxic air contaminant monitoring network for the year 2017. These data represent monitoring results at 21 separate sites at which samples were collected.

(1) "Maximum Conc." is the highest daily concentration measured at any of the 21 monitoring sites.

(2) "Minimum Conc." is the lowest daily concentration measured at any of the 21 monitoring sites.

(3) "Mean Conc." is the arithmetic average of the air samples collected in 2017 at the 21 monitoring sites.

(4) Acetaldehyde and formaldehyde concentrations reflect measurements from one monitoring site (San Jose-Jackson).

### 3.2.1.4 Sensitive Receptors, Community-Scale Emissions Inventory, and Health Risks in West Oakland

Located in the urban core of the San Francisco Bay Area, West Oakland is bounded by Interstate 880 (I-880) to the south and west, Interstates 80 (I-80) and 580 (I-580) to the north, and Interstate 980 (I-980) to the east. The Port of Oakland and associated rail yards and rail lines lie to the south and west. The West Oakland Community Action Plan (Plan) area includes the Port of Oakland and is bounded by the Oakland Alameda Estuary to the south, the San Francisco Bay to the west, I-80 and I-580 to the north, and I-980 to the east (see Figures 2-1 and 2-2).

In West Oakland, people work, live, and play in proximity to the Port, the former Oakland Army Base (currently under redevelopment), regional infrastructure such as the Post Office, freeways, BART tracks, and other industrial uses including maritime-freight industry operations, large distribution centers, a concrete batch plant, a peaker power plant, and metal and recycling facilities. West Oakland has numerous sensitive receptors: schools, playground, senior facility, and residences (BAAQMD, 2018). Figure 3.2-2 identifies the location of sensitive receptors in West Oakland.

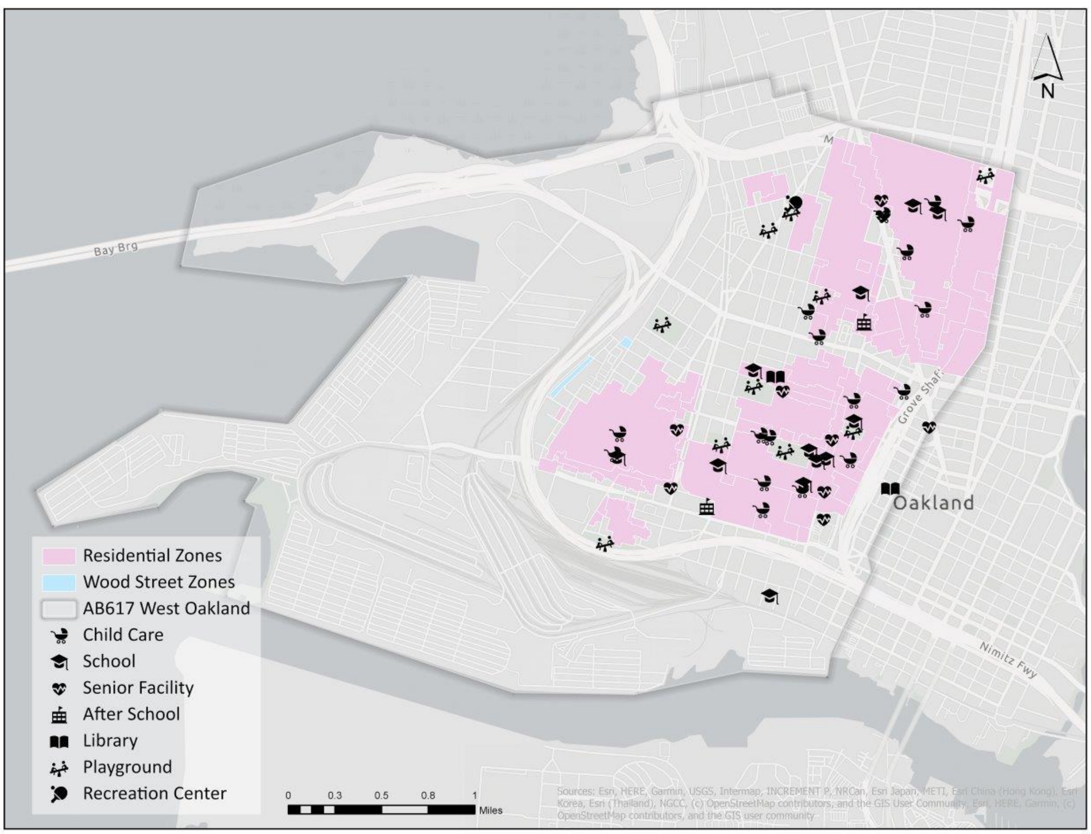



**Figure 3.2-2: Sensitive Receptors in West Oakland**
Note: Figure is updated and replaced in Final EIR

Infrastructure and industrial uses contribute to West Oakland's elevated levels of diesel particulate matter (DPM), fine particulate matter ($PM_{2.5}$), and TACs. Because of high levels of local pollution exposure and poor health conditions, the Air District identified West Oakland as an impacted community in the Community Air Risk Evaluation Program (CARE).[5] Similarly, the State of California, using the CalEnviroScreen screening tool, recognizes that across a wide array of environmental and health indicators that includes air, water, and soil pollution, West Oakland is one of the most impacted areas in the state. All West Oakland census tracts are in the top 50% of pollution-burdened census tracts, and approximately half of West Oakland's census tracts are in the top 90% of pollution-burdened census tracts in the State. While CalEnviroScreen is not intended to be used for CEQA purposes, CalEnvironScreen was used by CARB as one criterion for identifying disadvantaged communities under AB 617.

The Air District developed a "community-scale" emissions inventory for $PM_{2.5}$, DPM, and other air toxics from sources within West Oakland for 2017. This emissions inventory was developed using a bottom-up approach, where detailed activity data and emission factors are used to estimate total emissions. The District estimated that over 86 tons of $PM_{2.5}$ and 25 tons of DPM were emitted by local sources in West Oakland in 2017 (see Table 3.2-7).

However, there are several emission sources in West Oakland that were not accounted for in the community-scale emissions inventory, namely due to insufficient understanding of the spatial and temporal variability of these emissions (e.g., residential wood combustion, construction activities, etc.). Emissions from these sources were estimated using a top-down approach (based on regional inventories and spatial surrogates) but were not included in further dispersion modeling and risk assessment. The grand total emissions in West Oakland can be estimated by summing the results from the bottom-up emissions inventory and the top-down emissions inventory; ~66.4% of total $PM_{2.5}$ emissions (129.31 ~~129.72~~ tons per year), and ~~~86~~ ~85.3% of total DPM emissions (28.03 ~~29.61~~ tons per year) were accounted for in the community-scale emissions inventory (see Table 3.2-7).

The Air District used the American Meteorological Society/EPA Regulatory Model Improvement Committee Regulatory Model (AERMOD) to simulate dispersion from each emissions source in the community-scale emissions inventory, using source-specific temporal and spatial allocation data. Concentrations were sampled at receptors within the West Oakland community. The concentrations of DPM and other air toxics were then used to estimate cancer risk (see Table 3.2-8).

[5] Air District Community Air Risk Evaluation Program, April 2014

## TABLE 3.2-7

### West Oakland Emission Inventory

(Note for Final EIR Table 3.2-7 has been updated to be consistent with revisions to Appendix C)

| Source | 2017 Emissions | | |
|---|---|---|---|
| | Tons/year | | Cancer Risk-Weighted |
| | $PM_{2.5}$ | DPM | |
| **West Oakland Sources Included in Community-Scale Modeling** | | | |
| **Highway** | **20.29** | **2.12** | **1,791** |
| Non-truck vehicles | 12.22 | 0.19 | 331 |
| HD/Medium HD trucks | 2.48 | 1.84 | 1,392 |
| Light HD trucks | 0.41 | 0.09 | 69 |
| Road dust | 5.17 | -- | -- |
| **Street** | **22.38** | **2.07** | **1,692** |
| Non-truck vehicles | 4.82 | 0.09 | 183 |
| HD/Medium HD trucks | 2.44 | 1.88 | 1,434 |
| Light HD trucks | 0.35 | 0.09 | 76 |
| Road dust | 14.77 | -- | -- |
| **Port** | **21.99** | **15.87** | **11,831** |
| OGV maneuvering | 3.94 | 3.84 | 2,859 |
| OGV berthing | 7.83 | 4.31 | 3,212 |
| Dredging | 1.12 | 1.16 | 864 |
| Assist Tugs | 3.82 | 3.94 | 2,932 |
| Bunkering (tugs, pumps) | 0.27 | 0.28 | 209 |
| CHE | 1.59 | 1.58 | 1,177 |
| Port trucks* | 0.93 | 0.50 | 386 |
| Road dust | 2.25 | -- | -- |
| Railyard - OGRE | 0.07 | 0.08 | 57 |
| Railyard - BNSF | 0.17 | 0.18 | 136 |
| **Rail** | **2.04** | **2.20** | **1,637** |
| Rail lines | 1.02 | 1.09 | 810 |
| Railyard - UP | 1.02 | 1.11 | 826 |
| **Permitted** | **17.84** | **0.30** | **1,101** |
| Schnitzer (stationary) | 5.20 | 0.00 | 823 |
| EBMUD | 3.99 | 0.09 | 110 |
| Dynegy | 1.96 | <0.01 | 1 |
| Pinnacle Ag Services | 1.48 | 0.00 | - |
| Sierra Pacific | 0.91 | 0.00 | - |
| CASS | 0.72 | 0.00 | <1 |
| California Cereal | 0.58 | 0.00 | <1 |
| CA Waste (10th St) | 0.46 | 0.00 | - |
| Other | 2.53 | 0.21 | 168 |

**TABLE 3.2-7 (cont.)**

| Source | 2017 Emissions | | |
|---|---|---|---|
| | Tons/year | | Cancer Risk-Weighted |
| | $PM_{2.5}$ | DPM | |
| **Other** | **1.36** | **1.36** | **1,016** |
| Ferries/excursion vessels | 0.91 | 0.93 | 695 |
| Schnitzer - OGV | 0.30 | 0.30 | 225 |
| Schnitzer (trucks) | 0.04 | 0.01 | 8 |
| Truck-related businesses | 0.11 | 0.12 | 87 |
| **Total West Oakland Sources Included in Community-Scale Modeling** | **85.91** | **23.91** | **19,068** |
| **West Oakland Sources Not Included in Community-Scale Modeling** | | | |
| **Area** | **30.40** | **-** | **413** |
| Commercial cooking | 20.63 | - | 9 |
| Food and agriculture | 0.00 | - | 13 |
| Fuel combustion – residential | 6.93 | - | 18 |
| Fuel combustion - commercial/industrial | 2.30 | - | 17 |
| Industrial processes | 0.03 | - | 176 |
| Solvent use | 0.00 | - | 125 |
| Consumer products | 0.00 | - | 41 |
| Other area sources | 0.50 | - | 13 |
| **Non-Road** | **13.00** | **4.12** | **3,358** |
| Construction equipment | 4.10 | 3.33 | 2,501 |
| Construction dust | 6.74 | -- | -- |
| Commercial/industrial equipment | 1.17 | 0.51 | 436 |
| Lawn & garden equipment | 0.12 | 0.02 | 79 |
| Transportation refrigeration units (TRUs) | 0.24 | 0.26 | 192 |
| Other non-road sources | 0.63 | 0.00 | 151 |
| **Total West Oakland Sources Not Included in Community-Scale Modeling** | **43.40** | **4.12** | **3,771** |
| **GRAND TOTAL:** | **129.31** | **28.03** | **22,839** |

The "Port truck" sub-category includes all drayage truck emissions, including operations on highways and surface streets.

The cancer risk associated with the sources within West Oakland only has also been estimated by the District (see Table 3.2-8). The total estimated residential cancer risk from local sources in West Oakland is ~~204~~ 303 per million. Based on the emissions modeling the primary local sources of emissions that contribute to the residential cancer risk in West Oakland are rail (21%), assist tugs (18%), and trucks (11% ~~39%), marine vessels (31%), and rail (17%)~~. The emissions data in Table 3.2-8 are from local emissions within West Oakland (only).

## TABLE 3.2-8

## Annual Average Modeled Impact of Local Sources on Residential Cancer Risk in West Oakland

(Note for Final EIR Table 3.2-7 has been updated to be consistent with revisions to Appendix C)

| Source | 30-Year Residential Cancer Risk (per million) | Percent of Total Risk |
|---|---|---|
| **Highway Sources** | | |
| Heavy/Medium Duty Trucks | 33 | 11% |
| Non-truck vehicles | 7 | 2% |
| Light Trucks | 2 | 1% |
| **Surface Street Sources** | | |
| Heavy/Medium Trucks | 22 | 7% |
| Non-Truck Vehicles | 4 | 1% |
| Light Trucks | 1 | <1% |
| **Port Sources** | | |
| Ocean-Going Vessel (at berth) | 20 | 7% |
| Ocean-Going Vessel (maneuvering) | 17 | 6% |
| Dredging | 15 | 5% |
| Assist Tugs | 55 | 18% |
| Bunkering (tugs & pumps) | 4 | 1% |
| Cargo Handling Equipment | 20 | 7% |
| Port Trucks | 10 | 3% |
| Road Dust | - | - |
| Railyard (OGRE) | 4 | 1% |
| Railyard (BNSF) | 8 | 2% |
| **Rail** | | |
| Railyard (UP) | 46 | 15% |
| Locomotives | 21 | 7% |
| **Permitted Sources** | | |
| CA Waste (10th Street) | - | - |
| California Cereal | <1 | <1% |
| CASS | <1 | <1% |
| Dynergy | <1 | <1% |
| EBMUD | 2 | 1% |
| Pinnacle Ag Services | - | - |
| Schnitzer (stationary sources) | 5 | 2% |
| Sierra Pacific | - | - |
| Other facilities | 2 | 1% |
| **Other Sources** | | |
| Ferries/Excursion Vessels | 5 | 2% |
| Schnitzer Steel (OGV) | 2 | 1% |
| Schnitzer (trucks) | <1 | 1% |
| Truck-related businesses | 2 | 1% |
| **TOTAL:** | 303 | 100% |

Source: West Oakland Community Action Plan, Bay Area Air Quality Management District, September 2019

## 3.2.2 REGULATORY SETTING

### 3.2.2.1 Criteria Pollutants

Ambient air quality standards in California are the responsibility of, and have been established by, both the U.S. EPA and CARB. These standards have been set at concentrations, which provide margins of safety for the protection of public health and welfare. Federal and state air quality standards are presented in Table 3.2-1. The federal, state, and local air quality regulations are identified below in further detail.

#### 3.2.2.1.1 Federal Regulations

The U.S. EPA is responsible for setting and enforcing the National Ambient Air Quality Standards for ozone, CO, $NO_2$, $SO_2$, $PM_{10}$, $PM_{2.5}$, and lead. The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Clean Air Act (CAA) Amendments of 1990 give the U.S. EPA additional authority to require states to reduce emissions of ozone precursors and particulate matter in non-attainment areas. The amendments set attainment deadlines based on the severity of problems. At the state level, CARB has traditionally established state ambient air quality standards, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emission inventories, collected air quality and meteorological data, and approved state implementation plans. At a local level, California's air districts, including the Air District, are responsible for overseeing stationary source emissions, approving permits, maintaining emission inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA.

Other federal regulations applicable to the Bay Area include Title III of the Clean Air Act, which regulates toxic air contaminants. Title V of the Act establishes a federal permit program for large stationary emission sources. The U.S. EPA also has authority over the Prevention of Significant Deterioration (PSD) program, as well as the New Source Performance Standards (NSPS), both of which regulate stationary sources under specified conditions.

#### 3.2.2.1.2 California Regulations

CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act and federal Clean Air Act, and for regulating emissions from consumer products and motor vehicles. CARB has established California Ambient Air Quality Standards for all pollutants for which the federal government has established National Ambient Air Quality Standards and also has standards for sulfates, visibility, hydrogen sulfide and vinyl chloride. Federal and state air quality standards are presented in Table 3.2-1 under Air Quality Environmental Setting. California standards are generally more stringent than the National Ambient Air Quality Standards. CARB has established emission standards for vehicles sold in California and for various types of combustion equipment. CARB also sets fuel specifications to reduce vehicular emissions.

CARB is responsible for developing and implementing air pollution control plans to achieve and maintain state and federal ambient air quality standards. CARB has primary responsibility for statewide pollution sources and produces a major part of the State Implementation Program (SIP). The measures contained in the State SIP Strategy reflect a combination of state actions, petitions for federal action, and actions for deployment of cleaner technologies in all sectors. CARB's proposed state SIP Strategy includes control measures for on-road vehicles, locomotives, ocean going vessels, and off-road equipment that are aimed at helping all districts in California to comply with federal and state ambient air quality standards.

California gasoline specifications are governed by both state and federal agencies. During the past two decades, federal and state agencies have imposed numerous requirements on the production and sale of gasoline in California. CARB adopted the Reformulated Gasoline Phase III regulations in 1999, which required, among other things, that California phase out the use of MTBE in gasoline. The CARB Reformulated Gasoline Phase III regulations have been amended several times (the most recent amendments were adopted in 2013) since the original adoption by CARB.

The California Clean Air Act (AB 2595) mandates achievement of the maximum degree of emission reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date.

Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) requires the adoption and implementation of community emissions reduction plans for targeted jurisdictions with disproportionate impacts from air pollution. Pursuant to AB 617, the Air District and the West Oakland Environmental Indicators Project jointly developed a community emissions reduction plan, referred to as the Community Action Plan, for West Oakland. The proposed plan includes strategies at the community level to maximize emission reductions and reduce residents' cumulative exposure to criteria air pollutants and toxic air contaminants. The West Oakland Community Action Plan is an integrated multi-pollutant community air quality plan to eliminate health risk disparities in West Oakland. This Community Action Plan also documents the Steering Committee's effort to study air pollution in West Oakland, and to identify and to prioritize Action Strategies that once implemented, will significantly reduce West Oakland's air pollution burden.

#### 3.2.2.1.3 Air District Regulations

The California Legislature created the Air District in 1955. The Air District is responsible for regulating stationary sources of air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties. The District is governed by a 24-member Board of Directors composed of publicly-elected officials apportioned according to the population of the represented counties. The Board has the authority to develop and enforce regulations for the control of air pollution within its jurisdiction. The District is responsible for implementing emissions standards and other requirements of federal and state laws. Numerous regulations have been developed by the District to control emissions sources within its jurisdiction. It is also responsible for developing air quality planning documents required by both federal and state laws.

Bay Area facilities are subject to various air quality regulations that have been adopted by the Air District, CARB and U.S. EPA. These rules contain standards that are expressed in a variety of forms to ensure that emissions are effectively controlled including:

1. Requiring the use of specific emission control strategies or equipment (e.g., the use of floating roof tanks for ROG emissions);
2. Requiring that emissions generated by a source be controlled by at least a specified percentage (e.g., 95 percent control of ROG emissions from pressure relief devices);
3. Requiring that emissions from a source not exceed specific concentration levels (e.g., 100 parts per million (ppm) by volume of ROG for equipment leaks, unless those leaks are repaired within a specific timeframe; 250 ppm by volume $SO_2$ in exhaust gases from sulfur recovery units; 1,000 ppm by volume $SO_2$ in exhaust gases from catalytic cracking units);
4. Requiring that emissions not exceed certain quantities for a given amount of material processed or fuel used at a source (e.g., 0.033 pounds NOx per million BTU of heat input, on a refinery-wide basis, for boilers, process heaters, and steam generators);
5. Requiring that emissions be controlled sufficient to not result in off property air concentrations above specified levels (e.g., 0.03 ppm by volume of hydrogen sulfide ($H_2S$) in the ambient air);
6. Requiring that emissions from a source not exceed specified opacity levels based on visible emissions observations (e.g., no more than 3 minutes in any hour in which emissions are as dark or darker than No. 1 on the Ringelmann chart);
7. Requiring that emissions be minimized by the use of all feasible prevention measures (e.g., flaring prohibited unless it is in accordance with an approved Flare Minimization Plan);
8. Requiring that emissions of non-methane organic compounds and methane from the waste decomposition process at solid waste disposal sites be limited;
9. Requiring emission limits on ozone precursor organic compounds from valves and flanges; and
10. Requiring the limitation of emissions of organic compounds from gasoline dispensing facilities.

### 3.2.2.2 Toxic Air Contaminants

#### 3.2.2.2.1 Federal and State Regulations

TACs are regulated in the District through federal, state, and local programs. At the federal level, air toxics are regulated primarily under the authority of the CAA. Prior to the amendment of the CAA in 1990, source-specific NESHAPs were promulgated under Section 112 of the CAA for certain sources of radionuclides and hazardous air pollutants (HAPs).

Title III of the 1990 CAA amendments required the U.S. EPA to promulgate NESHAPs on a specified schedule for certain categories of sources identified by the U.S. EPA as emitting one or more of the 189 listed HAPs. Emission standards for affected sources must require the maximum achievable control technology (MACT). MACT is defined as the maximum degree of emission reduction achievable considering cost and non-air quality health and environmental impacts and energy requirements. All NESHAPs were promulgated by May 2015.

Many sources of HAPs that have been identified under the CAA are also subject to the California TAC regulatory programs. CARB developed four regulatory programs for the control of TACs. Each of the programs is discussed in the following subsections.

**Control of TACs Under the TAC Identification and Control Program:** California's TAC identification and control program, adopted in 1983 as Assembly Bill 1807 (AB 1807) (California Health and Safety Code §39662), is a two-step program in which substances are identified as TACs, and airborne toxic control measures (ATCMs) are adopted to control emissions from specific sources. Since adoption of the program, CARB has identified 18 TACs, and CARB adopted a regulation designating all 189 federal HAPs as TACs.

**Control of TACs Under the Air Toxics "Hot Spots" Act:** The Air Toxics Hot Spot Information and Assessment Act of 1987 (AB 2588) (California Health and Safety Code §39656) (1987 Connelly) , as amended by Senate Bill (SB) 1731 (1982 Calderon), establishes a state-wide program to inventory and assess the risks from facilities that emit TACs and to notify the public about significant health risks associated with those emissions. AB 2588 requires operators of certain stationary sources to inventory air toxic emissions from their operation and, if directed to do so by the local air district, prepare a health risk assessment to determine the potential health impacts of such emissions. If the health impacts are determined to be “significant” (greater than 10 per million exposures or non-cancer chronic or acute hazard index greater than 1.0), each facility must, upon approval of the health risk assessment, provide public notification to affect individuals.

**Community Air Protection Program (AB 617):** The Community Air Protection Program was established under AB 617 (2017 Garcia) to reduce exposure in communities most impacted by air pollution. The Program includes community air monitoring and community emissions reduction programs, as well as funding to support early actions to address localized air pollution through targeted incentive funding to deploy cleaner technologies in these impacted communities. AB 617 also includes new requirements for accelerated retrofit of pollution controls on industrial sources, increased penalty fees, and greater transparency and availability of air quality and emissions data, which will help advance air pollution control efforts. CARB is required to select the communities for action in the first year of the program and develop the program requirements by October 2018. The 2018 communities in the Bay Area recommended by CARB staff for approval by the CARB Governing Board are Richmond and West Oakland.

3.2.2.2.2 District TAC Rules and Regulations

The Air District uses three approaches to reduce TAC emissions and to reduce the health impacts resulting from TAC emissions: 1) Specific rules and regulations; 2) Pre-construction review; and, 3) the Air Toxics Hot Spots Program. In addition, the Air District implements U.S. EPA, CARB, and Air District rules that specifically target toxic air contaminant emissions from sources at petroleum refineries.

**District Rules and Regulations:** The Air District has a number of rules that reduce or control emissions from stationary sources. A number of regulations that control criteria pollutant emissions also control TAC emissions. For example, inspection and maintenance programs for fugitive emission sources (e.g., pumps, valves, and flanges) control ROG emissions, some of which may also be TAC emissions. Also, as discussed above, the District's Regulation 11, Rule 18: Reduction from Air Toxic Emissions at Existing Facilities requires a review of TAC emissions, health risk assessments for facilities that have priority scores above a certain level, and risk reduction measures or installation of Best Available Retrofit Control Technology for Toxics on all significant sources of toxic emissions, if certain health risks are exceeded.

**Preconstruction Review:** The Air District's Regulation 2, Rule 5 is a preconstruction review requirement for new and modified sources of TACs implemented through the Air District's permitting process. This rule includes health impact thresholds, which require the use of the best available control technology for TAC emissions (TBACT) for new or modified equipment, and health risk limits cannot be exceeded for any proposed project.

**Air Toxics Hot Spots Program:** The Air Toxic Hot Spots program, or AB 2588 Program, is a statewide program implemented by each individual air district pursuant to the Air Toxic Hot Spots Act of 1987 (Health and Safety Code Section 44300 et. seq.). The Air District uses standardized procedures to identify health impacts resulting from industrial and commercial facilities and encourage risk reductions at these facilities. Health impacts are expressed in terms of cancer risk and non-cancer hazard index. Under this program, the Air District uses a prioritization process to identify facilities that warrant further review. This prioritization process uses toxic emissions data, health effects values for TACs, and Air District approved calculation procedures to determine a cancer risk prioritization score and a non-cancer prioritization score for each site. The District updates the prioritization scores annually based on the most recent toxic emissions inventory data for the facility.

Facilities that have a cancer risk prioritization score greater than 10 or a non-cancer prioritization greater than 1 must undergo further review. If emission inventory refinements and other screening procedures indicate that prioritizations scores remain above the thresholds, the Air District will require that the facility perform a comprehensive site-wide HRA.

In 1990, the Air District Board of Directors adopted the current risk management thresholds pursuant to the Air Toxic "Hot Spots" Act of 1987. These risk management thresholds, which are summarized in Table 3.2-9 below, set health impact levels that require sites to take further action, such as conducting periodic public notifications about the site's health impacts and implementing mandatory risk reduction measures.

**TABLE 3.2-9**

**Summary of Bay Area Air Toxics Hot Spots Program Risk Management Thresholds**

| Requirement | Site Wide Cancer Risk | Site Wide Non-Cancer Hazard Index |
|---|---|---|
| Public Notification | Greater than 10 in one million | Greater than 1 |
| Mandatory Risk Reduction | Greater than 100 in one million | Greater than 10 |

**Targeted Control of TACs Under the Community Air Risk Evaluation Program:** In 2004, the Air District established the CARE program to identify locations with high emissions of TAC and high exposures of sensitive populations to TAC and to use this information to help establish policies to guide mitigation strategies that obtain the greatest health benefit from TAC emission reductions. For example, the Air District will use information derived from the CARE program to develop and implement targeted risk reduction programs, including grant and incentive programs, community outreach efforts, collaboration with other governmental agencies, model ordinances, new regulations for stationary sources and indirect sources, and advocacy for additional legislation.

The CARE program was initiated to evaluate and reduce health risks associated with exposures to outdoor TACs and other pollutants in the Bay Area. The program examines emissions from point sources, area sources, and on-road and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The main objectives of the program are to:

1. Characterize and evaluate potential cancer and non-cancer health risks associated with exposure to TACs and other pollutants from both stationary and mobile sources throughout the Bay Area.
2. Assess potential exposures to sensitive populations including children, senior citizens, and people with respiratory illnesses.

3. Identify significant sources of emissions and prioritize use of resources to reduce exposure in the most highly impacts areas (i.e., priority communities).
4. Develop and implement mitigation measures such as grants, guidelines or regulations, to achieve cleaner air for the public and the environment, focusing initially on priority communities.

The CARE program is an on-going program that encourages community involvement and input. The technical analysis portion of the CARE program is being implemented in three phases that includes an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TAC, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations.

**The District's Regulation 11, Rule 18: Reduction from Air Toxic Emissions at Existing Facilities:** Rule 11-18, adopted November 15, 2017, requires the District to conduct screening analyses for facilities that report TAC emissions within the District and calculate health prioritization scores based on the amount of TAC emissions, the toxicity of the TAC pollutants, and the proximity of the facilities to local communities. The District will conduct health risk assessments for facilities that have priority scores above a certain level. Based on the health risk assessment, facilities found to have a potential health risk above the risk action level would be required to reduce their risk below the action level, or install Best Available Retrofit Control Technology for Toxics on all significant sources of toxic emissions.

A partial list of the air pollution rules and regulations that the Air District implements and enforces at Bay Area facilities follows:

1. Air District Regulation 1: General Provisions and Definitions
2. Air District Regulation 2, Rule 1: Permits, General Requirements
3. Air District Regulation 2, Rule 2: New Source Review
4. Air District Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants
5. Air District Regulation 2, Rule 6: Major Facility Review (Title V)
6. Air District Regulation 6, Rule 1: Particulate Matter, General Requirements
7. Air District Regulation 6, Rule 2: Miscellaneous Operations
8. Air District Regulation 8, Rule 5: Storage of Organic Liquids
9. Air District Regulation 8, Rule 6: Terminals and Bulk Plants
10. Air District Regulation 8, Rule 7: Gasoline Dispensing Facilities
11. Air District Regulation 8, Rule 8: Wastewater (Oil-Water) Separators
12. Air District Regulation 8, Rule 9: Vacuum Producing Systems
13. Air District Regulation 8, Rule 10: Process Vessel Depressurization
14. Air District Regulation 8, Rule 18: Equipment Leaks
15. Air District Regulation 8, Rule 22: Valves and Flanges at Chemical Plants
16. Air District Regulation 8, Rule 28: Episodic Releases from Pressure Relief Devices at Petroleum Refineries and Chemical Plants

17. Air District Regulation 8, Rule 33: Gasoline Bulk Terminals and Gasoline Delivery Vehicles
18. Air District Regulation 8, Rule 39: Gasoline Bulk Terminals and Gasoline Delivery Vehicles
19. Air District Regulation 8, Rule 44: Marine Vessel Loading Terminals
20. Air District Regulation 9, Rule 1: Sulfur Dioxide
21. Air District Regulation 9, Rule 2: Hydrogen Sulfide
22. Air District Regulation 9, Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters
23. Air District Regulation 9, Rule 8: Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines
24. Air District Regulation 9, Rule 9: Nitrogen Oxides and Carbon Monoxide from Stationary Gas Turbines
25. Air District Regulation 9, Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries
26. Air District Regulation 9, Rule 11: Nitrogen Oxides And Carbon Monoxide from Utility Electric Power Generating Boilers
27. Air District Regulation 11, Rule 1: Lead
28. Air District Regulation 11, Rule 8: Hexavalent Chromium
29. Air District Regulation 11, Rule 18: Risk Reduction from Air Toxic Emissions at Existing Facilities
30. Air District Regulation 12, Rule 11: Flare Monitoring at Petroleum Refineries
31. Air District Regulation 12, Rule 12: Flares at Petroleum Refineries
32. 40 CFR Part 63, Subpart CC: Petroleum Refineries (NESHAP)
33. 40 CFR Part 63, Subpart UUU: Petroleum Refineries: Catalytic Cracking, Catalytic Reforming, and Sulfur Plant Units (NESHAP)
34. 40 CFR Part 61, Subpart FF: Benzene Waste Operations (NESHAP)
35. 40 CFR Part 60, Subpart J: Standards of Performance for Petroleum Refineries (NSPS)
36. State Airborne Toxic Control Measure for Stationary Compression Ignition (Diesel) Engines (ATCM)

### 3.2.3 SIGNIFICANCE CRITERIA

The most recently available Air District draft CEQA guidelines established criteria pollutant thresholds for specific projects, general plans, and regional plans. The Air District's draft CEQA Guidelines (BAAQMD, 2017a) established criteria pollutant thresholds for air quality plans of "no net increase in emissions," which is appropriate for air quality plans because they include a mix of control measures with individual trade-offs. For example, one control measure may result in combustion to reduce reactive organic emissions, while increasing criteria pollutant emissions associated with combustion by a small amount. Those small increases in combustion emissions would be offset by decreases from other measures focused on reducing criteria pollutants. Because the proposed project is a Community Action Plan with the goal of reducing emissions, the criteria pollutant threshold for air quality plans of “no net increase in emissions” will apply to the proposed project.

In addition, the Air District will also (to the extent feasible) evaluate whether the Strategies in the West Oakland Community Action Plan could have potential impacts associated with toxic air contaminants (TACs). For TACs, the Air District will use two thresholds of significance, one for carcinogenic health impacts and one for non-carcinogenic health impacts. For non-carcinogenic impacts, the Air District will use a “Hazard Index” of 1 as the threshold of significance. A Hazard Index of 1 is the level of exposure below which there are not expected to be any observable adverse health effects, based on scientific studies. If the Strategy will result in localized concentrations of TACs that will expose people to a Hazard Index greater than 1.0, that will be considered a significant impact. For carcinogenic impacts, the Air District will use a threshold of “100 in one million” increased risk from all emissions sources within 1,000 feet. This means an exposure level that would be expected to produce 100 additional cancer cases if a population of one million people were exposed to that level of exposure over a 70-year lifetime. Under this threshold, there will be a significant localized impact if any person will be subjected to an additional carcinogenic risk of 100 in one million, taking into account all of the net increases in TAC emissions that will occur as a result of the Strategy within 1000 feet of the person.

### 3.2.4 EVALUATION OF AIR QUALITY IMPACTS

As discussed previously, the Notice of Preparation and Initial Study (NOP/IS) (see Appendix A) found that the implementation of the West Oakland Community Action Plan could result in secondary air quality impacts from implementing certain of the Strategies.

It is expected that the direct effects of the West Oakland Community Action Plan would be reductions in criteria pollutant and TAC emissions. However, construction equipment and activities to install air pollution control equipment, enclosures, and new infrastructure has the potential to generate secondary air quality impacts, primarily from exhaust emissions. Further, air pollution control equipment that reduces one or more regulated pollutants has the potential to generate adverse secondary air quality impacts from other sources such as mobile sources or from air pollution control equipment. For example, some types of air pollution control equipment that use ammonia as part of the control process have the potential to generate emissions of the material that may be considered a TAC.

Potential secondary air quality impacts from construction activities and equipment that may be required under the West Oakland Community Action Plan are analyzed herein. The analysis identifies construction air quality impacts from air pollution control equipment that could be installed to comply with the Strategies (e.g., Selective Catalytic Reduction (SCR) and enclosures). This subchapter evaluates the potential construction and operational air quality impacts that could result due to implementation of the West

Oakland Community Action Plan. The potential air quality impacts are summarized in Table 3.2-10.

**TABLE 3.2-10**

**Strategies to be Implemented by the Air District with Potential Air Quality Impacts**

| Strategy # | Description | Control Methodology | Potential Air Quality Impacts |
|---|---|---|---|
| ~~61~~ 66 | District works with Schnizter Steel to study the feasibility of installing a shore power or bonnet system to capture vessel emissions | Bonnet system could include SCR and filtration system or shore power could be used. | Air quality impacts associated with increased use of ammonia/catalyst, etc.; Air impacts associated with increased energy generation |
| ~~63~~ 68 | Amendments to existing District Reg 6-4 and 12-13 to reduce fugitive PM emissions from metal recycling and foundry operations | Emission Minimization Plans would be prepared and are expected to required enclosures for fugitive emission sources | Construction emissions associated with enclosures |
| Various Measures (14, ~~36~~ 41, ~~43~~ 48, ~~44~~ 49, ~~48~~ 53, ~~49~~ 54) | Conversion of Sources from conventional to zero emission sources. | Increased electrification of sources. | Increased demand for electricity so increased need from electric generating facilities with increase air emissions. |

### 3.2.4.1 Potential Criteria Pollutant Impacts During Construction

The proposed Plan aims to reduce $PM_{2.5}$ and TAC emissions, although other criteria pollutants would also be reduced. The Strategies aim to reduce emissions and exposure to emissions by replacing conventional vehicles with zero emission vehicles, installing air pollution control equipment at stationary sources, reducing fugitive emissions at stationary sources (metal recycling and foundry operations), and installing filtration devices at sensitive receptor locations, among others. Construction activities may be necessary to implement some of the Strategies. Of the Strategies that the Air District proposes to implement, Strategy ~~#63~~ #68 would be expected to require Emission Minimization Plans for metal recycling and foundry operations. The most likely method of reducing emissions from these facilities is through the enclosure of operations. Construction activities may also be required for stationary sources, the installation of zero-emission infrastructure and other similar Strategies. The potential secondary adverse air quality construction impacts from implementation of Strategies, to the extent that information is known or can be estimated, are analyzed in this subsection.

Construction equipment associated could result in ROG, $NO_x$, $SO_x$, CO, $PM_{10}$, and $PM_{2.5}$ emissions, although the amount generated by specific types of equipment can vary greatly. As shown in Table 3.2-11, different types of equipment can generate construction emissions in much different quantities depending on the type of equipment.

For example, the estimated emissions of $NO_x$ range from of 0.17 pound per hour (lb/hr) of $NO_x$ for a forklift to 1.06 lbs/hr for a large drill rig. To provide a conservative construction air quality analysis and in the absence of information on the specific construction activities necessary to complete a construction project, a typical construction analysis assumes that, in the absence of specific information, all construction activities would occur for eight hours per day. This is considered a conservative assumption because workers may need to be briefed on daily activities, so construction may start later than their arrival times or the actual construction activities may not require eight hours to complete.

**TABLE 3.2-11**

**Emission Factors Associated with Typical Construction Equipment(1)**

| Equipment Type | VOC (lb/hr) | CO (lb/hr) | NOx (lb/hr) | SOx (lb/hr) | PM10 (lb/hr) |
|---|---|---|---|---|---|
| Aerial Lift | 0.00 | 0.17 | 0.10 | 0.00 | 0.0 |
| Backhoe | 0.02 | 0.36 | 0.27 | 0.00 | 0.02 |
| Compressor | 0.02 | 0.21 | 0.13 | 0.00 | 0.03 |
| Crane | 0.05 | 0.40 | 0.72 | 0.00 | 0.03 |
| Drill Rig | 0.08 | 0.50 | 1.06 | 0.00 | 0.04 |
| Excavator | 0.02 | 0.51 | 0.31 | 0.00 | 0.01 |
| Forklift | 0.02 | 0.22 | 0.17 | 0.00 | 0.01 |
| Front End Loader | 0.05 | 0.44 | 0.60 | 0.00 | 0.03 |
| Generator | 0.02 | 0.28 | 0.13 | 0.00 | 0.01 |
| Light Plants | 0.02 | 0.29 | 0.13 | 0.00 | 0.01 |
| Welding Machine | 0.03 | 0.23 | 0.18 | 0.00 | 0.02 |

(1) Emission Factors from Off-Road 2011, Model Year 2019. CO emissions from SCAQMD, 2006: http://www.aqmd.gov/ceqa/handbook/offroad/offroadEF07_25.xls.

To calculate the potential construction emissions associated with the construction of one enclosure, it was assumed that construction activities would take about 60 days and would require 20 workers. It is also assumed that only one enclosure would be constructed at a time as Strategy ~~#63~~ #68 would affect one facility in West Oakland. The potential emissions associated with the construction of an enclosure are summarized in Table 3.2-12.

Construction activities may also be associated with other Strategies that the Air District would implement but the details of those construction activities are unknown and, therefore, speculative or expected to be very minor. Under Strategy ~~#61~~ #66, implementation of a bonnet system would most likely occur on a barge because of limited space near Schnitzer Steel and the adjacent Port. The equipment would be purchased and then placed on a barge. Because of the limited space, it is unlikely that the control system would be put together in West Oakland. It is more likely that the barge would be configured elsewhere and transported to Schnitzer Steel for use. Further, Strategy ~~#70~~ #75 could require building energy efficiency upgrades and the installation of high efficiency air filtration systems in existing schools, day care facilities, hospitals, apartments, and homes. The construction activities associated with this Strategy are expected to be minor and limited to 1-3 workers.

**TABLE 3.2-12**

**Estimated Construction Emissions for Enclosures**

| ACTIVITY | ROG | CO | NOx | SOx | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| **Peak Day Construction Emissions (lbs/day)** | | | | | | |
| Construction Activities for 1 Enclosure(1) | 2.43 | 24.78 | 23.37 | 0.07 | 2.59 | 1.57 |
| Construction Significance Thresholds(2) | 54 | -- | 54 | -- | 82 | 54 |
| **Total Construction Estimates (tons emitted during construction period – tons/yr)** | | | | | | |
| Construction Activities for 1 Enclosure(1) | 0.06 | 0.69 | 0.50 | 0.00 | 0.04 | 0.03 |
| Construction Significance Thresholds(2) | 10 | -- | 10 | -- | 15 | 10 |

(1) See Appendix B for detailed emissions calculations.
(2) BAAQMD, 2017a

The construction of additional electrical or hydrogen cell infrastructure would be required under several Strategies in the West Oakland Community Action Plan. The type of equipment, magnitude of any construction activities, location of the activities, etc., are currently unknown and considered to be speculative. However, additional construction activities associated with Strategies that the Air District would seek to implement are expected to be minor such as installing electric charging stations or hydrogen fuel stations, for example, which would likely be added to existing facilities (e.g., gas stations).

Based on the construction emissions in Tables 3.2-12, it is concluded that construction emissions associated with the Strategies that the Air District expects to implement under the West Oakland Plan would be below the Air District construction significance thresholds for criteria pollutants and would, therefore, be less than significant. Construction emissions are temporary as construction emissions would cease following completion of construction activities. Future projects proposed to implement Strategies by other government agencies presumably would complete further environmental analyses per CEQA.

### 3.2.4.2 Potential Criteria Pollutant Impacts During Operation

The net effect of implementing the West Oakland Community Action Plan is to reduce TAC and $PM_{2.5}$ emissions as well as exposure to emissions in West Oakland. However, some control technologies have the potential to generate secondary or indirect air quality impacts as part of the control process.

#### 3.2.4.2.1 Air Pollution Control Equipment

The installation of a bonnet system to control emissions from marine vessels at berth (Strategy ~~#61~~ #66) could include emission control equipment to control particulate matter (e.g., baghouse) as well as other control equipment, such as a Selective Catalytic Reduction (SCR) Unit. While the West Oakland Community Action Plan does not require the control of NOx emissions, NOx is a major pollutant from marine engines and it is likely that control equipment to reduce NOx would be included in a bonnet system, if such a system were to be built.

SCR Units have been used to control NOx emissions from stationary sources for many years by promoting chemical reactions in the presence of a catalyst. Installation of new SCR equipment would be expected to increase the amount of ammonia used for NOx control. SCRs would require the additional deliver of ammonia or urea to the facilities where they are installed. In addition, the bonnet system would require servicing of the diesel particulate filter or other similar maintenance activities. It is estimated that a peak of two trucks per peak day would be required to delivery ammonia/urea, catalyst and other supplies, or about 40 truck trips per year would be required for the delivery of supplies. This amount could vary depending on the size of the SCR and size of the ammonia or urea storage systems. However, the 40 trucks per year is expected to provide a conservative estimate of transportation requirements. As shown in Table 3.2-13, indirect mobile source emissions from transport delivery trucks would be low. Truck trip emissions from transporting to and from facilities would not generate significant adverse operational air quality impacts or contribute to significant adverse operational air quality impacts that may be caused by other control technologies.

**TABLE 3.2-13**

**Delivery Truck Emissions**

| Material | Criteria Pollutant | | | | | |
|---|---|---|---|---|---|---|
| | **ROG** | **CO** | **NOx** | **SOx** | **$PM_{10}$** | **$PM_{2.5}$** |
| **Operational Emissions Per Facility (lbs/day)** | | | | | | |
| Ammonia/Catalyst for SCR | <0.01 | 0.03 | 0.12 | <0.01 | 0.03 | 0.01 |
| **Operational Emissions Per Facility (Tons/year)** | | | | | | |
| Ammonia/Catalyst for SCR | <0.01 | 0.01 | 0.02 | <0.01 | 0.01 | <0.01 |

See Appendix B for detailed emission calculations.

The installation of an SCR Unit may potentially result in increased ammonia emissions due to "ammonia slip" (unreacted ammonia released in the exhaust). As a result, ammonia slip emissions could increase, thus, contributing to $PM_{10}$ and $PM_{2.5}$ concentrations. Ammonia can be released in liquid form, thus, directly generating $PM_{10}$ and $PM_{2.5}$ emissions. Ammonia can also be released in gaseous form where it is a precursor to $PM_{10}$ and $PM_{2.5}$ emissions. Ammonia slip can increase as the catalyst ages and becomes less effective. Ammonia slip from SCR equipment can be continuously monitored and controlled. The SCR technology has progressed such that ammonia slip can be limited to five parts per million (ppm) or less. SCR vendors have developed better injection systems that result in a more even distribution of NOx ahead of the catalyst so that the potential for ammonia slip has been reduced. Similarly, ammonia injection rates are more precisely controlled by model control logic units that are a combination of feed-back control and feed forward control using a proportional/integral controller that sets flow rates by predicting SCR outlet ammonia concentrations and calibrating them to a set reference value. Installation of an SCR would require an Authority to Construct from the Air District. A limit on ammonia slip is normally included in air permits for stationary sources. Operators would be required to monitor ammonia slip by conducting an annual source test and maintain a continuous monitoring system to accurately indicate the ammonia-to-emitted-NOx mole ratio at the inlet of the SCR. In addition, the barge system would include a diesel particulate filter or some other similar type of particulate control, which could control $PM_{10}$ and $PM_{2.5}$ emissions from ships, as well as ammonia slip. These measures are expected to minimize potential air quality impacts associated with ammonia slip. Further, the bonnet system would be located on a barge within/adjacent to the Port and would be located about 0.5 mile from the closest residential area, further minimizing the potential for exposure to TAC emissions.

3.2.4.2.2 Secondary Impacts from Increased Electricity Demand

Implementing Strategies in the West Oakland Community Action Plan is expected to increase future demand for electricity in two ways. First, electricity is often used as the power source to operate various components of add-on control equipment that may be required to reduce emissions. Second, a number of Strategies may increase future demand for electricity as a result of increasing the penetration of electric on-road and off-road vehicles or replacing existing equipment with zero or near-zero emissions, electric-powered equipment. Although increasing the number of on-road and off-road electric vehicles in West Oakland, it is anticipated that the increased electricity generation emissions would be offset by emission reductions from removing gasoline and diesel-powered vehicles from district fleets.

*Electricity Demand Impacts from Operating Control Equipment*

There are a variety of different types of air pollution control equipment, such as SCRs and filters/baghouses associated with a bonnet system, that may require additional electricity. In the case of the bonnet system, it would be expected that the air pollution control equipment would be placed on a barge because of lack of space along the waterfront within and adjacent to the Port. Since the bonnet system would be placed on a barge, it would be operated through the diesel engines on the barge so that no increase in electricity from a public utility company would be required. See Section 3.2.4.4 for the estimated emissions decreased associated with the use of the bonnet system.

Strategy ~~#70~~ #75 that would place filtration devices on schools, day care facilities, hospitals, apartments, and homes, could place additional electricity demands to operate heaters or air conditioners. Increased demand for electrical energy may require generation of additional electricity, which in turn could result in increased indirect emissions of criteria pollutants in the Bay Area and in other portions of California that export electricity to the Bay Area. However, installation of high-energy efficient systems could help offset any electricity increases. Details on the filtration systems, ventilation systems, fan motors, where they would be located, how many would be installed, etc., are currently unknown. Therefore, the potential increase in electricity and the related air quality impacts are currently unknown and considered to be speculative.

*Electricity Demand Impacts from Mobile Sources*

Because of the need for ever more stringent emission control regulations to achieve all Ambient Air Quality Standards (AAQSs), electricity is becoming more important as an energy source to reduce emissions in a number of economic sectors, especially mobile sources. With regard to some of the West Oakland Strategies, assumptions have been made regarding future electricity demand. For example, several Strategies would increase future demand for electricity to achieve the control measures' targets of zero emissions from on-road and off-road vehicles. The following information summarizes the Strategies in the Plan that could result in an increase in future electricity demand:

1. Strategy #14: Provide financial incentives for local businesses to install energy storage systems (e.g., batteries, fuel cells) to replace stationary sources of pollution (e.g., back-up generators).

2. Strategy ~~#36~~ #41: Provide financial incentives for fueling infrastructure, and for low and zero emission equipment.

3. Strategy ~~#43~~ #48: Offer up to $7 million per year to replace older autos through the Vehicle Buy Back program, and up to $4 million per year through the Clean Cars for All program to replace older autos and provide an incentive for a hybrid electric, plug-in hybrid electric, battery electric vehicle, or funding for public transit.

4. Strategy ~~#44~~ #49: Offer financial incentives to replace box and yard diesel trucks with zero emission trucks.

5. Strategy ~~#48~~ #53: Offer financial incentives to replace long-haul diesel trucks with zero emission trucks.

6. Strategy ~~#49~~ #54: Offer up to $1 million in funding incentives to pay for the purchase of cleaner equipment, including electric lawn and garden equipment, Transportation Refrigeration Units, and cargo-handling equipment.

7. Strategy ~~#61~~ #66: Study the feasibility of installing shore power to marine vessels at Schnitzer Steel.

Increasing penetration of zero and near-zero emission vehicles would increase future demand for electricity in the Bay Area and other areas of California that provide electricity to the Bay Area. For the purpose of this analysis, a zero emission vehicle is assumed to be an electric vehicle. Near-zero vehicles are assumed to be plug-in hybrid sources. Potential increased electricity demand from West Oakland Community Action Plan Strategies that increase the penetration of zero on-road and off-road mobile sources are shown in Table 3.3-3 in Section 3.3 – Energy. Estimates of the potential increase in electricity use are provided where sufficient information is available to estimate the number of pieces of equipment or vehicles that would be required under each of the Strategies. In most cases, that information is not available and cannot be determined at this time.

As shown in Table 3.3-3, the potential increase in future demand for electricity to provide energy for on-road and off-road mobile sources associated with the West Oakland Plan is expected to be less than one gigawatt-hours (GWh) in the year 2021. Assuming Strategy ~~#43~~ #48 is implemented through 2023, the increase would be approximately one GWh in 2023 (see Table 3.3-3 for further details).

~~Electricity to Alameda County, including West Oakland, is supplied by Pacific Gas and Electric (PG&E).~~ Beginning in 2018, East Bay Community Energy (EBCE) has been the electric power service provider for Oakland and most of Alameda County. As the County's community choice aggregation program, EBCE buys and develops clean electric power for its customers and PG&E ensures this power is safely and reliably delivered through its transmission and distribution system (see EBCE's electricity mix here: https://ebce.org/wp-content/uploads/Item-11-Power-Content-Informational-Item.pdf). PG&E has prepared an Integrated Resources Plan (IRP) that outlines how the utility will shape its future energy portfolio to meet California's clean energy goals in a reliable and cost-effect manner. As part of the IRP (PG&E, 2018), PG&E has forecasted the potential load impacts on electricity demand that would be expected to occur from increased charging of electric vehicles in the future. PG&E has estimated that meeting the state's goal of five million electric vehicles (or two million within PG&E's service territory) by 2030 would increase the current electrical use for electric vehicles from about 160 GWh in 2018 to 2,353 GWh in 2022, to 4,205 GWh in 2026, and 5,982 GWh in 2030 (PG&E, 2018). PG&E plans to add resources to supply sufficient electricity to its customers for electric vehicles as well as from population growth. Most of the increases will come for additional bioenergy, solar, and wind resources due to the renewables portfolio standard (RPS) requirements.

While the electricity use associated with electric vehicles is expected to increase, PG&E predicts that its overall sales in electricity would increase slightly (up to eight percent). The expected increases in energy efficiency and solar photovoltaic projects are expected to offset a majority of the growth in electric vehicles, as well as economic and population driven growth (PG&E, 2018).

As part of the IRP process, PG&E is required to provide estimates of local air emissions from the plants that it operates. Air emissions associated with PG&E's facilities are forecasted to decrease (NOx) or stay flat ($PM_{2.5}$) through 2030 due to: (1) changes in PG&Es load and supply portfolio; (2) decreased combined heat and power emissions as units come off contracts; and (3) decreased biogas/biomass emissions (see Table 3.2-14) (PG&E, 2018). The electrification of motor vehicles and other commercial and industrial equipment would greatly reduce fossil fuel usage. The criteria pollutant emissions shown in Table 3.2-14 do not reflect the emission reductions from the transportation sector related to electrification of vehicles in California.

**TABLE 3.2-14**

**PG&E Air Emission Forecast(1)**

| Source | 2018 | 2022(2) | 2026 | 2030 |
|---|---|---|---|---|
| **NOx Emissions (metric tons/year)** | | | | |
| CASIO Dispatchable Thermal Resources(3) | 16 | (43) to (83) | 280-341 | 395-407 |
| Combined Heat & Power | 3,358 | 1,462 | 718 | 316 |
| Biogas | 1,060 | 1,289 | 1,285 | 836 |
| Biomass | 886 | 961 | 829 | 755 |
| Total NOx Emissions | 5,320 | 3,669 | 3,112-3,173 | 2,302-2,314 |
| **$PM_{2.5}$ Emissions (metric tons/year)** | | | | |
| CASIO Dispatchable Thermal Resources(3) | 10 | (26) to (50) | 169-205 | 224-230 |
| Combined Heat & Power | 109 | 48 | 23 | 10 |
| Biogas | 9 | 15 | 17 | 17 |
| Biomass | 538 | 520 | 473 | 417 |
| Total $PM_{2.5}$ Emissions | 666 | 533-557 | 682-718 | 668-674 |

(1) Source: PG&E, 2018. Data presented are from both the Conforming and Preferred Scenarios.
(2) Numbers in parenthesis indicate negative numbers.
(3) Combined cycle gas turbines with emissions from start-ups, CTs, and reciprocating engines

The potential increase in electric vehicles under the Strategies in the West Oakland Community Action Plan are within the range of vehicles that PG&E has forecast for its service area of two million vehicles. As shown in Table 3.2-14, overall emissions associated with providing electricity from power plants is expected to decline or remain relatively consistent. Therefore, implementation of the Strategies is not expected to result in an increase in air emissions associated with electricity over those already contemplated in the PG&E service areas.

New power generation equipment within the Bay Area would be subject to Air District Regulation 9, Rule 9. New power generating equipment would not result in air quality impacts because they would be subject to Best Available Control Technology (BACT) requirements, and all emission increases would have to be offset (through emission reduction credits) before permits could be issued.

Electricity in California is also generated by alternative sources that include hydroelectric plants, geothermal energy, wind power, and solar energy, which are clean sources of energy. California's RPS requires retail sellers of electricity to increase their procurement of eligible renewable energy resources by at least one percent per year so that 33 percent of their retail sales are procured from eligible renewable energy resources by 2020, and 50 percent by December 31, 2030. Among other objectives, the Legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation. These regulatory requirements are expected to move California towards the use of more renewable sources of electricity, reducing the use of fossil fuels. These renewable sources of electricity generate little, if any, air emissions. Increased use of these and other clean technologies will continue to minimize emissions from the generation of electricity.

The West Oakland Community Action Plan is designed to reduce PM and TAC emissions and reduce exposure to TACs. The Plan has the potential to create impacts on electricity demand; however, the existing and future air quality, greenhouse gas rules and regulations, and RPS requirements are expected to minimize operational emissions associated with increased electrical generation. Furthermore, electricity providers are moving towards compliance with California's RPS and generating 50 percent of their electricity from renewable energy resources by 2030.

Concurrent with increased demand for electricity associated with electric vehicles, it is expected that emissions from the combustion of gasoline or diesel fuels would be reduced (see Table 3.2-15). ~~Combustion emissions from gasoline and diesel fuels would be displaced by combustion emissions from natural gas, which is the primary fuel used for generating electricity in the district.~~ However, as discussed above, new sources of electricity are generally from renewable energy sources (e.g., solar). Emissions from diesel combustion (e.g., marine vessel engines) are orders of magnitude higher than emissions from the combustion of natural gas. So, overall combustion emissions from energy production are expected to decline in the future. Therefore, no significant adverse impacts to air quality are expected from control measures requiring increased demand for electricity.

**TABLE 3.2-15**

**Potential Reduction in Fuel Use Associated With Implementation of the West Oakland Community Action Plan**

| Strategy | Reduced Fuel Use (gals/yr)[(a)] |
|---|---|
| Strategy 43 – offer up to $7 million per year to replace older vehicles through the Vehicle Buy Back Program (estimated 60-80 vehicles) | 16,963 – 22,618 |
| Strategy 43 – offer up to $4 million per year to replace older vehicles through the Clean~~er~~ Cars for All program (estimated 40-50 vehicles) | 11,309 – 14,136 |
| **Potential Reduction in Fuel Use** | **28,272 – 36,754** |

(a) See Appendix B for detailed emission calculation assumptions.

### 3.2.4.3 Potential Toxic Air Contaminant Impacts

Unreacted ammonia emissions generated from SCR units are referred to as ammonia slip. Best Available Control Technology (BACT) for ammonia slip is limited to five parts per million (ppm) and enforced by a specific permit condition. Modeling has been performed that shows the concentration of ammonia at a receptor located 25 meters from a stack would be much less than one percent of the concentration at the release from the exit of the stack (SCAQMD, 2015b)[6]. Thus, the peak concentration of ammonia at a receptor

[6] It is expected that concentrations at 25 meters in the Bay Area would be comparable or less than in southern California because of the different meteorological conditions in southern California compared to the Bay Area.

located 25 meters from a stack is calculated by assuming a dispersion of one percent. While ammonia does not have an OEHHA-approved cancer potency value, it does have non-carcinogenic chronic (200 µg/m$^3$) and acute (3,200 µg/m$^3$) reference exposure levels (RELs). Table 3.2-16 summarizes the calculated non-carcinogenic chronic and acute hazard indices for ammonia and compared these values to the respective significance thresholds; both were shown to be less than significant.

**TABLE 3.2-16**

**Ammonia Slip Calculation**

| Ammonia Slip Conc. at the Exit of the Stack, ppm(1) | Dispersion Factor(2) | Molecular Weight, g/mol | Peak Conc. at a Receptor 25 m from the Stack, ug/m3 | Acute REL, ug/m3 | Chronic REL, ug/m3 | Acute Hazard Index(3) | Chronic Hazard Index(3) |
|---|---|---|---|---|---|---|---|
| 5 | 0.01 | 17.03 | 35 | 3,200 | 200 | 0.01 | 0.17 |

(1) Assumes ammonia slip is limited to five ppm by permitting.

(2) Assumes that the concentration at a receptor 25 m from a stack would be much less than one percent of the concentration at the release from the exit of the stack (SCAQMD, 2015b). The dispersion factor is based on local meteorology.

(3) Hazard index = conc. at receptor 25 m from stack, ug/m$^3$/REL, ug/m$^3$

In general, it should be noted that in addition to the estimated TAC emission increases that may occur due to the use of an SCR system, a reduction in TAC emissions would also be expected. The goal of the West Oakland Community Action Plan is to reduce emissions of $PM_{2.5}$ and TACs, as well as exposure to those pollutants. The Plan is expected to result in reduced emissions from diesel particulate matter by reducing the use of conventional mobile sources and encouraging the use of zero and near-zero emission mobile sources, among other strategies.

However, it is not possible to estimate the potential TAC emissions reductions at this point until the sources that will be controlled are known and the appropriate engineering analyses have been completed and so forth. Nonetheless, the reduction in use of conventional fuels as outlined in Table 3.2-15 is expected to result in a reduction in TAC emissions in the West Oakland areas. Therefore, TAC emissions associated with the proposed project are expected to be less than significant.

### 3.2.4.4 Air Quality Benefits

Emission benefits from certain measures in the West Oakland Community Action Plan that the Air District will implement are presented in Table 3.2-17. For some of the potential Strategies, emission reductions are unknown at this time. For particular sources or pollutants, there may be uncertainties associated with emission estimates or the level of control and emission reductions achievable, and further study and evaluation would be required to develop more detailed estimates.

Under Strategy ~~#43~~ #48, the District is proposing up to $7 million per year to replace older autos through the Vehicle Buy Back program and up to $4 million per year through the Clean~~er~~ Cars for All program to replace older autos and provide an incentive for zero emission vehicles. The number of vehicles that may be retired under this Strategy is up to 60-80 per year for the Vehicle Buy Back Program and up to 40-50 per year for the Clean~~er~~ Cars for All program (see Table 3.2-17).

Emission reduction estimates have also been provided for providing shore power to Schnitzer Steel as it is expected to be the better choice for reducing emissions from ships at berth. The emission calculations assume that ships would be at dock 100 days per year and assumes the hotel emissions are 80 percent from shore power and 20 percent for the auxiliary engine (see Appendix B for detailed emission calculations).

Finally, emission reductions have also been provided for the partial enclosure of storage piles at metal recycling and foundry operations. It was assumed that five 100-foot diameter by 40-foot high conical storage piles were enclosed with an estimated control of 95 percent (see Appendix B for detailed emission calculations).

**TABLE 3.2-17**

**West Oakland Community Action Plan Predicted Emission Reductions**

| **Strategy** | **Estimated Emission Reductions Criteria Air Pollutants (tons/yr)** | | | | | |
|---|---|---|---|---|---|---|
| | **ROG(1)** | **CO(1)** | **NOx(1)** | **SOx(1)** | **$PM_{10}$(1)** | **$PM_{2.5}$(1)** |
| ~~#43~~ #48 Vehicle Buy Back Program(2) | (0.76)–(1.01) | (3.94)-(5.25) | (0.57)-(0.76) | <0.00 | (0.03)–(0.04) | (0.02) |
| ~~#43~~ #48 Clean~~er~~ Cars for All Program(2) | (0.51)-(0.63) | (2.62)-(3.28) | (0.38)-(0.48) | <0.00 | 0.03 | 0.01 |
| ~~#61~~ #66 Shore Power to Schnitzer Steel | (0.18) | (0.30) | (6.23) | (0.21) | (0.13) | (0.12) |
| ~~#63~~ #68 Reduction from Enclosures | -- | -- | -- | -- | (0.79) | (0.12) |
| Total Emissions (tons/yr) | (1.45)-(1.82) | (6.86)-(8.83) | (7.18)-(7.47) | (0.21) | (0.92)-(0.93) | (0.25) |
| Total Emissions (lbs/day) | (7.95)-(9.97) | (37.59)-(48.38) | (39.34)-(40.93) | (1.15) | (5.04)-(5.10) | (1.37) |

(1) Numbers in parenthesis indicate negative numbers.
(2) See Appendix B for complete detailed emission calculations.

### 3.2.4.5 Summary of Operational Emission Impacts

As shown in Table 3.2-18, the implementation of the Strategies by the Air District would result in a minor increase in emissions associated with the potential delivery of materials to supply air emission control systems that would be implemented as part of the Plan. The potential emission increases are expected to be offset with emission decreases that would occur due to implementation of the Plan (see Table 3.2-18).

Based on the evaluation of the Strategies that the Air District would implement as part of the West Oakland Community Action Plan, the emission reductions associated with the

Plan are expected to exceed the potential air quality increases and there would be no net emission increases. Therefore, air quality impacts would be less than significant.

### TABLE 3.2-18

### Operational Emissions Under Strategies that the Air District Would Implement under the West Oakland Community Action Plan

| ACTIVITY | ROG | CO | NOx | SOx | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| **Daily Concurrent Operational Emissions (lb/day)** | | | | | | |
| Delivery Trucks for Bonnet System | <0.01 | 0.03 | 0.12 | <0.01 | 0.03 | 0.01 |
| Reductions from Project Implementation(1) | (7.95)-(9.97) | (37.59)-(48.38) | (39.34)-(40.93) | (1.15) | (5.04)-(5.10) | (1.37) |
| **Net Concurrent Emissions(2)** | (7.95)-(9.97) | (37.56)-(48.35) | (39.22)-(40.81) | (1.15) | (5.01)-(5.07) | (1.36) |
| **Significant?** | **No** | **--** | **No** | **--** | **No** | **No** |
| **Annual Concurrent Operational Emissions (tons/yr)** | | | | | | |
| Delivery Trucks for Bonnet System | <0.01 | 0.01 | 0.02 | <0.01 | 0.01 | <0.01 |
| Reductions from Project Implementation(1) | (1.45)-(1.82) | (6.86)-(8.83) | (7.18)-(7.47) | (0.21) | (0.92)-(0.93) | (0.25) |
| **Net Concurrent Emissions(2)** | (1.45)-(1.82) | (6.85)-(8.82) | (7.16)-(7.45) | (0.21) | (0.91)-(0.92) | (0.25) |
| **Significant?** | **No** | **--** | **No** | **--** | **No** | **No** |

(1) See Table 3.2-17. Assumes 365 days of operations.
(2) Numbers in parenthesis indicate emission reductions.

Additionally, specific information regarding a number of the Strategies that the Air District would implement are not currently available. For example, additional emission reductions would be expected from: (1) Strategies ~~#44~~ #49 and ~~#48~~ #53 replacing diesel trucks with zero emission trucks; (2) Strategy ~~#45~~ #50 to upgrade tugs and barges with cleaner engines; (3) Strategy ~~#46~~ #51 to upgrade locomotives with cleaner engines; (4) Strategy ~~#49~~ #54 to purchase cleaner electric lawn and garden equipment, battery electric Transportation Refrigeration Units, and cargo-handling equipment; and (4) Strategy ~~#65~~ #70 to replace existing diesel stationary and standby engines with Tier 4 diesel or cleaner engines. Additional emissions reductions would be expected from these and other Strategies that would be implemented by other agencies. However, sufficient information is not available to estimate the potential emission reductions at this time.

### 3.2.5 MITIGATION MEASURES

Air quality impacts associated with the implementation of the Strategies by the Air District as part of the West Oakland Community Action Plan are expected to be less than significant; therefore, no mitigation measures are required. However, the following measures are recommended to minimize increases associated with construction activities to implement Strategies in the West Oakland Community Action Plan.

On-Road Mobile Sources:

A-1 Construction activities should require the preparation of an Emission Management Plan to minimize emissions from vehicles including, but not limited to, consolidating truck deliveries, prohibiting truck idling in excess of five minutes as contract conditions with carriers and by posting signs onsite, specifying truck routing to/from the site to minimize congestion emissions, specifying hours of delivery to avoid peak rush-hour traffic, allowing ingress/egress only at specified entry/exit points to avoid heavily congested traffic intersections and streets, and specifying allowable locations of onsite parking.

Off-Road Mobile Sources:

A-2 Prohibit construction equipment from idling longer than five minutes at the facility under consideration as contract conditions with construction companies and by posting signs onsite.

A-3 Maintain construction equipment tuned up and with two- to four-degree retard diesel engine timing or tuned to manufacturer's recommended specifications that optimize emissions without nullifying engine warranties.

A-4 The facility operator shall survey and document the locations of construction areas and identify all construction areas that are served by electricity. Electric welders shall be used in all construction areas that are demonstrated to be served by electricity. Onsite electricity rather than temporary power generators shall be used in all construction areas that are demonstrated to be served by electricity.

A-5 If cranes are required for construction, cranes rated 200 hp or greater equipped with Tier 4 or equivalent engines shall be used. Engines equivalent to Tier 4 may consist of Tier 3 engines retrofitted with diesel particulate filters and oxidation catalysts, selective catalytic reduction, or other equivalent NOx control equipment. Retrofitting cranes rated 200 hp or greater with PM and NOx control devices must occur before the start of construction. If cranes rated 200 hp or greater equipped with Tier 4 engines are not available or cannot be retrofitted with PM and NOx control devices, the facility operator shall use cranes rated 200 hp or greater equipped with Tier 3 or equivalent engines.

A-6 For off-road construction equipment rated 50 to 200 hp that will be operating for eight hours or more, the facility operator shall use equipment rated 50 to 200 hp equipped with Tier 4 or equivalent engines. Engines equivalent to Tier 4 may consist of Tier 3 engines retrofitted with diesel particulate filters and oxidation catalysts, selective catalytic reduction, or other equivalent NOx control equipment. Retrofitting equipment rated 50 to 200 hp with PM and NOx control devices must occur before the start of construction. If equipment rated 50 to 200 hp equipped with Tier 4 engines is not available or cannot be retrofitted with PM and NOx control devices, the facility operator shall use equipment rated 50 to 200 hp equipped with Tier 3 or equivalent engines.

## 3.2.6 CUMULATIVE IMPACTS

Pursuant to CEQA Guidelines §15130(a), "An EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in Section 15065(a)(3). Where a Lead Agency is examining a project with an incremental effect that is not 'cumulatively considerable,' a Lead Agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable." Further, CEQA Guidelines §15130(b) requires that an EIR's "discussion of cumulative impacts reflect the severity of the impacts [from a proposed project] and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone." The discussion should be guided by standards of practicality and reasonableness. Cumulative impacts are defined by CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines, §15355). Cumulative impacts are further described as follows:

1. "The individual effects may be changes resulting from a single project or a number of separate projects." (CEQA Guidelines §15355(a).

2. "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (CEQA Guidelines, §15355(b)).

3. "[A] cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR."-- (CEQA Guidelines, §15130(a)(1)).

### 3.2.6.1 Criteria Air Pollutants

#### 3.2.6.1.2 Operational Air Quality Impacts

As noted above, implementation of the Strategies in the West Oakland Community Action Plan by the Air District is not expected to generate significant adverse project-specific air quality impacts and is not expected to exceed the applicable significance thresholds (result in an increase in emissions). These thresholds represent the levels at which a project's individual emissions would result in a cumulatively considerable contribution to the Air District's existing air quality conditions for individual projects (BAAQMD, 2017a). As a result, air quality impacts from the proposed project are not considered to be cumulatively considerable pursuant to CEQA Guidelines §15064 (h)(1). As discussed above, the West Oakland Community Action Plan is expected to result in more emission reductions than increases. It is not possible to estimate all of those emission reductions at this point until specific information for the Strategies has been identified, appropriate engineering analyses have been completed and so forth. It is expected that the potential emissions increases would be offset with emission decreases.

As described in the EIR for the Clean Air Plan (BAAQMD, 2017), air quality within the Bay Area has improved since 1955 when the Air District was created and is projected to continue to improve. This improvement is mainly due to lower-polluting on-road motor vehicles, more stringent regulation of industrial sources, and the implementation of emission reduction strategies by the Air District. This trend towards cleaner air has occurred in spite of continued population growth. The Air District is in attainment of the State and federal ambient air quality standards for CO, $NO_2$, and $SO_2$.

However, the Bay Area is designated as a non-attainment area for the federal and state 8-hour ozone standard. The State 8-hour standard was exceeded on 6 days in 2017 in the Air District, most frequently in the Eastern part of the District (Livermore, Patterson Pass, and San Ramon) and the Santa Clara Valley (see Table 3.2-2). The federal 8-hour standard was also exceeded on 6 days in 2017. The Air District is unclassified for the federal 24-hour $PM_{10}$ standard and is non-attainment with the State 24-hour $PM_{10}$ standard. Since the District is not in attainment for the federal and state ozone standard, the state 24-hour $PM_{10}$ standard, and the federal 24-hour $PM_{2.5}$ standard, past projects and activities have contributed to the nonattainment air quality impacts that are cumulatively significant.

The 2017 Clean Air Plan contains numerous control measures that the District intends to impose to improve overall air quality in the District. Control measures in the 2017 Clean Air Plan contain a number of other control measures to control emissions from stationary sources. The 2017 Clean Air Plan is expected to result in overall reductions in ROG, NOx, SOx, and PM emissions, providing an air quality benefit (BAAQMD, 2017). As reported in the Final EIR for the 2017 Clean Air Plan, large emission reductions are expected from implementation of the 2017 Plan including reductions in ROG emissions of 1,596 tons/year; NOx emissions of 2,929 tons/year, SOx emissions of 2,590 tons/year, and $PM_{2.5}$ emissions of 503 tons/year (see Table 3.2-21 of the Final EIR, BAAQMD

2017). These emission reductions are expected to help the Bay Area come into compliance or attainment with the federal and state 8-hour ozone standard, the federal and state $PM_{10}$ standards, the federal 24-hour $PM_{2.5}$ standards, and the state 24-hour $PM_{2.5}$ standard, providing both air quality and public health benefits. Emission reductions from the 2017 Clean Air Plan, in conjunction with the Strategies in the West Oakland Community Plan, are expected to far outweigh any potential secondary emission increases associated with implementation of the Strategies in the West Oakland Community Action Plan, providing a beneficial impact on air quality and public health.

### 3.2.6.2 Toxic Air Contaminants

It was concluded for the analysis of TAC air quality impacts, that TAC emissions from the use of ammonia would be minor and less than significant. Because operational TAC emissions do not exceed the applicable cancer and non-cancer health risk significance thresholds, they are not considered to be cumulatively considerable (CEQA Guidelines §15064(h)(1)), and therefore are not expected to generate significant adverse cumulative cancer and non-cancer health risk impacts. In addition, reductions in TAC emissions would be expected due to implementation of the proposed project, (e.g., reduction in the use of diesel fuel and the emissions of diesel particulate matter), but those emission reductions and the related health risk benefits cannot be estimated at this time.

# CHAPTER 3.3

## ENERGY

Environmental Setting
Regulatory Setting
Existing Setting
Significance Criteria
Environmental Impacts
Mitigation Measures
Cumulative Energy Impacts

# 3.3 ENERGY

This subchapter of the EIR evaluates the potential energy impacts associated with implementation of the West Oakland Community Action Plan, which aims to reduce residents' exposure to diesel PM, fine particulate matter, and TACs.

As discussed in the Initial Study, in accordance with AB 617, the Community Action Plan was developed through monthly meetings with the West Oakland Steering Committee and provides strategies to reduce exposure to air pollution and related health effects in West Oakland. The Notice of Preparation and Initial Study (see Appendix A) evaluated the potential energy impacts associated with implementation of the Strategies in the Community Action Plan. The Notice of Preparation and Initial Study determined that some Strategies have the potential to increase electricity demand due to measures that encourage the use of zero emission mobile sources and provide shore power to ships. This subchapter evaluates the potential energy impacts that could result due to implementation of the West Oakland Community Action Plan.

## 3.3.1 ENVIRONMENTAL SETTING

Power plants in California provided approximately 70.65 percent of the total in-state electricity demand in 2017, of which 29.65 percent came from renewable sources such as biomass, solar, and wind power. The Pacific Northwest provided another 13.65 percent of total electricity demand and the remaining 15.69 percent was imported from the Southwest (CEC, 2019a). The total electricity used in California in 2017 was 292,039 gigawatts (GWh)[1].

The contribution between in-state and out-of-state power plants depends upon, among other factors, the precipitation that occurred in the previous year and the corresponding amount of hydroelectric power that is available. The installed capacity of the 1,520 in-state power plants [greater than 0.1 megawatts (MW)[2]] totaled 88,003 MW (CEC, 2019b). The Pittsburg Generating Station, located in Contra Costa County, is currently the only facility located within Air District jurisdiction that ranks within the top ten power generating facilities in California. Smaller power plants and cogeneration facilities are located throughout the Bay Area. Pacific Gas and Electric (PG&E) is the primary supplier of electricity to northern California, including the Bay Area.

When signed into law in 1996, the electricity market in California was restructured under Assembly Bill 1890 (AB 1890) (Brulte 1995). Restructuring involved decentralizing the generation, transmission, distribution and customer services, which had previously been integrated into individual, privately-owned utilities. The objective of restructuring was to increase competition in the power generation business, while increasing customer choice

[1] A gigawatt equals one billion ($10^9$) watts of electricity.
[2] A megawatt equals one million watts.

through the Power Exchange. Additionally, the goal was to release control by privately-owned utilities of their transmission lines to a central operator called the Independent System Operator (ISO).

AB 1890 states the Legislature's intention that the State's publicly-owned utilities voluntarily give control of their transmission facilities to the ISO, just as is required of the privately-owned utilities. However, changes instituted by AB 1890 do not apply to them to the same extent as the privately-owned utilities. Power plants within California supply most of California’s electricity demand while power plants from the Pacific Northwest, and power plants in the southwestern U.S. provide for California’s out-of-state needs. The majority of power generated in the Bay Area comes from plants located in Contra Costa County.

The Pittsburg Generating Station, Delta Energy Center, and Marsh Landing Generating Center are the three largest power plants within Bay Area, providing 1,029, 860, and 828 MW respectively and are fueled primarily by natural gas. Due to an explosion in January 2017, the Pittsburg Generating Station was shut down for the first half of 2017. It was partially restarted in June of 2017 to meet summer demand and then shut down again in October to finish repairs. The Pittsburg Generation Station repairs were completed in January 2018 (East Bay Times, 2018). There are five additional facilities that produce over 500 MW in the Bay Area; the Russel City Energy Company Facility in Alameda (625 MW), the Gateway Generating Station in Contra Costa (613 MW), the Los Medanos Energy Center in Contra Costa (594 MW), the Metcalf Energy Center in Santa Clara (566 MW), and the Shiloh Wind Power Plant in Solano (CEC, 2019b). Additionally, the Altamont Pass Wind Farm located in Alameda is capable of producing 576 MW of electricity. No other facilities within the Bay Area provide over 250 MW of power.

Local electricity distribution service is provided to customers within the Air District by privately-owned utilities such as PG&E. Many public-owned utilities, such as Alameda Power and Telecom, East Bay Municipal Utility District, Silicon Valley Power, and the Santa Clara Electric Department also provide service. PG&E is the largest electricity utility in the Bay Area, with a service area that covers all, or nearly all, of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties. PG&E provides over 90 percent of the total electricity demand in the Air District (CEC, 2015). ~~The City of Oakland operates three 55 MW fossil fuel plants that supplement PG&E’s electricity generation.~~

Table 3.3-1 shows the amount of electricity delivered to residential and non-residential entities in the counties in the Bay Area in 2017.

**TABLE 3.3-1**

**Bay Area Utility Electricity Consumption by County for 2017 (million kilowatt-hour – kWh)(1)**

| County | Non-Residential | Residential | Total |
|---|---|---|---|
| Alameda | 8,043 | 3,070 | 11,113 |
| Contra Costa | 6,809 | 2,969 | 9,778 |
| Marin | 718 | 677 | 1,395 |
| Napa | 685 | 380 | 1,065 |
| San Francisco | 4,221 | 1,519 | 5,740 |
| San Mateo | 2,805 | 1,562 | 4,367 |
| Santa Clara | 13,139 | 4,050 | 17,189 |
| Solano | 2,102 | 1,101 | 3,203 |
| Sonoma | 1,679 | 1,361 | 3,040 |
| | | Total Electricity Consumption: | 56,890 |

Source: CEC, 2019c – Electricity Consumption by County

(1) All usage expressed in millions of kilowatt-hour (kWh): kWh is the most commonly used unit of measure telling the amount of electricity consumed over time. It means one kilowatt (1000 watts) of electricity supplied for one hour.

There are no other major facilities listed as pending construction or under review on the California Energy Commission's "Status of All Projects" webpage (CEC, 2019d). Two smaller facilities are listed but are planned specifically to provide uninterrupted power for private data centers.

## 3.3.2 REGULATORY SETTING

### 3.3.2.1 Federal Regulations

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation (U.S. DOT), United States Department of Energy (U.S. DOE), and United States Environmental Protection Agency (U.S. EPA) are three agencies with substantial influence over energy policies and programs. Generally, federal agencies influence transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy related research and development projects, and through funding for transportation infrastructure projects.

**Energy Policy and Conservation Act, and CAFE Standards:** The Energy Policy and Conservation Act (EPCA) of 1975 established nationwide fuel economy standards in order to conserve oil. Pursuant to this Act, the National Highway Traffic and Safety Administration, part of the U.S. DOT, is responsible for revising existing fuel economy standards and establishing new vehicle fuel economy standards. The Corporate Average Fuel Economy (CAFE) program was established to determine vehicle manufacturer compliance with the government's fuel economy standards. Compliance with CAFÉ standards is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. The U.S. EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. The CAFE values are a weighted harmonic average of the EPA city and highway fuel economy test results. Based on information generated under the CAFE program, the U.S. Department of Transportation is authorized to assess penalties for noncompliance. Under the Energy Independence and Security Act of 2007 (described below), the CAFE standards were revised for the first time in 30 years.

**Energy Policy Act of 1992 (EPACT92):** EPACT92 is comprised of twenty-seven titles. It was passed by Congress and set goals, created mandates, and amended utility laws to increase clean energy use and improve overall energy efficiency in the United States. EPACT92 established regulations requiring certain federal, state, and alternative fuel provider fleets to build an inventory of alternative fuel vehicles. EPACT92 was amended several times in the Energy Conservation and Reauthorization Act of 1998 and in 2005 via the Energy Policy Act in 2005, which emphasized alternative fuel use and infrastructure development.

**Energy Policy Act of 2005:** The Energy Policy Act of 2005 addresses energy efficiency; renewable energy requirements; oil, natural gas and coal; alternative-fuel use; tribal energy, nuclear security; vehicles and vehicle fuels, hydropower and geothermal energy, and climate change technology. The Act provides revised annual energy reduction goals (two percent per year beginning in 2006), revised renewable energy purchase goals, federal procurement of Energy Star or Federal Energy Management Program-designated products, federal green building standards, and fuel cell vehicle and hydrogen energy system research and demonstration.

**Energy Independence and Security Act of 2007 (EISA):** The EISA of 2007 was signed into law on December 19, 2007. The objectives of the Act are to move the United States toward greater energy independence and security, increase the production of clean renewable fuels, protect consumers, increase the efficiency of products, buildings and vehicles, promote greenhouse gas research, improve the energy efficiency of the Federal government, and improve vehicle fuel economy.

The renewable fuel standard in EISA requires 36 billion gallons of ethanol per year by 2022, with corn-based ethanol limited to 15 billion gallons. The CAFE standard for light duty vehicles is 35 miles per gallon by 2020. EISA also specifies that vehicle attribute-based standards are to be developed separately for cars and light trucks. EISA creates a CAFE credit and transfer program among manufacturers and across a manufacturer's fleet. It allowed an extension through 2019 of the CAFE credits specified under the Alternative Motor Fuels Act. It established appliance energy efficiency standards for boilers, dehumidifiers, dishwashers, clothes washers, external power supplies, commercial walk-in coolers and freezers, federal buildings; lighting energy efficiency standards for general service incandescent lighting in 2012; and standards for industrial electric motor efficiency.

**Heavy-Duty National Program:** The Heavy-Duty National Program was adopted on August 9, 2011, to establish the first fuel efficiency requirements for medium- and heavy-duty vehicles beginning with the model year 2014.

### 3.3.2.2 State Regulations

On the state level, the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are two agencies with authority over different aspects of energy. The CPUC regulates privately-owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. The CEC collects and analyzes energy-related data; forecasts future energy needs; promotes energy efficient and conservation by setting appliance and building energy efficiency standards; supports energy research; develops renewable energy resources, promotes alternative and renewable transportation fuels and technologies; certifies thermal power plants 50 megawatts and larger; and plans for and directs state response to energy emergencies. Some of the more relevant federal and state transportation-energy-related laws and plans are discussed in the following subsections.

**California Building Energy Efficiency Standards (Title 24):** California established statewide building energy efficiency standards following legislative action. The legislation required the standards to be cost-effective based on the building life cycle and to include both prescriptive and performance-based approaches. The 2005 Building Energy Efficiency Standards were first adopted in November 2003, and took effect October 1, 2005. Subsequently the standards have undergone two updates, one in 2008 and one in 2013. The 2016 Standards went into effect on January 1, 2017 for new construction of, and additions and alterations to, residential and nonresidential buildings.

**California Green Building Standards Code (CALGreen):** CALGreen is a statewide regulatory code for all residential, commercial, hospital, and school buildings and includes both mandatory and voluntary components that can be adopted by local jurisdictions. CALGreen is intended to encourage more sustainable and environmentally-friendly building practices, require low emitting substances that do not cause harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. The five CALGreen categories include: (1) Planning and Design; (2) Energy Efficiency; (3) Water Efficiency and Conservation; (4) Material Conservation and Resource Efficiency; and (5) Environmental Quality. CALGreen became mandatory on January 1, 2011, for new residential and commercial construction.

**California Building Standards:** The California Building Standards Commission approved a standard that will require solar power on single-family and multi-family dwellings (including condos and apartment buildings up to three stores) built in California after 2020.

**AB 1007 – Alternative Fuels Plan:** The Alternative Fuels Plan adopted in 2007 by the State Energy Resources Conservation and Development Commission and CARB as required under state law, AB 1007 (Pavley 2005), recommends that the governor set targets on a gasoline gallon equivalent basis for use of ten different alternative motor fuels in the on-road and off-road sectors by nine percent by 2012, 11 percent by 2017, and 26 percent by 2022. These goals will require a dramatic expansion in the use of such fuels as electricity, compressed natural gas, hydrogen, renewable diesel, bio-diesel and ethanol in motor vehicles. Also built into the Alternative Fuels Plan is a multi-part strategy to develop hybrid and electric vehicle technologies; build the infrastructure to deliver the alternative fuels; increase the blending of more biofuels into gasoline and diesel; improve the fuel efficiency of vehicles; and reduce vehicle miles traveled by California motorists with more effective land use planning.

**California Solar Initiative:** On January 12, 2006, the CPUC approved the California Solar Initiative (CSI), which provided $2.2 billion in incentives between 2007 and 2016. CSI is part of the Go Solar California campaign, and builds on 10 years of state solar rebates offered to California's IOU territories: Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E.) The California Solar Initiative is overseen by the CPUC, and has a goal of installing 200,000 new solar hot water systems and approximately 1,940 MW of new solar generation capacity.

**AB 2514 – Energy Storage Systems:** AB 2514 (Skinner 2010) requires the CPUC to adopt an energy storage system procurement target, if determined to be appropriate, to be achieved by each load-serving entity by December 31, 2015, and a 2nd target to be achieved by December 31, 2020. The bill would require the governing board of a local publicly owned electric utility to adopt an energy storage system procurement target, if determined to be appropriate, to be achieved by the utility by December 31, 2016, and a second target to be achieved by December 31, 2021. The bill would require each load-serving entity and local publicly-owned electric utility to report certain information to the CPUC, for a load-serving entity, or to the Energy Commission, for a local publicly-owned electric utility.

**Executive Order B-16-2012:** Executive Order B-16-2012 establishes long-term targets of reaching 1.5 million zero-emission vehicles on California's roadways by 2025 and sets zero-emission vehicle purchasing requirements for State Government fleets. Executive Order B-16-2012 also sets a target for 2050 of a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels. In February 2013, an interagency working group developed the zero-emission vehicle Action Plan, which identifies specific strategies and actions that State agencies will take to meet the milestones of the Executive Order. The Zero-Emission Vehicle Action Plan states: "*Zero-Emission Vehicles are crucial to achieving the state's 2050 greenhouse gas goal of 80 percent emission reductions below 1990 levels, as well as meeting federal air quality standards. Achieving 1.5 million Zero-Emission Vehicles by 2025 is essential to advance the market and put the state on a path to meet these requirements.*"

**Renewables Portfolio Standard:** California's renewables portfolio standard (RPS) requires retail sellers of electricity to increase their procurement of eligible renewable energy resources by at least one percent per year so that 20 percent of their retail sales are procured from eligible renewable energy resources by 2017. If a seller falls short in a given year, they must procure more renewables in succeeding years to make up the shortfall. Once a retail seller reaches 20 percent, they need not increase their procurement in succeeding years. RPS was enacted via SB 1078 (Sher 2002), signed in September 2002. The CEC and the CPUC are jointly implementing the standard. In 2006, RPS was modified by SB 107 (Simitan 2006) to require retail sellers of electricity to reach the 20 percent renewables goal by 2010. In 2011, RPS was further modified by SB 2 (Atkins 2017) to require retailers to reach 33 percent renewable energy by 2020.

**California SB 350:** SB 350 (DeLeon 2015) was approved on October 7, 2015. SB 350 will: (1) increase the standards of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) require the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provide for the evolution of the Independent System Operator (ISO) into a regional organization; and (4) require the state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. Among other objectives, the Legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

**Executive Order B-18-12:** Executive Order B-18-12 was signed into law on April 25, 2012 directing state agencies to reduce their grid-based energy purchases by at least 20 percent by 2018, as compared to a 2003 baseline. Pursuant to Executive Order B-18-12, all new state buildings and major renovations beginning design after 2025 shall be constructed as Zero Net Energy facilities with an interim target for 50 percent of new facilities beginning design after 2020 to be Zero Net Energy. State agencies shall also take measures toward achieving Zero Net Energy for 50 percent of the square footage of existing state-owned building area by 2025 and reduce water use by 20 percent by 2020. Additionally, the following measures relevant to energy are required:

1. Any proposed new or major renovation of state buildings larger than 10,000 square feet shall use clean, on-site power generation, such as solar photovoltaic, solar thermal and wind power generation, and clean back-up power supplies, if economically feasible;

2. New or major renovated state buildings and build-to-suit leases larger than 10,000 square feet shall obtain LEED "Silver" certification or higher, using the applicable version of LEED;

3. New and existing buildings shall incorporate building commissioning to facilitate improved and efficient building operation; and,

4. State agencies shall identify and pursue opportunities to provide electric vehicle charging stations, and accommodate future charging infrastructure demand, at employee parking facilities in new and existing buildings.

### 3.3.2.3 Local Regulations

The U.S. DOE Clean Cities Program promotes voluntary, locally based government/industry partnerships for the purpose of expanding the use of alternatives to gasoline and diesel fuel by accelerating the deployment of alternative fuel vehicles and building a local alternative fuel vehicle refueling infrastructure. The mission of the Clean Cities Program is to advance the nation's energy security by supporting local decisions to adopt practices that contribute to the reduction of petroleum consumption. Clean Cities carries out this mission through a network of more than 80 volunteer coalitions, which develop public/private partnerships to promote alternative fuels and vehicles, fuel blends, fuel economy, hybrid vehicles, and idle reduction.

**City of Oakland Sustainability Programs:** The City of Oakland's sustainability programs are administered under the Oakland Sustainability Community Development Initiative, which was created in 1998 under Ordinance 74675 CMS. The City's sustainability programs range from the encouragement of green building practices to the replacement of heavy-duty diesel trucks. Oakland has funded a Phase I feasibility study and Phase II implementation plan to become a community choice aggregator, which would allow the City to purchase electricity on behalf of its energy users. Potential benefits of becoming an aggregator include increase use of renewable energy sources to meet Oakland's energy needs and a reduction in electricity costs.

**City of Oakland Green Building Ordinance and Sustainable Green Building Requirements for Private Development:** The City of Oakland adopted a Civic Green Building Ordinance in May 2005, requiring City-owned and occupied buildings to meet specific green building standards set by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system. In October 2010, the City adopted mandatory green building standards for private development projects. The intent of the mandatory green building standards is to integrate environmentally sustainable strategies in building construction and landscapes in Oakland.

**City of Oakland Energy and Climate Action Plan**: The Oakland Energy and Climate Action Plan (ECAP) was adopted on December 4, 2012. The purpose of the ECAP is to identify and prioritize actions the City of Oakland can take to reduce energy consumption and GHG emissions. The ECAP recommends GHG reduction actions and establishes a framework for coordinating implementation, as well as monitoring and reporting on progress.

The primary sources of Oakland's GHG emissions are transportation and land use, building energy use, and material consumption and waste. Oakland approved a preliminary GHG reduction target for the year 2020 of 36 percent below 2005 levels. The ECAP recommends over 150 actions to be implemented over a ten-year period that would enable the City of Oakland to achieve a 36 percent reduction in GHG emissions. Implementation of renewable energy and energy efficiency measures include measures to reduce vehicle miles traveled annually by 20 percent, electricity consumption by 32 percent and natural gas consumption by 14 percent. These measures include the adoption of a green building ordinance for private development, the use of property-based financing for alternative energy systems, and advancing the use of transit. The ECAP was updated in 2018 to provide updates to the City's actions, but there were no changes to the GHG reduction goals.[3]

### 3.3.3 SIGNIFICANCE CRITERIA

The impacts to energy will be considered significant if any of the following criteria are met:

- The project uses energy resources in a wasteful, inefficient, or unnecessary manner.
- The project conflicts with or obstructs a state or local plan for renewable energy or energy efficiency.

### 3.3.4 EVALUATION OF ENERGY IMPACTS

As discussed previously, the Notice of Preparation and Initial Study (see Appendix A) found that the implementation of the West Oakland Community Action Plan could result in energy impacts from implementing certain of the Strategies.

It is expected that the direct effects of the West Oakland Community Action Plan would be reductions in criteria pollutant and TAC emissions through the implementation of Strategies. Of the Strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of zero emissions mobile sources (trucks, buses, locomotives), and provide shore power for ships. Implementation of these types of Strategies would not be expected to use energy in a wasteful, inefficient or unnecessary manner, or conflict with an energy conservation plan. However, Strategies that encourage zero emission mobile sources would increase electricity use, potentially requiring additional electricity or energy infrastructure. As such, the potential energy impacts from the implementation of Strategies that may increase electricity usage under

[3] https://www.oaklandca.gov/documents/energy-and-climate-action-plan-ecap-1

the West Oakland Community Action Plan are analyzed herein. The Strategies that may have potential energy impacts are summarized in Table 3.3-2.

**TABLE 3.3-2**

**Strategies with Potential Energy Impacts**

| Strategy # | Description | Control Methodology | Potential Energy Impacts |
|---|---|---|---|
| 14 | Loans to install energy storage systems to replace stationary emission sources | Electrification of sources | Increased demand for electricity |
| ~~36~~ 41 | Financial incentives for fueling infrastructure, and for low and zero-emission equipment | Electrification of sources | Increased demand for electricity |
| ~~43~~ 48 | Up to $7 million per year to replace autos through the Vehicle Buy Back Program and $4 million per year through the Clean Cars for All programs | Electrification of vehicles | Increased demand for electricity |
| ~~44~~ 49 | Financial incentives to replace box and yard trucks with zero-emission trucks | Electrification of trucks | Increased demand for electricity |
| ~~48~~ 53 | Financial incentives to replace long-haul diesel trucks with zero-emission | Electrification of trucks | Increased demand for electricity |
| ~~49~~ 54 | Up to $1 million to purchase cleaner electric lawn/garden equipment, battery electric Transportation Refrigeration Units, and cargo-handling equipment | Electrification of equipment | Increased demand for electricity |
| ~~61~~ 66 | Evaluate the feasibility of installing a shore power or bonnet system to capture vessel emissions at Schnitzer Steel | Use of electricity to shore power for use on marine vessels | Potential increase in electricity use |

Because of the need for ever more stringent emission control regulations to achieve all ambient air quality standards, electricity is becoming more important as an energy source to reduce emissions in a number of economic sectors, especially mobile sources. With regard to some of the West Oakland Strategies, assumptions have been made regarding future electricity demand. As shown in Table 3.3-2, strategies would increase future demand for electricity to achieve the Strategies' targets of zero emissions from on-road and off-road vehicles.

As discussed in Section 3.2.4.2.2 of this EIR, increasing penetration of zero and near-zero vehicles would increase future demand for electricity in the Bay Area and other areas of California that provide electricity to the Bay Area. Potential increased electricity demand from Strategies that the Air District may implement are shown in Table 3.3-3.

## TABLE 3.3-3

## Estimated Electricity Increases Associated with the West Oakland Community Action Plan (GWh)

| CONTROL MEASURE | 2017[(a)] | 2021 | 2023 |
|---|---|---|---|
| Baseline Electricity Consumption in Alameda Co. | 11.13 | n/a | n/a |
| Strategy ~~#61~~ #66 – Installation of shore power to reduce emissions from auxiliary engine on vessels at Schnitzer Steel[(b)] | n/a | 0.42 | 0.42 |
| Strategy ~~#43~~ #48 – offer up to $4 million per year to replace older vehicles through the Cleaner Cars for Everyone program (estimated 40-50 vehicles)[(c)] | n/a | 0.20 – 0.26 | 0.6 – 0.8 |
| **Total Electrical Use for Mobile Source Measures** | | **0.62 – 0.68** | **1.0 – 1.2** |

(a) See Table 3.3-1 for electricity use in 2017.
(b) See Appendix B for electricity estimates.
(c) Based on 15,000 miles/year and 0.34 kWh/mile.

As shown in Table 3.3-3, the potential increased demand for electricity to implement Strategies in the Plan that would electrify on-road and off-road mobile sources is expected to be less than one gigawatt-hours (GWh) (0.6-0.7 GWh) in the year 2021. Assuming Strategy ~~#43~~ #48 is implemented through 2023, the increase would be approximately one GWh in 2023 (see Table 3.3-3 for further details).

Electricity to Alameda County, including West Oakland, is supplied by PG&E. PG&E has prepared an Integrated Resources Plan (IRP) that outlines how the utility will shape its future energy portfolio to meet California's clean energy goals in a reliable and cost-effect manner. As part of the IRP (PG&E, 2018), PG&E has forecasted the potential load impacts on electricity demand that would be expected to occur from increased charging of electric vehicles in the future. PG&E has estimated that meeting the state's goal of five million electric vehicles (or two million within PG&E's service territory) by 2030 would increase the current electrical demand for electric vehicles of approximately 160 GWh in 2018 to 5,982 GWh in 2030 (see Table 3.3-4). PG&E plans to add resources to supply sufficient electricity to its customers for electric vehicles as well as from population growth. Most of the increases will come for additional bioenergy, solar, and wind resources due to the RPS requirements.

**TABLE 3.3-4**

**PG&E Energy Sales Forecast (GWh)**

| Description | 2018 | 2022 | 2026 | 2030 |
|---|---|---|---|---|
| PG&E Net Gross System Usage | 87,475 | 102,149 | 109,941 | 116,897 |
| Energy Efficiency | (4,147) | (8,894) | (15,930) | (22,573) |
| Distributed Generation | (2,614) | (13,662) | (17,243) | (20,290) |
| Solar-PV | (2,395) | (10,012) | (13,487) | (16,459) |
| Non-PV | (220) | (3,650) | (3,756) | (3,831) |
| Electric Vehicles | 160 | 2,353 | 4,205 | 5,982 |
| PG&E Net System Sales | 80,774 | 81,946 | 80,973 | 80,016 |

Note: Negative numbers are reductions.
Source: PG&E, 2018

While the electricity use associated with electric vehicles is expected to increase, PG&E predicts that its overall sales in electricity would remain the same or increase slightly (up to eight percent). The expected increases in energy efficiency and solar photovoltaic production are expected to offset a majority of the growth in electric vehicles, as well as economic and population driven growth (PG&E, 2018).

The potential increase in electric vehicles under the Strategies in the West Oakland Community Action Plan are within the range of vehicles that PG&E has forecast for its service area of two million vehicles. In addition to the vehicles, electricity may also be supplied to Schnitzer Steel to power marine vessels while at berth. The electricity to power a marine vessel is estimated to be 0.42 GWh, which is a very small increase in overall electricity use (less than 0.0005 percent). Therefore, implementation of the Strategies in the West Oakland Community Action Plan is not expected to result in significant impacts to energy/electricity, over those already contemplated in the PG&E service areas.

Further, some of the Strategies in the West Oakland Community Action Plan would encourage the use of electricity to reduce emissions from mobile and stationary sources. As these Strategies would provide environmental and health benefits, the energy use associated with the Strategies would not be a wasteful, inefficient or unnecessary use of energy resources.

As discussed in Section 3.3.2.2, electricity providers are moving towards compliance with California's RPS to generate 50 percent of their electricity from renewable energy resources by 2030. Therefore, modifications to existing electricity generating facilities and new generating facilities are expected to be implemented in the near future to comply with state RPS regulations. The Strategies that would convert mobile sources to zero-emission sources would further the goals of a number of state programs and plans including:

1. Executive Order B-16-2012, which established a target of reaching 1.5 million zero-emission vehicles on California's roadways by 2025 to help meet federal air quality standards.

2. The Air District's 2017 Spare the Air/Cool the Climate Plan: A Blueprint for Clean Air and Climate Protection in the Bay Area, which included a number of transportation control measures, several of which would encourage the use of zero-emission or near zero-emission mobile sources.

3. The City of Oakland's Sustainability Programs, which encourage the replacement of heavy-duty diesel trucks.

It should also be noted that in addition to Strategies that may result in an increase in electricity, the West Oakland Community Action Plan also includes a number of measures that are aimed at energy efficiency and are expected to result in decreases in electricity use including: Strategy ~~#70~~ #75 (includes policies or grants for building energy efficiency upgrades to reduce infiltration of pollutants at sensitive receptors); and Strategy ~~#81~~ #86 (examine weatherization/energy efficiency and renewable energy services). The method in which these Strategies would be implemented is speculative and the potential energy benefits are unknown, so no electricity reduction is assumed at this time.

The West Oakland Community Action Plan is designed to reduce PM and TAC emissions and reduce exposure to TACs. The Plan has the potential to create impacts on electricity demand; however, the existing and future air quality, greenhouse gas rules and regulations, and RPS requirements are expected to minimize the need for increased electrical generation. Furthermore, electricity providers are moving towards compliance with California's RPS and generating 50 percent of their electricity from renewable energy resources by 2030. Therefore, the Plan impacts on electricity demand are less than significant.

The Strategies in the West Oakland Community Action Plan would further the existing State and local plans to encourage electrification of mobile and stationary sources, as well as increase the energy efficiency of a number of sources. Therefore, the Plan would not obstruct a state or local plan for renewable energy or energy efficiency. Instead the Plan would help to further to goals of a number of state and local plans for renewable energy and energy efficiency.

### 3.3.5 MITIGATION MEASURES

The potential increase in electricity associated with the West Oakland Community Action Plan is expected to be a small percentage of the existing electrical demand and is not expected to exceed the current capacity of the electric utilities in the Bay Area or create significant impacts on regional electricity supplies or on requirements for additional electricity. The Plan impacts on electricity supply are less than significant.

CEQA requires mitigation measures to be implemented to avoid or minimize any significant impacts. As no significant energy impacts have been identified, no mitigation measures to reduce or avoid energy impacts are required or proposed for the Plan.

### 3.3.6 CUMULATIVE ENERGY IMPACTS

In addition to evaluating whether any action the Air District may take in implementing the proposed Plan will cause significant energy impacts by itself, the EIR must also evaluate whether any District action may contribute to significant cumulative energy impacts caused by other existing and reasonably foreseeable future activities. Specifically, CEQA Guidelines Section 15064(h) requires an evaluation of whether the District's implementation of the proposed Plan will result in any "cumulatively considerable" contribution to an existing (or reasonably foreseeable future) significant energy impact. The geographical location for the cumulative analysis for electricity is the PG&E service area.

#### 3.3.6.1 Impacts of Past, Present and Reasonably Foreseeable Future Projects

As described in Section 3.3.1, the Bay Area has sufficient electricity supplies. As discussed in Section 3.3.2.2, electricity providers are moving towards compliance with California's RPS to generate 50 percent of their electricity from renewable energy resources by 2030. Therefore, modifications to existing electricity generating facilities and new generating facilities are expected to be implemented in the near future to comply with state RPS regulations, as well as improved energy efficiency requirements. California is moving forward with a number of programs, plans, and requirements that impact energy/electricity requirements and increase energy efficiency including:

1. California Building Standards to require solar power on single-family and multi-family dwellings built in California after 2020.

2. RPS requires retail sellers of electricity to increase their procurement of eligible renewable energy resources to 33 percent renewable energy by 2020 and 50 percent by 2030.

3. Executive Order B-18-12 requires all new state buildings and major renovations beginning design after 2025 to be constructed as zero net energy facilities with an interim target for 50 percent of new facilities beginning design after 2020 to be zero net energy. The Order also encourages the use of on-site power generation (e.g., solar photovoltaic), if feasible.

4. Executive Order B-16-2012 which established a target of reaching 1.5 million zero emission vehicles on California's roadways by 2025 to help meet federal air quality standards.

5. The Air District's 2017 Spare the Air/Cool the Climate Plan: A Blueprint for Clean Air and Climate Protection in the Bay Area, which included a number of transportation control measures, several of which would encourage the use of zero emission or near zero-emission mobile sources.

6. The City of Oakland's Green Building Ordinance and Sustainable Green Building Requirements adopted mandatory green building standards for public and private developments and encourage sustainable building strategies.

7. City of Oakland's Energy and Climate Action Plan prioritizes actions the City can take to reduce energy consumption and GHG emissions, including renewable energy and energy efficiency measures to reduce vehicle miles travels by 20 percent annually, electricity consumption by 32 percent, and natural gas consumption by 14 percent.

The overall impact of these measures are expected to be a reduction in electricity use, an increase in the use of renewable energy sources, and a decrease in GHG emissions, as well as criteria pollutant emissions.

### 3.3.6.2 Contribution of the Proposed Project

The Plan is not expected to exceed the current capacity of the electric utilities in the Bay Area or create significant impacts on regional electricity supplies or on requirements for additional electricity. The Plan impacts on electricity supply are less than significant. Therefore, energy impacts associated with the Plan are not cumulatively significant and would not make a considerable contribution to a cumulatively significant energy impact. The Air District concludes that the Plan will not result in any significant energy impacts, individually or cumulatively, that must be addressed in this EIR.

The Strategies in the West Oakland Community Action Plan would further the existing State and local plans to encourage electrification of mobile and stationary sources, as well as increase the energy efficiency of a number of sources, providing a beneficial impact on energy resources.

CEQA requires mitigation measures to be implemented to avoid or minimize any significant impacts. As no significant cumulative energy impacts have been identified, no mitigation measures to reduce or avoid energy impacts are proposed for the Plan.

# CHAPTER 3.4

## GREENHOUSE GAS EMISSIONS


Introduction
Environmental Setting
Regulatory Setting
Significance Criteria
Greenhouse Gas Impacts

# 3.4 GREENHOUSE GAS EMISSIONS

This subchapter of the EIR evaluates the potential greenhouse gas (GHG) impacts associated with implementation of the West Oakland Community Action Plan, which aims to reduce residents' exposure to diesel PM, fine particulate matter, and TACs.

As discussed in the Initial Study, in accordance with AB 617, the Community Action Plan was developed through monthly meetings with the West Oakland Steering Committee and provides strategies to reduce exposure to air pollution and related health effects in West Oakland. The Notice of Preparation and Initial Study (see Appendix A) evaluated the potential GHG impacts associated with implementation of the control strategies in the Community Action Plan. The Notice of Preparation and Initial Study determined that some control measures have the potential to require modifications to facilities that would require the generation of additional electricity to operate mobile sources, including vehicles, trucks, locomotives, and ships, which could generate additional GHG impact. This subchapter evaluates the potential GHG materials impacts that could result due to implementation of the West Oakland Community Action Plan.

## 3.4.1 INTRODUCTION

Global climate change refers to changes in average climatic conditions on the earth as a whole, including temperature, wind patterns, precipitation and storms. Global warming, a related concept, is the observed increase in the average temperature of the earth's surface and atmosphere. One identified cause of global warming is an increase of greenhouse gases (GHGs) in the atmosphere. The six major GHGs identified by the Kyoto Protocol are carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), sulfur hexafluoride ($SF_6$), haloalkanes (HFCs), and perfluorocarbons (PFCs). Although not included among the Kyoto Six GHGs, black carbon, a key component of fine PM, has been identified as a potent agent of climate change. Black carbon is the third largest GHG in the Bay Area on a carbon dioxide equivalence ($CO_2e$) basis. Diesel engines and wood-burning are key sources of black carbon in the Bay Area. It is also important to reduce emissions of "super-GHGs" (with very high global warming potential) such as methane, black carbon, and fluorinated gases, in addition to carbon dioxide. The Air Resources Board refers to these compounds as short-lived climate pollutants (SLCPs).

The GHGs absorb longwave radiant energy reflected by the earth, which warms the atmosphere. GHGs also radiate longwave radiation both upward to space and back down toward the surface of the earth. The downward part of this longwave radiation absorbed by the atmosphere is known as the "greenhouse effect."

While the cumulative impact of GHG emissions is global, the geographic scope of this cumulative impact analysis is the State of California. The analysis of GHG emissions is a different analysis than for criteria pollutants for the following reasons. For criteria pollutants, significance thresholds are based on daily emissions because attainment or non-attainment is typically based on daily exceedances of applicable ambient air quality standards. Further, the ambient air quality standards for criteria pollutants are based on relatively short-term exposure effects to human health, e.g., one-hour and eight-hour. Using the half-life of $CO_2$, 100 years, for example, the effects of GHGs are longer-term, affecting the global climate over a relatively long time frame.

It is the increased accumulation of GHGs in the atmosphere that may result in global climate change. Climate change involves complex interactions and changing likelihoods of diverse impacts. Due to the complexity of conditions and interactions affecting global climate change, it is not possible to predict the specific impact, if any, attributable to GHG emissions associated with a single project, which is why GHG emission impacts are considered to be a cumulative impact.

Emissions of GHGs, especially combustion of fossil fuels for energy, transportation, and manufacturing, contribute to warming of the atmosphere that may cause rapid changes in the way a number different types of ecosystems typically function. For example, in some regions, changing precipitation or acceleration of melting snow and ice are altering hydrological systems, affecting water resources in terms of quantity and quality. Melting glaciers and polar ice sheets are expected to contribute to sea level rise. Rising sea levels are expected to contribute to an increase in coastal flooding events.

A warmer atmosphere could also contribute to chemical reactions increasing the formation of ground-level ozone. Ozone is a well-known lung irritant and a major trigger of respiratory problems like asthma attacks. Local changes in temperature and rainfall could alter the distribution of some waterborne illnesses and disease vectors. For example, warmer freshwater makes it easier for pathogens to grow and contaminate drinking water.

Potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (i.e., heat rash and heat stroke). In addition, climate sensitive diseases may increase, such as those spread by mosquitoes and other disease carrying insects. Those diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture, which would have negative consequences. Drought in some areas may increase, which would decrease water and food availability. Global climate change may also exacerbate air quality problems from increased frequency of exceeding criteria pollutant ambient air quality standards.

The Air District's Clean Air Plan, *Spare the Air, Cool the Climate* (2017), provides scientific data that California and the Bay Area is already experiencing a wide range of climate change impacts, which are predicted to intensify in the future negatively affecting natural systems, infrastructure, agriculture, air quality, and human health. The Air District's data and modeling shows the following:

1. Higher temperatures produce more high ozone days
2. Higher temperatures produce more pollution from power plants and vehicles
3. Changes in air mixing and flow can increase pollution levels
4. Higher temperatures and drought are fueling wildfires
5. Climate change will have non-air quality impacts on public health:
    - Heat-Related illnesses and death will increase
    - Urban heat island impacts will grow
    - Higher temperatures will increase vector-borne diseases
    - Other public health impacts from higher temperatures include worsening of allergy seasons, asthma, and other respiratory and cardiovascular diseases.

## 3.4.2 ENVIRONMENTAL SETTING

There are dozens of GHGs, but a subset of six of these gases has been identified by the Kyoto Protocol (plus black carbon ~~black~~) as the primary agents of climate change:

**Carbon Dioxide** ($CO_2$) is released to the atmosphere when fossil fuels (oil, gasoline, diesel, natural gas, and coal), solid waste, and wood or wood products are burned.

**Methane** ($CH_4$) is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from the decomposition of organic waste in municipal solid waste landfills and the raising of livestock.

**Nitrous oxide** ($N_2O$) is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels.

**Hydrofluorocarbons** (HFCs), **perfluorocarbons** (PFCs), and **sulfur hexafluoride** ($SF_6$), are generated by a variety of industrial processes. Emissions of these fluorinated gases are small on a mass basis, but they are potent agents of climate change on a per unit basis.

**Black Carbon**: Although not included among the Kyoto Six GHGs, black carbon is a key component of fine particulate matter and has been identified as a potent agent of climate change. Black carbon is the third largest contributor to climate change ~~GHG~~ in the Bay Area on a $CO_2$-equivalent basis. Diesel engines and wood-burning are key sources of black carbon in the Bay Area. Since exposure to fine PM has a wide range of health impacts, reducing emissions of black carbon will provide important public health co-benefits.

Table 3.4-1 shows atmospheric lifespan, 20-year and 100-year GWP values, and key emission sources for GHGs, which are also addressed in the 2017 Clean Air Plan.

**TABLE 3.4-1**

**Greenhouse Gases and Global Warming Potential**

| Greenhouse Gas | Atmospheric Lifespan | GWP * (20-year timeframe) | GWP * (100-year timeframe) | Key Emissions Sources |
|---|---|---|---|---|
| Carbon dioxide ($CO_2$) | 20-200 years | 1 | 1 | Fossil fuel combustion |
| Nitrous oxide ($N_2O$) | 114 years | 268 | 298 | Motor vehicles, agriculture, water treatment, composting |
| Methane ($CH_4$) | 12 years | 86 | 34 | Natural gas production & distribution, solid waste disposal, ranching, dairies |
| Hydrofluorocarbons (HFCs) | 1.5 to 264 years | 506 to 6,940 | 138 to 8,060 | Refrigeration, air conditioning |
| Perfluorocarbons (PFCs) | 3,000 years or more | 6,500 | 6,500 | Semiconductor manufacturing |
| Sulfur Hexafluoride ($SF_6$) | 3,200 years | 17,500 | 23,500 | Electricity grid losses |
| Black Carbon** | Days to weeks | 3,235 | 900 | Diesel engines, wood-burning |

* The GWP values in Table 3.3-1 are taken from the IPCC 5th Assessment Report (AR5), with the exception of black carbon.
** The black carbon values are based on from US EPA report on black carbon:
https://www3.epa.gov/blackcarbon/2012report/Chapter2.pdf

An emissions inventory is a detailed estimate of the amount of air pollutants discharged into the atmosphere of a given area by various emission sources during a specific time period. In 2014, total GHG emissions in the State of California were an estimated 441.5 million metric tons of $CO_2$ equivalent ($MMTCO_2e$), a decrease of 3.51 $MMTCO_2e$ compared to 2010. Fuel combustion activities (including energy industries, manufacturing and construction, transportation and other sectors) accounted for approximately 82 percent of the GHGs emitted in the State. GHG emissions from transportation account for about 36 percent of the total GHG emissions in the State, followed by energy industries (e.g., electric plants) with 32 percent of the total (CARB, 2016).

Table 3.4-2 presents the GHG emission inventory by major source categories in calendar year 2015, as identified by the Air District. Transportation sources generate approximately 40 percent of the total GHG emissions in the District. The remaining 60 percent of the total District GHG emissions are from stationary and area sources.

**TABLE 3.4-2**

**2015 BAAQMD Greenhouse Gas Emission Inventory (metric tons of $CO_2e$)**

| Source Category | $CO_2$, $CH_4$, $N_2O$, HFC/PFC, SF6 | Black Carbon | Total Emissions ($CO_2e$) |
|---|---|---|---|
| **Transportation** | **35,040,000** | **770,000** | **35,810,000** |
| On-road | 30,480,000 | 310,000 | 30,790,000 |
| Off-road | 4,560,000 | 460,000 | 5,020,000 |
| **Electricity/Co-Generation** | **15,790,000** | **130,000** | **15,920,000** |
| Co-Generation | 6,790,000 | 90,000 | 6,880,000 |
| Electricity Generation | 6,210,000 | 40,000 | 6,250,000 |
| Electricity Imports | 2,790,000 | - | 2,790,000 |
| **Buildings** | **9,870,000** | **400,000** | **10,270,000** |
| Residential Fuel Usage | 6,460,000 | 220,000 | 6,680,000 |
| Commercial Fuel Usage | 3,410,000 | 180,000 | 3,590,000 |
| **Stationary Sources** | **20,840,000** | **340,000** | **21,180,000** |
| Oil Refineries | 14,240,000 | 210,000 | 14,450,000 |
| General Fuel Usage | 5,880,000 | 130,000 | 6,010,000 |
| Fugitive/Process Emissions | 720,000 | 4,000 | 724,000 |
| **Waste Management** | **2,480,000** | **23,000** | **2,503,000** |
| Landfills | 2,050,000 | 22,000 | 2,072,000 |
| Composting/POTWs | 430,000 | 1,000 | 431,000 |
| **High-GWP Gases** | **2,790,000** | **-** | **2,790,000** |
| HFCs and PFCs | 2,740,000 | - | 2,740,000 |
| SF6 | 50,000 | - | 50,000 |
| **Agriculture** | **1,180,000** | **170,000** | **1,350,000** |
| Agricultural Equipment | 180,000 | 43,000 | 223,000 |
| Animal Waste | 720,000 | 16,000 | 736,000 |
| Soil Management | 270,000 | 1,000 | 271,000 |
| Biomass Burning | 10,000 | 110,000 | 120,000 |
| **Total Emissions** | **87,990,000** | **1,833,000** | **89,823,000** |

Source: BAAQMD, 2016

The emission inventory in Table 3.4-2 focuses on GHG emissions projections due to human activities only, and compiles emission estimates that result from industrial, commercial, transportation, domestic, forestry, and agriculture activities in the San Francisco Bay Area. The GHG emission inventory reports direct emissions generated from sources within the District. The report does not include indirect emissions, for example, a source using electricity has no direct emissions because emissions are emitted at the power plants. Emissions of $CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, and $SF_6$ are estimated using the most current activity and emission factor data from various sources. Emission factor data were obtained from the U.S. Department of Energy's (DOE's) Energy Information Administration (EIA), the CEC, and CARB.

Under "business as usual" conditions, GHG emissions are expected to grow in the future due to population growth and economic expansion. Table 3.4-3 shows emissions trends by major sources for the period 1990 to 2020. The long term GHG emissions trends are expected to go upwards by approximately 0.5 percent per year in the absence policy changes. Year-to-year fluctuation in emissions trends are due to variation in economic activity and the fraction of electric power generation in this region (BAAQMD, 2015).

**TABLE 3.4-3**

**Bay Area Emission Trends by Major Sources**
**(Million metric Tons $CO_2$e)**

| Category | 1990 | 2008 | 2011 | 2014 | 2017 | 2020 |
|---|---|---|---|---|---|---|
| Transportation | 28.6 | 34.8 | 34.3 | 33.9 | 32.5 | 30.4 |
| Industry/Commercial | 21 | 28.9 | 31 | 32.6 | 34.3 | 36 |
| Electricity/Co-Gen. | 8.4 | 13.9 | 12.1 | 12.9 | 12.6 | 12.3 |
| Residential Fuel | 7 | 6.5 | 6.6 | 6.7 | 6.8 | 6.9 |
| Off-Road Equipment | 0.9 | 1.4 | 1.3 | 1.3 | 1.4 | 1.3 |
| Agriculture | 1.2 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Total | 67.1 | 86.8 | 86.6 | 88.7 | 88.8 | 88.2 |

Source: Bay Area Emission Inventory Summary Report: Greenhouse Gases. (BAAQMD, 2015)

In June 2006 the City of Oakland, along with 10 other local governments in Alameda County, committed to becoming a member of Local Governments for Sustainability (ICLEI) and participating in the Alameda County Climate Protection Project. In December 2006, the City of Oakland completed their Baseline Greenhouse Gas Emissions Inventory Report to determine the community-wide levels of GHG emissions that the City of Oakland emitted in its base year (2005).

Subsequently, the City of Oakland has completed a Draft Energy and Climate Action Plan, which includes an updated analysis of community-wide emissions. As shown in Table 3.4-4, Oakland emitted approximately 3.4 million metric tons of $CO_2$e in 2005 from all areas sources and highway transportation sources. Of these emissions, transportation generated the most emissions (51 percent), following by building energy use (37 percent), other stationary sources (7 percent), and methane from solid waste landfills (four percent) (City of Oakland, 2014).

**TABLE 3.4-4**

**Oakland Estimated GHG Emissions**

| GHG Emission Source | $CO_2e$ (metric tons) | Percent of Total |
|---|---|---|
| Non-Highway Transportation | 759,883 | 22 |
| Highway Transportation | 1,006,911 | 29 |
| Mobile Sources (Port of Oakland) | 211,910 | 6 |
| Commercial/Industrial Electricity | 320,212 | 9 |
| Commercial/Industrial Natural Gas | 285,365 | 8 |
| Residential Electricity | 150,105 | 4 |
| Residential Natural Gas | 346,339 | 10 |
| Other Stationary Sources | 226,900 | 7 |
| Landfill Methane from Solid Waste | 126,361 | 4 |
| **TOTAL:** | **3,433,986** | **100** |

Source: City of Oakland, 2014

## 3.4.3 REGULATORY SETTING

### 3.4.3.1 Federal Regulations

**Greenhouse Gas Endangerment Findings:** On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the CAA. The Endangerment Finding stated that $CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, and $SF_6$ taken in combination endanger both the public health and the public welfare of current and future generations. The Cause or Contribute Finding stated that the combined emissions from motor vehicles and motor vehicle engines contribute to the greenhouse gas air pollution that endangers public health and welfare. These findings were a prerequisite for implementing GHG standards for vehicles. The U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) finalized emission standards for light-duty vehicles in May 2010 and for heavy-duty vehicles in August of 2011.

**Renewable Fuel Standard (RFS):** The RFS program was established under the Energy Policy Act (EPAct) of 2005, and required 7.5 billion gallons of renewable-fuel to be blended into gasoline by 2012. Under the Energy Independence and Security Act (EISA) of 2007, the RFS program was expanded to include diesel, required the volume of renewable fuel blended into transportation fuel be increased from nine billion gallons in 2008 to 36 billion gallons by 2022, established new categories of renewable fuel and required the U.S. EPA to apply lifecycle GHG performance threshold standards so that each category of renewable fuel emits fewer greenhouse gases than the petroleum fuel it replaces. The RFS is expected to reduce greenhouse gas emissions by 138 million metric tons, about the annual emissions of 27 million passenger vehicles, replacing about seven percent of expected annual diesel consumption and decreasing oil imports by $41.5 billion.

**GHG Tailoring Rule:** On May 13, 2010, U.S. EPA finalized the Tailoring Rule to phase in the applicability of the Prevention of Significant Deterioration (PSD) and Title V operating permit programs for GHGs. The rule was tailored to include the largest GHG emitters, while excluding smaller sources (restaurants, commercial facilities and small farms). The first step (January 2, 2011 to June 30, 2011) addressed the largest sources that contributed 65 percent of the stationary GHG sources. Title V GHG requirements were triggered only when affected facility owners/operators were applying, renewing or revising their permits for non-GHG pollutants. PSD GHG requirements were applicable only if sources were undergoing permitting actions for other non-GHG pollutants and the permitted action would increase GHG emission by 75,000 metric tons of $CO_2e$ per year or more.

On June 23, 2014, the U.S. Supreme Court issued its decision in Utility Air Regulatory Group v. EPA, 134 S.Ct. 2427 (2014). The Court held that U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also held that PSD permits that are otherwise required to be subject to PSD (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of BACT. In accordance with the Supreme Court decision, on April 10, 2015, the D.C. Circuit issued an amended judgment in Coalition for Responsible Regulation, Inc. v. Environmental Protection Agency, Nos. 09-1322, 10-073, 10-1092 and 10-1167 (D.C. Cir. April 10, 2015), which, among other things, vacated the PSD and Title V regulations under review in that case to the extent that they require a stationary source to obtain a PSD or Title V permit solely because the source emits or has the potential to emit GHGs above the applicable major source thresholds.

**GHG Reporting Program:** U.S. EPA issued the Mandatory Reporting of Greenhouse Gases Rule (40 CFR Part 98) under the 2008 Consolidated Appropriations Act. The Mandatory Reporting of Greenhouse Gases Rule requires reporting of GHG data from large sources and suppliers under the Greenhouse Gas Reporting Program. Suppliers of certain products that would result in GHG emissions if released, combusted or oxidized; direct emitting source categories; and facilities that inject $CO_2$ underground for geologic sequestration or any purpose other than geologic sequestration are included. Facilities that emit 25,000 metric tons or more per year of GHGs in $CO_2e$ are required to submit annual reports to U.S. EPA. For the 2014 calendar year, there were over 8,000 entities that reported 3.20 billion metric tons of GHG emissions under this program. $CO_2$ emissions accounted for the largest share of direct emissions with 91.5 percent, followed by methane with seven percent, and nitrous oxide and fluorinated gases representing the remaining 1.5 percent (U.S. EPA, 2016a).

**National Program to Improve Fuel Economy:** On September 15, 2009, the NHTSA and U.S. EPA announced a proposed joint rule that would explicitly tie fuel economy to GHG emissions reductions requirements. The proposed new corporate average fuel economy (CAFÉ) Standards would cover automobiles for model years 2012 through 2016, and would require passenger cars and light trucks to meet a combined, per mile, carbon dioxide emissions level. It was estimated that by 2016, this GHG emissions limit could equate to an overall light-duty vehicle fleet average fuel economy of as much as 35.5 miles per gallon. The proposed standards required model year 2016 vehicles to meet an estimated combined average emission level of 250 grams of carbon dioxide per mile under EPA's GHG program. On November 16, 2011, EPA and NHTSA issued a joint proposal to extend the national program of harmonized GHG and fuel economy standards to model year 2017 through 2025 passenger vehicles. In August 2012, the President of the United States finalized standards that will increase fuel economy to the equivalent of 54.5 mpg for cars and light-duty trucks by Model Year 2025.

**Clean Power Plan:** On August 3, 2015, the U.S. EPA announced the Clean Power Plan. The Clean Power Plan set standards to reduce carbon dioxide emissions by 32 percent from 2005 levels by 2030. This Plan established emissions guidelines for states to follow in developing plans to reduce GHG emissions from existing fossil fuel-fired electric generating units (EGUs). Specifically, the U.S. EPA established: (1) carbon dioxide emission performance rates representing the best system of emission reduction (BSER) for two subcategories of existing fossil fuel-fired EGUs, fossil fuel-fired electric utility steam generating units and stationary combustion turbines; (2) state-specific carbon dioxide goals reflecting the carbon dioxide emission performance rates; and (3) guidelines for the development, submittal and implementation of state plans that establish emission standards or other measures to implement the carbon dioxide emission performance rates, which may be accomplished by meeting the state goals. In February 2016, the U.S. Supreme Court issued a stay of this rule pending final determination on litigation challenging the rule. The Trump Administration has announced potential changes to the plan which is now known as the Affordable Clean Energy rule.

**Planning for Federal Sustainability in the Next Decade:** Published June 10, 2015, Executive Order 13693, *Planning for Federal Sustainability in the Next Decade*, revokes multiple prior Executive Orders and memorandum. The Executive Order outlines goals for federal agencies in the area of energy, climate change, water use, vehicle fleets, construction, and acquisition. The goal is to maintain federal leadership in sustainability and GHG emission reductions. Federal agencies shall, where life-cycle cost-effective, beginning in fiscal year 2016:

1. Reduce agency building energy intensity as measured in Btu/ft$^2$ by 2.5 percent annually through 2025.
2. Improve data center energy efficiency at agency buildings.
3. Ensure a minimum percentage of total building electric and thermal energy shall be from clean energy sources.

4. Improve agency water use efficiency and management (including stormwater management).
5. Improve agency fleet and vehicle efficiency and management by achieving minimum percentage GHG emission reductions.

### 3.4.3.2 State Regulations

**Executive Order S-3-05:** In June 2005, then Governor Schwarzenegger signed Executive Order S-3-05, which established GHG emission reduction targets. The goals would reduce GHG emissions to 2000 levels by 2010, then to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

**AB 32: Global Warming Solutions Act:** On September 27, 2006, AB 32 (Nunez and Pavely), the California Global Warming Solutions Act of 2006, was enacted by the State of California and signed by Governor Schwarzenegger. AB 32 expanded on Executive Order S-3-05. The legislature stated that "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." AB 32 established a program to limit GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB 32 lays out a program to inventory and reduce GHG emissions in California and from power generating facilities located outside the state that serve California residents and businesses.

Authorized by AB 32, the cap-and-trade program is one of several strategies that California uses to reduce greenhouse gas emissions. CARB adopted the California cap-and-trade program final regulations on October 20, 2011, and adopted amended regulations on September 12, 2012, with the first auction for GHG allowances on November 14, 2012. Funds received from the program are deposited into the Greenhouse Gas Reduction Fund and appropriated by the Legislature. It sets a GHG emissions limit that will decrease by two percent each year until 2015, and then three percent from 2015 to 2020 to achieve the goals in AB 32. The program initially applies to large electric power plants and large industrial plants, and included fuel distributors in 2015. These rules encompass 85 percent of all of California's GHG emissions.

**SB 97 - CEQA: Greenhouse Gas Emissions:** On August 24, 2007, Governor Schwarzenegger signed into law Senate Bill (SB) 97 – CEQA: Greenhouse Gas Emissions stating, "This bill advances a coordinated policy for reducing greenhouse gas emissions by directing the Office of Planning and Research (OPR) and the Resources Agency to develop CEQA guidelines on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions." OPR's amendments provided guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments did not establish a threshold for significance for GHG emissions. The amendments became effective on March 18, 2010.

**Office of Planning and Research Technical Advisory on CEQA and Climate Change[1]:** Consistent with SB 97, on June 19, 2008, OPR released its "Technical Advisory on CEQA and Climate Change," which was developed in cooperation with the Resources Agency, the Cal/EPA, and the CARB. According to OPR, the "Technical Advisory" offers the informal interim guidance regarding the steps lead agencies should take to address climate change in their CEQA documents, until CEQA guidelines are developed pursuant to SB 97 on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions.

According to OPR, lead agencies should determine whether greenhouse gases may be generated by a proposed project, and if so, quantify or estimate the GHG emissions by type and source. Second, the lead agency must assess whether those emissions are individually or cumulatively significant. When assessing whether a project's effects on climate change are "cumulatively considerable" even though the GHG contribution of the project may be individually limited, the lead agency must consider the impact of the project when viewed in connection with the effects of past, current, and probable future projects. Finally, if the lead agency determines that the GHG emissions from the project as proposed are potentially significant, it must investigate and implement ways to avoid, reduce, or otherwise mitigate the impacts of those emissions.

**AB 1493 Vehicular Emissions: Carbon Dioxide:** Prior to the U.S. EPA and NHTSA joint rulemaking, the Governor signed AB 1493 (Pavley 2002). AB 1493 requires that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

CARB originally approved regulations to reduce GHGs from passenger vehicles in September 2004, with the regulations that apply to 2009 and later model year vehicles. California's first request to the U.S. EPA to implement GHG standards for passenger vehicles was made in December 2005 and denied in March 2008. The U.S. EPA then granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks and sport utility vehicles on June 30, 2009.

On April 1, 2010, the CARB filed amended regulations for passenger vehicles as part of California's commitment toward the National Program to reduce new passenger vehicle GHGs from 2012 through 2016. The amendments will prepare California to harmonize its rules with the federal Light-Duty Vehicle GHG Standards and CAFÉ Standards (discussed above).

**Senate Bill 1368 (2006):** SB 1368 (Perata) is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the

[1] The CA Climate Change website provides a complete list of regulations https://www.climatechange.ca.gov/state/regulations.html

California Public Utilities Commission (PUC) to establish a greenhouse gas emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) was required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

**Executive Order S-1-07 (2007)[2]:** Governor Schwarzenegger signed Executive Order S-1-07 in 2007 which finds that the transportation sector is the main source of GHG emissions in California. The executive order proclaims the transportation sector accounts for over 40 percent of statewide GHG emissions. The executive order also establishes a goal to reduce the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020.

In particular, the executive order established a Low-Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the CEC, the CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by CEC on December 24, 2007) and was submitted to CARB for consideration as an "early action" item under AB 32. CARB adopted the LCFS on April 23, 2009.

**Senate Bill 375 (2008):** SB 375 (Steinberg), signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) which prescribes land use allocation in that MPO's Regional Transportation Plan (RTP). CARB, in consultation with MPOs, is required to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned GHG emission reduction targets. CARB set initial GHG emission targets which were modified in 2018 to the following reduction targets for ABAG/MTC region: reduce per capita 10 ~~seven~~ percent of GHG emissions below 2005 levels by 2020 and ~~15~~ 19 percent below 2005 levels by 2035.

**Executive Order S-13-08 (2008):** Governor Schwarzenegger signed Executive Order S-13-08 on November 14, 2008 which directs California to develop methods for adapting to

2 CA climate change Executive Orders https://www.climatechange.ca.gov/state/executive_orders.hml

climate change through preparation of a statewide plan. The executive order directs OPR, in cooperation with the Resources Agency, to provide land use planning guidance related to sea level rise and other climate change impacts.

**Senate Bills 1078 and 107 and Executive Order S-14-08 (2008):** SB 1078 (Chapter 516, Statutes of 2002, Committee on Budget and Fiscal Review) requires retail sellers of electricity, including investor owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, then Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020.

**SB X-1-2 and the Clean Energy and Pollution Reduction Act of 2015:** SB X-1-2, signed by Governor Edmund G. Brown, Jr. in April 2011, created a new Renewables Portfolio Standard (RPS), which preempted CARB's 33 percent Renewable Electricity Standard. The new RPS applies to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. These entities must adopt the new RPS goals of 20 percent of retail sales from renewables by the end of 2013, 25 percent by the end of 2016, and the 33 percent requirements by the end of 2020.

Clean Energy and Pollution Reduction Act of 2015, SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Brown on October 7, 2015. SB 350 will (1) increase the standards of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) require the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provide for the evolution of the Independent System Operator (ISO) into a regional organization; and (4) require the state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. Among other objectives, the Legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

**SB 862:** In June 2014, SB 862 (Chapter 36, Statutes of 2014) established long-term funding programs from the cap-and-trade program for transit, sustainable communities and affordable housing, and high speed rail. SB 862 allocates 60 percent of ongoing cap-and-trade revenues, beginning in 2015–2016, to these programs. The remaining 40 percent is to be determined by future legislatures. A minimum of 25 percent of cap-and-trade dollars must go to projects that provide benefits to disadvantaged communities, and a minimum of 10 percent must go to projects located within those disadvantaged communities. In addition, this bill established the CalRecycle Greenhouse Gas Reduction Revolving Loan Program and Fund.

**Senate Bills 32 and 350 and Executive Order B-30-15 (2015)[3]:** Governor Brown signed Executive Order B-30-15 in 2015 in order to reduce GHG emissions by 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing GHG emissions to 80 percent of 1990 levels by 2050. In particular, the Executive Order commissioned CARB to update the Climate Change Scoping Plan and the California Natural Resources Agency to update the state climate adaption strategy, Safeguarding California, every three years. The Safeguarding California Plan will identify vulnerabilities to climate change by sector and regions, including, at a minimum, the following sectors: water, energy, transportation, public health, agriculture, emergency services, forestry, biodiversity and habitat, and ocean and coastal resources; outline primary risks to residents, property, communities and natural systems from these vulnerabilities, and identify priority actions needed to reduce these risks; and identify a lead agency or group of agencies to lead adaptation efforts in each sector.

**Executive Order B-55-18:** Under Executive Order B-55-18 the State is required to achieve carbon neutrality by 2045 and maintain on-going net negative emissions.

**CARB Mobile Source Strategy:** CARB's Mobile Source Strategy was released on May 16, 2016 and demonstrates how the State can simultaneously meet air quality standards, achieve GHG emission reduction targets, decrease health risk from transportation emissions, and reduce petroleum consumption over the next 15 years (CARB, 2016).

**CARB Tractor-Trailer GHG Regulation:** CARB approved the Tractor-Trailer GHG regulation to reduce GHG emissions from certain heavy-duty tractor-trailers. The tractors and trailers subject to this regulation must either use U.S. EPA "SmartWay" certified tractors and trailers, or be retrofitted with SmartWay verified technologies.

**Executive Order B-32-15 - California Sustainable Freight Action Plan:** This Executive Order directed Caltrans to develop strategies to improve freight efficiency and transition to zero emission freight handling technologies. The goal of the Plan is to achieve 25 percent improvement of freight system efficiency by 2030, and to deploy over 100,000 zero-emission freight vehicles and equipment and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.

**Advanced Clean Trucks Regulation:** CARB adopted the Advanced Clean Truck Regulation to help accelerate the early market adoption of zero emission trucks that are usually centrally fueled, have duty cycles with low average speed and stop-and-go operation. The rule focuses on urban, mostly vocational trucks, but includes class 7-8 urban goods movement trucks as well. The regulatory schedule begins with the 2023 vehicle mode year with early action credits given for pre-2023 vehicle models.

[3] A complete list of California climate change legislation with a brief description provided on the CA Climate Change website https://www.climatechange.ca.gov/state/legislation.html.

### 3.4.3.3 Local Regulations

3.4.3.3.1 Air District

The Air District established a climate protection program in 2005 to explicitly acknowledge the link between climate change and air quality. In November 2013, the Air District's Board of Directors adopted a resolution outlining greenhouse gas reduction goals of achieving an 80 percent reduction in GHG below 1990 levels and making a commitment to develop a regional climate protection strategy. The Air District regularly prepares inventories of GHG, criteria pollutants and toxic air contaminants to support planning, regulatory and other programs.

The District adopted a 10-point Climate Action Work Program in March 2014. The work program outlines the District's priorities in reducing GHG emissions that include: (1) establishing the goal of reducing GHG emissions 80% below 1990 levels by 2050; (2) updating the District's regional GHG emission inventory; (2) implementing GHG emissions monitoring; (4) developing a regional climate action strategy to meet the 2050 GHG emission reduction goal; (5) supporting and enhancing local actions through enhanced technical assistance to local governments in preparing local Climate Action Plans; (6) initiating rule development to enhance GHG reductions from sources subject to Air District regulations; (7) expanding enforcement of statewide regulations to reduce GHG emissions; (8) launching climate change and public health impacts initiative; (9) reporting progress to the public toward the 2050 goals and related performance objectives; and (10) exploring the Bay Area's energy future, including trends in fossilfuel demand and productions and exploring opportunities to promote the development of clean energy options.

In 2015 the Air District launched a GHG measurement program to provide the scientific basis that supports rulemaking and policy development for reducing GHG emissions. The program started monitoring GHGs in 2016 and includes a long-term fixed-site GHG monitoring network that measures concentrations of carbon dioxide, methane, and carbon monoxide at four sites. A dedicated mobile GHG monitoring research van also provides assistance in identifying emission hot spots and enhancing the regional emissions inventory.

Finally, in 2017 the Air District approved the Clean Air Plan: *Spare the Air, Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area*. The 2017 Plan identified control measures that include potential rules, programs, and strategies that the Air District can pursue to reduce GHG emissions in the Bay Area in support of the goals of reducing GHG emissions to 90 percent below 1990 levels by 2050.

3.4.3.3.2 City of Oakland

Numerous counties within the Bay Area have prepared and adopted Climate Action Plans including Alameda County, Contra Costa County, Marin County, San Francisco County, Sonoma County and Solano County[4]. These plans outline the county's measures and actions to reduce GHG emissions with each county's jurisdiction. Napa County addressed climate change and sustainable practices in the Conservation Element of its General Plan. In addition a number of communities (e.g., cities) have finalized and adopted community climate action plans, or are in the process of drafting climate action plans (ABAG, 2013).

**City of Oakland Energy and Climate Action Plan**: The Oakland Energy and Climate Action Plan (ECAP) was adopted on December 4, 2012. The purpose of the ECAP is to identify and prioritize actions the City of Oakland can take to reduce energy consumption and GHG emissions. The ECAP recommends GHG reduction actions and establishes a framework for coordinating implementation, as well as monitoring and reporting on progress.

The primary sources of Oakland's GHG emissions are transportation and land use, building energy use, and material consumption and waste. Oakland approved a preliminary GHG reduction target for the year 2020 of 36 percent below 2005 levels. The ECAP recommends over 150 actions to be implemented over a ten-year period that would enable the City of Oakland to achieve a 36 percent reduction in GHG emissions. Implementation of renewable energy and energy efficiency measures include measures to reduce vehicle miles traveled annually by 20 percent, electricity consumption by 32 percent and natural gas consumption by 14 percent. These measures include the adoption of a green building ordinance for private development, the use of property-based financing for alternative energy systems, and advancing the use of transit. The ECAP was updated in 2018 to show the several types of updates on City's actions, but without changing the greenhouse gas reduction goals.[5]

**City of Oakland Green Building Ordinance and Sustainable Green Building Requirements for Private Development:** The City of Oakland adopted a Civic Green Building Ordinance in May 2005, requiring City-owned and occupied buildings to meet specific green building standards set by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system. In October 2010, the City adopted mandatory green building standards for private development projects. The intent of the mandatory green building standards is to integrate environmentally sustainable strategies in building construction and landscapes in Oakland.

**Land Use and Transportation Element:** The City of Oakland General Plan Land Use and Transportation element includes a Pedestrian Master Plan and Bicycle Master Plan with a number of policies related to GHG emissions and climate change that encourages the use of public transit, encourages transit-oriented and pedestrian-oriented developments, encourages the use of alternative transportation options, and encourages infill development.

[4] A complete list and map of cities and counties of climate action planning efforts provided by CARB https://coolcalifornia.arb.ca.gov/local-government

[5] https://www.oaklandca.gov/documents/energy-and-climate-action-plan-ecap-1

### 3.4.4 SIGNIFICANCE CRITERIA

It is the increased accumulation of GHGs in the atmosphere that may result in global climate change. Climate change involves complex interactions and changing likelihoods of diverse impacts. Due to the complexity of conditions and interactions affecting global climate change, it is not possible to predict the specific impact, if any, attributable to GHG emissions associated with a single project, which is why GHG emission impacts are considered to be a cumulative impact.

The Air District draft CEQA Guidelines (BAAQMD, 2017a) established a GHG threshold for air quality plans of "no net increase in emissions," which is appropriate for air quality plans because they include a mix of control measures with individual trade-offs. For example, one control measure may result in combustion of methane to reduce greenhouse gas emissions, while increasing criteria pollutant emissions by a small amount. Because the proposed project is a Community Action Plan with the goal of reducing emissions, the GHG threshold for air quality plans of "no net increase in emissions" will apply to the proposed project.

### 3.4.5 EVALUATION OF GHG/CLIMATE CHANGE IMPACTS

As discussed in the Notice of Preparation and Initial Study (see Appendix A), some of these Strategies could potentially have secondary adverse impacts that could result in increased GHG emissions. For example, implementation of some of the control measures that accelerate zero-emission technologies, rely on electricity; an increase in electrical demand may result in increased electricity generation and subsequently increased GHG emissions associated with combustion and power plants. GHG emissions may increase from one emission sector as a result of these measures in order to effectively reduce overall GHG emissions from fossil fuel combustion. Therefore, this EIR evaluates whether the implementation of Strategies associated with the West Oakland Community Action Plan will result in adverse GHG impacts.

CEQA defines a "project" broadly to include "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment." (CEQA Guidelines, §15378(a) It is expected that the direct effects of the West Oakland Community Action Plan would be reductions in criteria pollutant and TAC emissions. However, construction equipment and activities to install air pollution control equipment, enclosures, and new infrastructure has the potential to generate GHG emission impacts, primarily from exhaust emissions. Potential secondary GHG impacts from activities that may be required under the West Oakland Community Action Plan are analyzed herein. The Strategies with potential GHG emission increases are summarized in Table 3.4-5. Those Strategies where no direct or indirect GHG emission impacts were identified, or where the impacts are unknown or considered speculative, are not discussed further in the following subsections.

CEQA Guidelines, §15064.4(a) states "the lead agency shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to: (1) Quantify greenhouse gas emissions, resulting from a project; and/or (2) Rely on a qualitative analysis or performance based standards."

## TABLE 3.4-5

## Control Strategies to be Implemented by the Air District with Potential GHG Impacts

| Strategy # | Description | Control Methodology | Potential GHG Impacts |
|---|---|---|---|
| 14 | Loans to install energy storage systems to replace stationary emission sources | Electrification of sources | Potential GHG emissions associated with increased demand for electricity |
| ~~36~~ 41 | Financial incentives for fueling infrastructure, and for low and zero-emission equipment | Electrification of sources | Potential GHG emissions associated with increased demand for electricity |
| ~~43~~ 48 | Up to $7 million per year to replace autos through the Vehicle Buy Back Program and $4 million per year through the Clean Cars for All programs | Electrification of vehicles | Potential GHG emissions associated with increased demand for electricity |
| ~~44~~ 49 | Incentives to replace box and yard trucks with zero-emission trucks | Electrification of trucks | Potential GHG emissions associated with increased demand for electricity |
| ~~48~~ 53 | Incentives to replace long-haul diesel trucks with zero-emission trucks | Electrification of trucks | Potential GHG emissions associated with increased demand for electricity |
| ~~49~~ 54 | Up to $1 million to purchase cleaner electric lawn/garden equipment, battery electric Transportation Refrigeration Units, and cargo-handling equipment | Electrification of equipment | Potential GHG emissions associated with increased demand for electricity |
| ~~61~~ 66 | Evaluate the feasibility of installing a shore power or bonnet system to capture vessel emissions at Schnitzer Steel | Use of electricity for shore power for use on marine vessels | Potential GHG emissions associated with increased demand for electricity |
| ~~63~~ 68 | Amendments to existing District Reg 6-4 and 12-13 to reduce fugitive PM emissions from metal recycling and foundry operations | Emission Minimization Plans would be prepared and are expected to required enclosures for fugitive emission sources | Potential GHG emissions associated with construction activities |

### 3.4.5.1 Potential GHG Impacts During Construction Activities

A few of the Strategies in the Plan have the potential to generate construction activities to install air pollution control or modify operations. It is impossible to predict at the Plan stage all of the construction activities that may be required, or how, when, or where they may be carried out. However, construction activities can be estimated for implementation of some of the Strategies.

Construction activities would result in temporary GHG emissions, although the amount generated by specific types of equipment can vary greatly as shown in Table 3.4-6. The estimated emissions for construction equipment operating on a typical eight-hour day are also provided in Table 3.4-6.

## TABLE 3.4-6

### GHG Emission Estimates for Typical Construction Equipment Assuming an 8-Hour Operational Day(1)

| Equipment Type | $CO_2e$ (MT/hr) | $CO_2e$ (MT/8-hr day) |
|---|---|---|
| Bore/Drill Rigs | 0.06 | 0.47 |
| Cranes | 0.04 | 0.28 |
| Excavators | 0.03 | 0.26 |
| Graders | 0.04 | 0.33 |
| Pavers | 0.03 | 0.23 |
| Paving Equipment | 0.02 | 0.20 |
| Rollers | 0.02 | 0.13 |
| Rough Terrain Forklifts | 0.02 | 0.17 |
| Rubber Tired Dozers | 0.05 | 0.42 |
| Rubber Tired Loaders | 0.04 | 0.31 |
| Scrapers | 0.09 | 0.75 |
| Skid Steer Loaders | 0.01 | 0.10 |
| Surfacing Equipment | 0.04 | 0.34 |
| Tractors/Loaders/Backhoes | 0.02 | 0.15 |
| Trenchers | 0.02 | 0.17 |
| Aerial Lifts | 0.01 | 0.09 |
| Forklifts | 0.01 | 0.08 |

(1) Emission Factors from Off-Road 2011.

To calculate the potential GHG emissions associated with the construction of one enclosure, it was assumed that construction activities would take about 60 days and would require 20 workers. It is also assumed that only one enclosure would be constructed as Strategy ~~#63~~ #68 would affect one facility in West Oakland. The potential GHG emissions associated with the construction of an enclosure are summarized in Table 3.4-7.

The estimated GHG construction emission increases associated with the Plan are 75 metric tons or 3 metric tons per year amortized over 30 years. Construction emissions are temporary as construction emissions would cease following completion of construction activities.

**TABLE 3.4-7**

**West Oakland Community Action Plan**
**GHG Construction Emissions Summary**

| Construction Emissions | $CO_2e$ (MT) | 30-Year Amortized CO2e (MT/yr) |
|---|---|---|
| Construction Emissions Associated with Enclosure (1) | 75 | 3 |

(1) See Appendix B for detailed emission calculations.

The construction of additional electrical or hydrogen cell infrastructure would be required under several Strategies in the West Oakland Community Action Plan. The type of equipment, magnitude of any construction activities, location of the activities, etc., are currently unknown and considered to be speculative. However, additional construction activities associated with Strategies that the Air District would seek to implement are expected to be minor, such as installing electric charging stations or hydrogen fuel stations, for example, would likely be added to existing facilities (e.g., gas stations).

### 3.4.5.2 Potential GHG Impacts Associated with Operational Activities

The net effect of implementing the West Oakland Community Action Plan is to reduce TAC and $PM_{2.5}$ emissions as well as exposure to emissions in West Oakland. However, some control technologies have the potential to generate secondary or indirect GHG emission impacts as part of the control process.

#### 3.4.5.2.1 GHG Emissions Associated with Truck Deliveries

Table 3.4-5 lists the Strategies that may have secondary or indirect operational GHG impacts. The installation of a bonnet system to control emissions from marine vessels at berth could include emission control equipment to control particulate matter, as well as other pollutants. Installation of a bonnet system would be expected to result in the increase in delivery trucks to support the system. It is estimated that two trucks per peak day would be required to delivery ammonia/urea, catalyst and other supplies, or about 40 truck trips per year would be required for the delivery of supplies. This amount could vary depending on the size of the bonnet system and related equipment (e.g., SCR and size of the ammonia or urea storage systems). However, the 40 trucks per year is expected to provide a conservative estimate of transportation requirements. The estimated increase in GHG emissions associated with truck deliveries to support the bonnet system would be 7 metric tons per year (see Table 3.4-8).

**TABLE 3.4-8**

**West Oakland Community Action Plan**
**Potential Indirect GHG Emission Impacts Associated with Transportation Activities**

| Material | Trucks per year | Trip Length (roundtrip miles) | CO2e (MT/year) |
|---|---|---|---|
| Truck Deliveries to Support Bonnet System | 40 | 100 | 7 |

(1) See Appendix B for detailed emission calculations.

3.4.5.2.2 GHG Emissions from Increased Electricity Demand

Implementing Strategies in the West Oakland Community Action Plan is expected to increase future demand for electricity in two ways. First, electricity is often used as the power source to operate various components of add-on control equipment that may be required to reduce emissions. Second, a number of Strategies may increase future demand for electricity as a result of increasing the penetration of electric on-road and off-road vehicles or replacing existing equipment with zero or near-zero equipment. Although increasing the number of on-road and off-road electric vehicles in West Oakland, it is anticipated that the increased electricity generation emissions would be offset by emission reductions from removing gasoline and diesel-powered vehicles from district fleets.

*Electricity Demand Impacts from Operating Control Equipment*

There are a variety of different types of air pollution control equipment, such as SCRs and filters/baghouses associated with a bonnet system, that may require additional electricity. In the case of the bonnet system, it would be expected that the air pollution control equipment would be placed on a barge because of lack of space along the waterfront within and adjacent to the Port. Since the bonnet system would be placed on a barge, it would be operated through the diesel engines on the barge so that no increase in electricity from a public utility company would be required.

Strategy ~~#70~~ #75 that would place filtration devices on schools, day care facilities, hospitals, apartments, and homes, could place additional electricity demands to operate heaters or air conditioners. Increased demand for electrical energy may require generation of additional electricity, which in turn could result in increased GHG emissions associated with electricity generation. However, installation of high-energy efficient systems could help offset any electricity increases. Details on the filtration systems, ventilation systems, fan motors, where they would be located, how many would be installed, and other details are currently unknown. Therefore, the potential increase in electricity and the related GHG impacts are currently difficult to estimate and considered to be speculative.

*Electricity Demand Impacts from Electric Vehicles*

Because of the need for ever more stringent emission control regulations to achieve all ambient air quality standards and climate protection goals, electricity is becoming more important as an energy source to reduce emissions in a number of economic sectors, especially mobile sources. With regard to some of the West Oakland Strategies, assumptions have been made regarding future electricity demand. For example, several Strategies would increase future demand for electricity to achieve the control measures' targets of zero emissions from on-road and off-road vehicles. The following information summarizes the Strategies in the Plan that could result in an increase in future electricity demand:

1. Strategy #14: Provide financial incentives for local businesses to install energy storage systems (e.g., batteries, fuel cells) to replace stationary sources of pollution (e.g., back-up generators).

2. Strategy ~~#36~~ #41: Provide financial incentives for fueling infrastructure, and for low and zero emission equipment.

3. Strategy ~~#43~~ #48: Offer up to $7 million per year to replace older autos through the Vehicle Buy Back program, and up to $4 million per year through the Clean Cars for All program to replace older autos and provide an incentive for a hybrid electric, plug-in hybrid electric, battery electric vehicle, or funding for public transit.

4. Strategy ~~#44~~ #49: Offer financial incentives to replace box and yard diesel trucks with zero emission trucks.

5. Strategy ~~#48~~ #53: Offer financial incentives to replace long-haul diesel trucks with zero emission trucks.

6. Strategy ~~#49~~ #54: Offer up to $1 million in funding incentives to pay for the purchase of cleaner equipment, including electric lawn and garden equipment, Transportation Refrigeration Units, and cargo-handling equipment.

Increasing penetration of zero and near-zero emission vehicles and electrification of stationary sources could increase future demand for electricity in the Bay Area and other areas of California that provide electricity to the Bay Area. Potential increased electricity demand from West Oakland Community Action Plan Strategies that increase the penetration of zero on-road and off-road mobile sources are shown in Table 3.3-3 in Section 3.3 – Energy. Estimates of the potential increase in electricity use are provided where sufficient information is available to estimate the number of pieces of equipment or vehicles that would be required under each of the Strategies. In most cases, that information is not available and cannot be determined at this time. The potential increase in future demand for electricity to provide energy for on-road and off-road mobile sources associated with the West Oakland Plan is expected to be less than one gigawatt-hours (GWh) in the year 2021. Assuming Strategy ~~#43~~ #48 is implemented through 2023, the increase would be approximately one GWh in 2023 (see Table 3.3-3 for further details).

As discussed in Section 3.3.4, PG&E has forecasted the potential load impacts on electricity demand that would be expected to occur from increased charging of electric vehicles in the future as part of its IRP. PG&E has estimated that meeting the goal of five million electric vehicles in California (or two million within PG&E's service territory by 2030) would increase the current electrical use for electric vehicles from about 160 GWh in 2018 to 2,353 GWh in 2022, to 4,205 GWh in 2026, and 5,982 GWh in 2030 (PG&E, 2018). PG&E plans to add bioenergy, solar and wind resources (due to RPS requirements) to supply sufficient electricity to its customers.

As part of the IRP process, PG&E is required to provide estimates of GHG emissions from the plants that it operates. PG&E has forecasted its 2030 GHG emissions to be 4.72 to 4.59 million metric tons (MMT) which is below the required benchmark level of 5.50 to 6.06 MMT (PG&E, 2018). The electrification of motor vehicles and other commercial and industrial equipment would greatly reduce fossil fuel usage (see Table 3.2-15).

The potential increase in electric vehicles under the Strategies in the West Oakland Community Action Plan is within the range of vehicles that PG&E has forecast for its service area of two million vehicles. PG&E is expected to meet its forecast GHG benchmarks by 2030. Therefore, implementation of the Strategies is not expected to result in an increase in GHG emissions over those already contemplated in the PG&E service areas.

### 3.4.5.3 Potential GHG Emission Reduction Benefits

The estimated emission benefits from implementation of several Strategies that the Air District may implement in the West Oakland Community Action Plan are presented in Table 3.2-17. For some of the potential Strategies, emission reductions are unknown at this time. For particular sources or pollutants, there may be uncertainties associated with emission estimates or the level of control and emission reductions achievable, and further study and evaluation would be required to develop more detailed estimates.

Under Strategy ~~#43~~ #48, the District is proposing up to $7 million per year to replace older autos through the Vehicle Buy Back program and up to $4 million per year through the Clean~~er~~ Cars for All program to replace older vehicles and provide an incentive for zero emission vehicles. The number of vehicles that may be retired in West Oakland under this Strategy is up to 60-80 per year for the Vehicle Buy Back Program and up to 40-50 per year for the Clean~~er~~ Cars for All program.

**TABLE 3.4-9**

**West Oakland Community Action Plan Predicted GHG Emission Reductions**

| ~~Construction~~ Operational Emissions(1) | $CO_2e$ (MT/year) |
|---|---|
| ~~#43~~ #48 Vehicle Buy Back Program | -142 to -189 |
| ~~#43~~ #48 Clean~~er~~ Cars for All Program | -55 to -69 |
| ~~#61~~ #66 Shore Power to Schnitzer Steel | -18 |
| Total GHG Emission Reductions (tons/yr) | -215 to -276 |

(1) See Appendix B for detailed emission calculations.

Emission reduction estimates have also been provided for providing shore power to Schnitzer Steel as it is expected to be the better choice for reducing emissions from ships at berth. The emission calculations assume that ships would be at dock 100 days per year and assumes the total emissions are 80 percent from shore power and 20 percent for the auxiliary engine (see Appendix B for detailed emission calculations).

As summarized in Table 3.4-9, GHG emissions reductions are expected to range from 182 to 276 metric tons per year, providing a beneficial impact on GHG emissions.

### 3.4.5.4 Summary of Operational Emission Impacts

Implementation of the Strategies in the West Oakland Community Action Plan by the Air District would result in a minor increase in emissions associated with the potential delivery of materials to supply air emission control systems that would be implemented as part of the Plan. The potential GHG emission increases are expected to be offset with emission decreases that would occur due to implementation of the Plan (see Table 3.4-10).

Based on the evaluation of the Strategies that the Air District would implement as part of the West Oakland Community Action Plan, the emission reductions associated with the Plan are expected to exceed the potential air quality increases and there would be no net GHG emission increases. Therefore, GHG impacts would be less than significant.

**TABLE 3.4-10**

**West Oakland Community Action Plan Predicted GHG Emission Reductions**

| Construction Emissions(1) | $CO_2e$ (MT) |
|---|---|
| **Potential GHG Emissions Increases** | |
| Construction Emissions | 3 |
| Truck Deliveries to Support Bonnet System | 7 |
| Potential GHG Emission Increases | 10 |
| **Potential GHG Emission Reductions** | |
| Project GHG Emission Reductions | -215 to -276 |
| | |
| Total GHG Emission Reductions (tons/yr) | -205 to -246<br>-162 to -256 |

(1) See Appendix B for detailed emission calculations.

The West Oakland Community Action is predicted to result in a decrease in fuel use of 28,272 to 36,754 gallons per year, providing both GHG emission reductions (see Table 3.4-9), as well as criteria pollutant emissions reductions.

## 3.4.6 CONCLUSION ON GHG EMISSION IMPACTS AND CUMULATIVE IMPACTS

Table 3.4-10 provides a summary of the estimated GHG emission increases associated with implementation of the West Oakland Community Action Plan, along with the estimated decreases in GHG emissions associated with the Plan. As shown in Table 3.4-10, the emission reductions from the Plan are expected to outweigh the potential secondary GHG emissions and result in a beneficial impact on climate change. The GHG analysis is cumulative in nature. Since the Plan is a GHG emission benefit, the GHG emissions impacts from the Plan are not cumulatively considerable.

### 3.4.6.1 Impacts of Past, Present and Reasonably Foreseeable Future Projects

As discussed in Section 3.4.3.2, electricity providers are moving towards compliance with California's RPS to generate 50 percent of their electricity from renewable energy resources by 2030 and reduce GHG emissions. Therefore, modifications to existing electricity generating facilities and new generating facilities are expected to be implemented in the near future to comply with state RPS regulations, as well as improved energy efficiency requirements. California is moving forward with a number of programs, plans, and requirements that impact energy requirements and increase energy efficiency, with the overall goal of decreasing GHG emissions and its impact on climate change including the following:

1. AB 32: Global Warming Solutions Act (Nunez and Pavley 2006) lays out a program to inventory and reduce GHG emissions in California by three percent

per year from 2015 to 2020 in California from industrial facilities, including power generating facilities.

2. SB 375 (Steinberg 2008) aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation aimed at reducing GHGs emitted by passenger cars and light trucks California. The GHG emission reduction targets in this program are to reduce per capita GHG emissions by seven percent below 2005 levels by 2020 and 15 percent below 2005 levels by 2035.

3. California Building Standards require solar power on single-family and multi-family dwellings built in California after 2020.

4. RPS requires retail sellers of electricity to increase their procurement of eligible renewable energy resources to 33 percent renewable energy by 2020 and 50 percent by 2030.

5. Executive Order B-18-12 requires all new state buildings and major renovations beginning design after 2025 to be constructed as zero net energy facilities with an interim target for 50 percent of new facilities beginning design after 2020 to be zero net energy. The Order also encourages the use of on-site power generation (e.g., solar photovoltaic), if feasible.

6. Executive Order B-16-2012 which established a target of reaching 1.5 million zero-emission vehicles on California's roadways by 2025 to help meet federal air quality standards.

7. The Air District's 2017 *Spare the Air/Cool the Climate Plan: A Blueprint for Clean Air and Climate Protection in the Bay Area* identified control measures that include potential rules, programs, and strategies that the Air District can pursue to reduce GHG emissions in the Bay Area in support of the goals of reducing GHG emissions to 90 percent below 1990 levels by 2050.

8. Air District Climate Action Work Program outlines the District's priorities to reduce GHG emissions 80 percent below 1990 levels by 2050.

9. The City of Oakland's Green Building Ordinance and Sustainable Green Building Requirements adopted mandatory green building standards for public and private developments and encourage sustainable building strategies.

10. City of Oakland's Energy and Climate Action Plan prioritizes actions the City can take to reduce energy consumption and GHG emissions, including renewable energy and energy efficiency measures to achieve a 36 percent reduction in GHG emissions by 2020.

11. City of Oakland General Plan Land Use and Transportation element includes a Pedestrian Master Plan and Bicycle Master Plan with a number of policies related to GHG emissions and climate change that encourages the use of public transit, encourages transit-oriented and pedestrian-oriented developments, encourages the use of alternative transportation operations, and encourages infill development.

The overall impact of these measures are expected to be a reduction in electricity use, an increase in the use of renewable energy sources, and a decrease in GHG emissions, as well as criteria pollutant emissions.

### 3.4.6.2 Contribution of the Proposed Project

CEQA Guidelines, §15064.4(b): "In determining the significance of a project's greenhouse gas emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change."

The emission reductions from the Plan are expected to reduce greenhouse gas emissions compared to the existing environmental setting, outweigh the potential secondary GHG emissions, comply with existing regulations, implement reductions, and provide beneficial impacts on climate change and human health. The GHG analysis is cumulative in nature. Since the Plan is a GHG emission benefit, the GHG emissions impacts from the Plan are not cumulatively considerable.

# CHAPTER 3.5

## HAZARDS AND HAZARDOUS MATERIALS

Introduction
Environmental Setting
Regulatory Setting
Significance Thresholds
Environmental Impacts
Mitigation Measures
Cumulative Impacts

# 3.5 HAZARDS AND HAZARDOUS MATERIALS

This subchapter of the EIR evaluates the potential hazards and hazardous material impacts associated with implementation of the West Oakland Community Action Plan, which aims to reduce residents exposure to diesel PM, fine particulate matter, and TACs.

As discussed in the Initial Study, in accordance with AB 617, the Community Action Plan was developed through monthly meetings with the West Oakland Steering Committee and provides strategies to reduce exposure to air pollution and related health effects in West Oakland. The Notice of Preparation and Initial Study (see Appendix A) evaluated the potential hazard and hazardous materials impacts associated with implementation of the Strategies in the Community Action Plan. The Notice of Preparation and Initial Study determined that some Strategies have the potential to create direct or indirect hazard impacts. For example, control devices may increase the hazards or releases at industrial facilities due to the increased use of hazardous materials in air pollution control equipment, as well as hazards associated with energy-generating facilities. This subchapter evaluates the potential hazards and hazardous materials impacts that could result due to implementation of the West Oakland Community Action Plan.

## 3.5.1 ENVIRONMENTAL SETTING

### 3.5.1.1 Contaminated Sites

West Oakland was one of the first industrial locations in the San Francisco Bay Area, later became a center for defense related industries, and continues to be a major transportation hub and industrial area. Over the years, many transportation and industrial uses have relocated or closed and many of the industrial properties have been abandoned and left contaminated (City of Oakland, 2014).

West Oakland currently contains a mix of industrial, commercial, residential, and transportation uses. Industrial uses are often located adjacent to or near residential and other sensitive land uses, such as schools and parks. Many ongoing industrial operations use, store, and/or transport hazardous materials, which potentially pose a hazard to human health and the environment through releases that contaminate soil or groundwater.

In California, regulatory databases listing hazardous materials sites provided by numerous federal, state, and local agencies are consolidated in the "Cortese List" pursuant to Government Code Section 65962.5. The Cortese List is located on the California Environmental Protection Agency's website and is a compilation of the following lists:

1. The list of Hazardous Waste and Substances sites from the California Department of Toxic Substances Control (DTSC) "EnviroStor" database;

2. The list of Leaking Underground Storage Tank Sites (LUSTs) from the California Water Resources Control Board's (WRCB) "Geotracker" database;

3. The list of solid waste disposal sites identified by the WRCB with waste constituents above hazardous waste levels outside the waste management unit; and

4. The list of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by DTSC.

The Alameda County Department of Environmental Health (ACDEH) maintains a list of sites for which it is the administrative agency responsible for coordination and enforcement of local, state, and federal hazardous materials management and environmental protection programs, as recognized by the California Department of Toxics Substances Control.

Regulatory databases contain relatively current information about environmental cases involving suspected or confirmed releases of hazardous materials to the subsurface soil or groundwater. The status of each environmental case can be active (ongoing investigations or remediation), closed (remediation or cleanup completed and approved by the regulatory agency), or unknown. The information and status of identified sites changes as characterization, cleanup and monitoring of contamination occurs. Sites are typically closed once it has been demonstrated that existing or intended site uses combined with the levels of identified contamination present no significant risk to human health or the environment (City of Oakland, 2014).

Within West Oakland, there are a total of 123 reported environmental cases. Nearly 65% of these reported cases have been closed by the respective oversight agencies. Of those cases that remain open, remediation efforts are still needed before new development can occur. Within those closed case sites, the level of prior clean-up efforts may vary and may be appropriate only for commercial or industrial uses, may have deed restrictions preventing sensitive uses, or may stipulate additional agency oversight should development be considered. Of these 123 sites, only 16 of the sites in Oakland are included in the Cortese List. For DTSC, the Cortese List includes site for which DTSC has issued an order for cleanup.[1]

The majority of reported environmental cases within West Oakland are attributed to leaking underground storage tanks, most of which contain, or used to contain petroleum products, e.g., gasoline. However, there are also a number of reported cases of more complex and hazardous incidents where toxic chemicals have been spilled or released into the soils and groundwater, resulting in potential health and safety concerns for residents and employees of the area.

One property within West Oakland is on the National Priorities List (NPL) of federal Superfund sites, for former AMCO Chemical facility located at 141 3rd Street, one block south of the West Oakland BART station. From 1960s to 1989, the site was owned and operated by AMCO as a chemical distribution facility. Investigative studies on the site found that the primary source of contamination to groundwater, soil, and soil gas is from tetrachloroethene (PCE), trichloroethene (TCE), other volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and dioxins/furans, floating on groundwater beneath the former AMCO site. The

[1] https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES,OPEN,FUDS,CLOSE&status=ACT,BKLG,COM,COLUR&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+(CORTESE)

highest concentrations of contaminants were observed in the central and south-central areas of the site, corresponding with the known locations of former chemical storage units and buried distribution piping. Concrete pavement at the site and off-site locations provides a protective layer that isolates on-site workers from the contaminated soil, soil gas and groundwater contamination underneath the site (City of Oakland, 2014). Active remediation continues at the AMCO facility.

### 3.5.1.2 Hazardous Materials

The potential for hazards exist in the production, use, storage and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Specifically, storage refers to the bulk handling of hazardous materials before and after they are transported to the general geographical area of use. Currently, hazardous materials are transported throughout the Bay Area in great quantities via all modes of transportation including rail, highway, water, air, and pipeline.

The potential hazards associated with industrial activities are a function of the materials being processed, processing systems, and procedures used to operate and maintain the facility. The hazards that are likely to exist are identified by the physical and chemical properties of the materials being handled and their process conditions, including the following events:

**Toxic gas clouds:** Toxic gas clouds are releases of volatile chemicals (e.g., anhydrous ammonia, chlorine, and hydrogen sulfide) that could form a cloud and migrate off-site, thus exposing individuals. “Worst-case” conditions tend to arise when very low wind speeds coincide with an accidental release, which can allow the chemicals to accumulate rather than disperse.

**Torch fires (gas and liquefied gas releases), flash fires (liquefied gas releases), pool fires, and vapor cloud explosions (gas and liquefied gas releases):** The rupture of a storage tank or vessel containing a flammable gaseous material (like propane or gasoline), without immediate ignition, can result in a vapor cloud explosion. The “worst-case” upset would be a release that produces a large aerosol cloud with flammable properties. If the flammable cloud does not ignite after dispersion, the cloud would simply dissipate. If the flammable cloud were to ignite during the release, a flash fire or vapor cloud explosion could occur. If the flammable cloud were to ignite immediately upon release, a torch fire would ensue.

**Thermal Radiation:** Thermal radiation is the heat generated by a fire and the potential impacts associated with exposure. Exposure to thermal radiation would result in burns, the severity of which would depend on the intensity of the fire, the duration of exposure, and the distance of an individual to the fire.

**Explosion/Overpressure:** Process vessels containing flammable explosive vapors and potential ignition sources are present at industrial facilities, e.g., refineries and chemical plants. Explosions may occur if the flammable/explosive vapors came into contact with an ignition source. An explosion could cause impacts to individuals and structures in the area due to overpressure.

### 3.5.1.3 Hazardous Materials Incidents

Emergency incidents involving hazardous materials can threaten human life, damage property, contaminate the environment, require the evacuation of nearby populations and impact transportation routes. Potential hazards include accidental releases of toxic/hazardous materials, as well as fires and explosions. The Department of Transportation, Office of Pipeline and Hazardous Materials Safety Administration (PHMSA) utilizes a post incident reporting system that collects data on incidents involving accidents. Information on accidental releases of hazardous materials are reported to PHMSA. PHMSA provides access to retrieve data from the Incident Reports Database, which also includes non-pipeline incidents, e.g., truck and rail events. Incident data and summary statistics, e.g., release date geographical location (state and county) and type of material released, are available online from the Hazmat Incident Database and are summarized in yearly incident summary reports (PHMSA, 2018).

The California Hazardous Materials Incident Reporting System (CHMIRS) is a post incident reporting system to collect data on incidents involving the accidental release of hazardous materials. Information on accidental releases of hazardous materials are reported to and maintained by the California Governor's Office of Emergency Services (Cal OES). While information on accidental releases is reported to Cal OES, Cal OES no longer conducts statistical evaluations of the releases.

Table 3.5-1 provides a summary of the reported hazardous materials incidents in the nine counties within the Bay Area. In 2018, there were a total of 1,396 incidents reported in the nine counties in the Bay Area (see Table 3.5-1), with the most incidents (380) reported in Alameda County, followed by Contra Costa County (245).

**TABLE 3.5-1**
**Hazardous Materials Incidents 2018 by County**

| County | Reported Incidents |
|---|---|
| Alameda | 380 |
| Contra Costa | 245 |
| Marin | 82 |
| Napa | 39 |
| San Francisco | 74 |
| San Mateo | 129 |
| Santa Clara | 185 |
| Solano | 106 |
| Sonoma | 156 |
| **Total No. of Reported Incidents** | **1,396** |

Source: OES, 2019

The location of the spills varies (see Table 3.5-2). In the nine counties that comprise the Air District, hazardous materials incidents during transportation, in residential areas, and at waterways were the most common locations, respectively, for hazardous materials incidents. About 15 percent of the hazardous materials incidents that occurred within California occurred within the nine counties that comprise the Bay Area, with spills in waterways being the most common (24 percent), followed by residential areas (15 percent).

**TABLE 3.5-2**

**Hazardous Materials Incidents 2018**

| Spill Site | Bay Area | Statewide | Percent of State Total |
|---|---|---|---|
| Waterways | 206 | 860 | 24% |
| Transportation | 407 | 2,831 | 14% |
| Industrial | 65 | 486 | 13% |
| Commercial | 212 | 1,463 | 14% |
| Residential | 192 | 1,290 | 15% |
| Utilities | 26 | 208 | 13% |
| Military | 4 | 57 | 7% |
| Other | 155 | 1,251 | 12% |
| **Total** | 1,267 | 8,446 | 15% |

Source: OES, 2019

### 3.5.1.4 Potential Hazards Associated with Air Pollution Control Equipment

The District has evaluated the hazards associated with the implementation of rules in previous air plans (2017 Clean Air Plan) and proposed District rules.[1] The analyses covered a range of potential air pollution control technologies and equipment. EIRs prepared for the previous rules and air plans have specifically evaluated hazard impacts from add-on pollution control equipment. Add on pollution control technologies include scrubbers, bag filters, SCRs, vapor recovery systems, and electrostatic precipitators. The use of add-on pollution control equipment may concentrate or utilize hazardous materials. A malfunction or accident when using add-on pollution control equipment could potentially expose people to hazardous materials, explosions, or fires. The transport, use, and storage of hazardous materials are evaluated herein.

### 3.5.1.5 Electric Vehicles

Electric and hybrid vehicles (hybrids) both use electricity as part of their fuel system. Electric vehicles rely purely on electric power stored in batteries. Hybrids also use batteries as part of their fuel supply; however, hybrids supplement their electric demand by using gasoline engines to generate either mechanical or electric power on demand. Since gasoline is a conventional

[1] http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans

fuel, any difference in hazards associated with hybrid vehicles would be from the batteries. The most common battery technologies used in modern electric vehicles and hybrids are nickel-metal hydride (NiMH) and lithium ion (Li-ion) (AFDC, 2016). A number of state-back incentives have pushed the sales of zero emission vehicles, including CARB's State Implementation Plan and the Air District's 2017 Air Plan. Electric and plug-in hybrid vehicles now represent 7.8 percent of all new car sales in California, (CARB, 2019).

## 3.5.2 REGULATORY SETTING

There are many federal and state rules and regulations for handling hazardous materials, which serve to minimize the potential impacts associated with hazards.

### 3.5.2.1 Federal Regulations

The U.S. EPA is the primary federal agency charged with protecting human health and with safeguarding the natural environment from pollution into air, water, and land. The U.S. EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The U.S. EPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and Indian tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Since 1970, Congress has enacted numerous environmental laws that pertain to hazardous materials, for the U.S. EPA to implement as well as to other agencies at the federal, state and local level, as described in the following subsections.

#### 3.5.2.1.1 Hazardous Materials and Waste Regulations

**Resource Conservation and Recovery Act:** The Resource Conservation and Recovery Act (RCRA) of 1976 authorizes the U.S. EPA to control the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA considers materials and waste to be hazardous based on four characteristics: ignitability, corrosivity, reactivity, and toxicity. Under RCRA regulations, hazardous wastes must be tracked from the time of generation to the point of disposal. In 1984, RCRA was amended with addition of the Hazardous and Solid Waste Amendments, which authorized increased enforcement by the U.S. EPA, stricter hazardous waste standards, and a comprehensive underground storage tank program. Likewise, the Hazardous and Solid Waste Amendments focused on waste reduction and corrective action for hazardous releases. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Amendments. Individual states may implement their own hazardous waste programs under RCRA, with approval by the U.S. EPA. California has been delegated authority to operate its own hazardous waste management program.

**Comprehensive Environmental Response, Compensation and Liability Act:** The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which is often commonly referred to as Superfund, is a federal statute that was enacted in 1980 to address abandoned sites containing hazardous waste and/or contamination. CERCLA was amended in

1986 by the Superfund Amendments and Reauthorization Act, and by the Small Business Liability Relief and Brownfields Revitalization Act of 2002.

CERCLA contains prohibitions and requirements concerning closed and abandoned hazardous waste sites; establishes liability of persons responsible for releases of hazardous waste at these sites; and establishes a trust fund to provide for cleanup when no responsible party can be identified. The trust fund is funded largely by a tax on the chemical and petroleum industries. CERCLA also provides federal jurisdiction to respond directly to releases or impending releases of hazardous substances that may endanger public health or the environment.

CERCLA also enabled the revision of the National Contingency Plan (NCP) which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the National Priorities List, which identifies hazardous waste sites eligible for long-term remedial action financed under the federal Superfund program.

**Prevention of Accidental Releases and Risk Management Programs:** Requirements pertaining to the prevention of accidental releases are promulgated in §112 (r) of the CAA Amendments of 1990 [42 U.S.C. §7401 et. seq.]. The objective of these requirements was to prevent the accidental release and to minimize the consequences of any such release of a hazardous substances. Under these provisions, facilities that produce, process, handle or store hazardous substances have a duty to: 1) identify hazards which may result from releases using hazard assessment techniques; 2) design and maintain a safe facility and take steps necessary to prevent releases; and, 3) minimize the consequence of accidental releases that occur.

In accordance with the requirements in §112 (r), U.S. EPA adopted implementing guidelines in 40 CFR Part 68. Under this part, stationary sources with more than a threshold quantity of a regulated substance shall be evaluated to determine the potential for and impacts of accidental releases from any processes subject to the federal risk management requirements. Under certain conditions, the owner or operator of a stationary source may be required to develop and submit a Risk Management Plan (RMP). RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program. At the local level, RMPs are implemented by the local fire departments.

3.5.2.1.2 Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA) is a federal law adopted by Congress in 1986 that is designed to help communities plan for emergencies involving hazardous substances. EPCRA establishes requirements for federal, state and local governments, Indian tribes, and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals. The Community Right-to-Know provisions help increase the public's knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment. There are four major provisions of EPCRA:

1. Emergency Planning (§§301 – 303) requires local governments to prepare chemical emergency response plans, and to review plans at least annually. These sections also require state governments to oversee and coordinate local planning efforts. Facilities that maintain Extremely Hazardous Substances (EHS) onsite (see 40 CFR Part 355 for the list of EHS chemicals) in quantities greater than corresponding "Threshold Planning Quantities" must cooperate in the preparation of the emergency plan.

2. Emergency Release Notification (§304) requires facilities to immediately report accidental releases of EHS chemicals and hazardous substances in quantities greater than corresponding Reportable Quantities (RQs) as defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to state and local officials. Information about accidental chemical releases must be made available to the public.

3. Hazardous Chemical Storage Reporting (§§311 – 312) requires facilities that manufacture, process, or store designated hazardous chemicals to make Safety Data Sheets (SDSs, formerly referred to as material safety data sheets or MSDSs) describing the properties and health effects of these chemicals available to state and local officials and local fire departments. These sections also require facilities to report to state and local officials and local fire departments, inventories of all onsite chemicals for which SDSs exist. Lastly, information about chemical inventories at facilities and SDSs must be available to the public.

4. Toxic Chemical Release Inventory (§313) requires facilities to annually complete and submit a Toxic Chemical Release Inventory Form for each Toxic Release Inventory (TRI) chemical that are manufactured or otherwise used above the applicable threshold quantities.

Implementation of EPCRA has been delegated to the State of California. The California Emergency Management Agency requires facilities to develop a Hazardous Materials Business Plan if they handle hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas or extremely hazardous substances above the threshold planning quantity. The Hazardous Materials Business Plan is provided to state and local emergency response agencies and includes inventories of hazardous materials, an emergency plan, and implements a training program for employees.

#### 3.5.2.1.3 Hazardous Materials Transportation Act

The Hazardous Material Transportation Act (HMTA), adopted in 1975 (see 49 U.S.C. §§5101 – 5127), gave the Secretary of Transportation the regulatory and enforcement authority to provide adequate protection against the risks to life and property inherent in the transportation of hazardous materials in commerce. The U.S. DOT (see 49 CFR Parts 171-180) oversees the movement of hazardous materials at the federal level. The HMTA requires that carriers report accidental releases of hazardous materials to U.S. DOT at the earliest practical moment. Other incidents that must be reported include deaths, injuries requiring hospitalization, and property damage exceeding $50,000. The hazardous material regulations also contain emergency response provisions which include incident reporting requirements. Reports of major incidents go to the National Response Center, which in turn is linked with CHEMTREC, a public service hotline established by the chemical manufacturing industry for emergency responders to obtain information and assistance for emergency incidents involving chemicals and hazardous materials.

Hazardous materials regulations are implemented by the Research and Special Programs Administration (RSPA) branch of the U.S. DOT. The regulations cover the definition and classification of hazardous materials, communication of hazards to workers and the public, packaging and labeling requirements, operational rules for shippers, and training. These regulations apply to interstate, intrastate, and foreign commerce by air, rail, ships, and motor vehicles, and also cover hazardous waste shipments. The Federal Aviation Administration Office of Hazardous Materials Safety is responsible for overseeing the safe handling of hazardous materials aboard aircraft. The Federal Railroad Administration oversees the transportation of hazardous materials by rail. The U.S. Coast Guard regulates the bulk transport of hazardous materials by sea. The Federal Highway Administration (FHWA) is responsible for highway routing of hazardous materials and issuing highway safety permits.

3.5.2.1.4 Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) was enacted by Congress in 1976 (see 15 U.S.C. §2601 et seq.) and gave the U.S. EPA the authority to protect the public from unreasonable risk of injury to health or the environment by regulating the manufacture, sale, and use of chemicals currently produced or imported into the United States. The TSCA, however, does not address wastes produced as byproducts of manufacturing. The types of chemicals regulated by the act fall into two categories: existing and new. New chemicals are defined as "any chemical substance which is not included in the chemical substance list compiled and published under [TSCA] section 8(b)." This list included all of chemical substances manufactured or imported into the U.S. prior to December 1979. Existing chemicals include any chemical currently listed under section 8 (b). The distinction between existing and new chemicals is necessary as the act regulates each category of chemicals in different ways. The U.S. EPA repeatedly screens both new and existing chemicals and can require reporting or testing of those that may pose an environmental or human-health hazard. The U.S. EPA can ban the manufacture and import of those chemicals that pose an unreasonable risk.

3.5.2.1.5 Hazardous Material Worker and Public Safety Requirements

**Occupational Safety and Health Administration Regulations:** The federal Occupational Safety and Health Administration (OSHA) is an agency of the United States Department of Labor that was created by Congress under the Occupational Safety and Health Act in 1970. OSHA is the agency responsible for assuring worker safety in the handling and use of chemicals in the workplace. Under the authority of the Occupational Safety and Health Act of 1970, OSHA has adopted numerous regulations pertaining to worker safety (see 29 CFR Part 1910). These regulations set standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries. Some OSHA regulations contain standards relating to hazardous materials handling to protect workers who handle toxic, flammable, reactive, or explosive materials, including workplace conditions, employee protection requirements, first aid, and fire protection, as well as material handling and storage. For example, facilities which use, store, manufacture, handle, process, or move hazardous materials are required to conduct employee safety training, have available and know how to use safety equipment, prepare illness prevention programs, provide hazardous substance exposure warnings, prepare emergency response plans, and prepare a fire prevention plan.

Procedures and standards for safe handling, storage, operation, remediation, and emergency response activities involving hazardous materials and waste are promulgated in 29 CFR Part 1910, Subpart H. Some key subsections in 29 CFR Part 1910, Subpart H are §1910.106 - Flammable Liquids and §1910.120 - Hazardous Waste Operations and Emergency Response. In particular, the Hazardous Waste Operations and Emergency Response regulations contain requirements for worker training programs, medical surveillance for workers engaging in the handling of hazardous materials or wastes, and waste site emergency and remediation planning, for those who are engaged in specific clean-up, corrective action, hazardous material handling, and emergency response activities (see 29 CFR Part 1910 Subpart H, §1910.120 (a)(1)(i-v) and §1926.65 (a)(1)(i-v)).

**Process Safety Management:** As part of the numerous regulations pertaining to worker safety adopted by OSHA, specific requirements that pertain to Process Safety Management (PSM) of Highly Hazardous Chemicals were adopted in 29 CFR Part 1910 Subpart H, §1910.119 and 8 CCR §5189 to protect workers at facilities that have toxic, flammable, reactive or explosive materials. PSM program elements are aimed at preventing or minimizing the consequences of catastrophic releases of chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan. Specifically, the PSM program requires facilities that use, store, manufacture, handle, process, or move hazardous materials to conduct employee safety training; have an inventory of safety equipment relevant to potential hazards; have knowledge on the use of the safety equipment; prepare an illness prevention program; provide hazardous substance exposure warnings; prepare an emergency response plan; and prepare a fire prevention plan.

**Emergency Action Plan:** An Emergency Action Plan (EAP) is a written document required by OSHA standards promulgated in 29 CFR Part 1910, Subpart E, §1910.38 (a) to facilitate and organize a safe employer and employee response during workplace emergencies. An EAP is required by all that are required to have fire extinguishers. At a minimum, an EAP must include the following: 1) a means of reporting fires and other emergencies; 2) evacuation procedures and emergency escape route assignments; 3) procedures to be followed by employees who remain to operate critical plant operations before they evacuate; 4) procedures to account for all employees after an emergency evacuation has been completed; 5) rescue and medical duties for those employees who are to perform them; and, 6) names or job titles of persons who can be contacted for further information or explanation of duties under the plan.

**National Fire Regulations:** The National Fire Codes (NFC), Title 45, published by the National Fire Protection Association (NFPA) contains standards for laboratories using chemicals, which are not requirements, but are generally employed by organizations in order to protect workers. These standards provide basic protection of life and property in laboratory work areas through prevention and control of fires and explosions, and also serve to protect personnel from exposure to non-fire health hazards.

In addition to the NFC, the NFPA adopted a hazard rating system which is promulgated in NFPA 704 - Standard System for the Identification of the Hazards of Materials for Emergency Response. NFPA 704 is a "standard (that) provides a readily recognized, easily understood system for identifying specific hazards and their severity using spatial, visual, and numerical methods to describe in simple terms the relative hazards of a material. It addresses the health, flammability, instability, and related hazards that may be presented as short-term, acute exposures that are most likely to occur as a result of fire, spill, or similar emergency." In addition, the hazard ratings per NFPA 704 are used by emergency personnel to quickly and easily identify the risks posed by nearby hazardous materials in order to help determine what, if any, specialty equipment should be used, procedures followed, or precautions taken during the first moments of an emergency response. The scale is divided into four color-coded categories, with blue indicating level of health hazard, red indicating the flammability hazard, yellow indicating the chemical reactivity, and white containing special codes for unique hazards such as corrosivity and radioactivity. Each hazard category is rated on a scale from 0 (no hazard; normal substance) to 4 (extreme risk).

**Health Hazards Guidance:** In addition to fire impacts, health hazards can also be generated due to exposure of chemicals present in products, by-products and wastes. As a measure of a chemical's potential health hazards, the following values need to be considered: the Threshold Limit Values established by the American Conference of Governmental Industrial Hygiene, OSHA's Permissible Exposure Limits, the Immediately Dangerous to Life and Health levels recommended by the National Institute for Occupational Safety and Health (NIOSH), and health hazards developed by the National Safety Council. The following is a brief description of each of these values.

> Threshold Limit Values (TLVs): The TLV of a chemical substance is a level to which it is believed a worker can be exposed day after day for a working lifetime without adverse health effects. The TLV is an estimate based on the known toxicity in humans or animals of a given chemical substance, and the reliability and accuracy of the latest sampling and analytical methods. The TLV for chemical substances is defined as a concentration in air, typically for inhalation or skin exposure. Its units are in parts per million (ppm) for gases and in milligrams per cubic meter ($mg/m^3$) for particulates. The TLV is a recommended guideline by the American Conference of Governmental Industrial Hygienists (ACGIH).

> Permissible Exposure Limits (PEL): The PEL is a legal limit, usually expressed in ppm, established by OSHA to protect workers against the health effects of exposure to hazardous substances. PELs are regulatory limits on the amount or concentration of a substance in the air. A PEL is usually given as a time-weighted average (TWA),

although some are short-term exposure limits (STEL) or ceiling limits. A TWA is the average exposure over a specified period of time, usually eight hours. This means that, for limited periods, a worker may be exposed to concentrations higher than the PEL, so long as the average concentration over eight hours remains lower. A short-term exposure limit is one that addresses the average exposure over a 15 to 30 minute period of maximum exposure during a single work shift. A ceiling limit is one that may not be exceeded for any period of time, and is applied to irritants and other materials that have immediate effects. The OSHA PELs are published in 29 CFR 1910.1000, Table Z1.

Immediately Dangerous to Life and Health (IDLH): IDLH is an acronym defined by NIOSH as exposure to airborne contaminants that is "likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment." IDLH values are often used to guide the selection of breathing apparatus that are made available to workers or firefighters in specific situations.

**Chemical Facility Anti-Terrorism Standards:** The Federal Department of Homeland Security established the chemical facility anti-terrorism standards in 2007 (see 6 CFR Part 27). These regulations established risk-based performance standards for the security of chemical facilities and require covered chemical facilities to prepare Security Vulnerability Assessments, which identify facility security vulnerabilities, and to develop and implement security plans.

### 3.5.2.2 State Regulations

**California Hazardous Waste Control Law:** The California Hazardous Waste Control Law is administered by the California Environmental Protection Agency (CalEPA) to regulate hazardous wastes within the State of California. While the California Hazardous Waste Control Law is generally more stringent than RCRA, both the state and federal laws apply in California. The California Department of Toxic Substances Control (DTSC) is the primary agency in charge of enforcing both the federal and state hazardous materials laws in California. The DTSC regulates hazardous waste, oversees the cleanup of existing contamination, and pursues methods to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California under the authority of RCRA, the California Hazardous Waste Control Law, and the California Health and Safety Code. Under the direction of the CalEPA, the DTSC maintains the Cortese List and Envirostor databases of hazardous materials and waste sites as specified under Government Code §65962.5.

The Hazardous Waste Control Law (22 CCR Chapter 11, Appendix X) also lists 791 chemicals and approximately 300 common materials which may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

**California Occupational Safety and Health Administration:** The California Occupational Safety and Health Administration (CalOSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace in California. CalOSHA requires the employer to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. CalOSHA standards are generally more stringent than federal regulations.

**Hazardous Materials Release Notification:** Many state statutes require emergency notification of a hazardous chemical release, including:

1. California Health and Safety Code §25270.7, §25270.8, and §25507;
2. California Vehicle Code §23112.5;
3. California Public Utilities Code §7673 (General Orders #22-B, 161);
4. California Government Code §51018 and §8670.25.5(a);
5. California Water Code §13271 and §13272; and,
6. California Labor Code §6409.1(b)10.

**California Accident Release Prevention (CalARP) Program:** The California Accident Release Prevention Program (19 CCR Division 2, Chapter 4.5) requires the preparation of Risk Management Plans (RMPs). CalARP requires stationary sources with more than a threshold quantity of a regulated substance to be evaluated to determine the potential for and impacts of accidental releases from any processes onsite (not transportation) subject to state risk management requirements. RMPs are documents prepared by the owner or operator of a stationary source containing detailed information including: (1) regulated substances held onsite at the stationary source; (2) offsite consequences of an accidental release of a regulated substance; (3) the accident history at the stationary source; (4) the emergency response program for the stationary source; (5) coordination with local emergency responders; (6) hazard review or process hazard analysis; (7) operating procedures at the stationary source; (8) training of the stationary source's personnel; (9) maintenance and mechanical integrity of the stationary source's physical plant; and (10) incident investigation. The CalARP program is implemented at the local government level by Certified Unified Program Agencies (CUPAs) also known as Administering Agencies (AAs). Typically, local fire departments are the administering agencies of the CalARP program because they frequently are the first responders in the event of a release. The CalARP regulations were last updated in October 2017 to include new Program 4 requirements.

**Hazardous Materials Disclosure Program:** The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) as promulgated by CalEPA in CCR, Title 27, Chapter 6.11 requires the administrative consolidation of six hazardous materials and waste programs (program elements) under one agency, a CUPA. The Unified Program administered by the State of California consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the state's environmental and emergency management programs, which include Hazardous Waste

Generator and Onsite Hazardous Waste Treatment Programs ("Tiered Permitting"); Above 0ground Spill Prevention Control and Countermeasures (SPCC) Program; Hazardous Materials Release Response Plans and Inventories (business plans); the CalARP Program; the Underground Storage Tank Program; and the Uniform Fire Code Plans and Inventory Requirements. The Unified Program is implemented at the local government level by CUPAs.

**Hazardous Materials Management Act:** The State of California (California Health and Safety Code Division 20, Chapter 6.95) requires any business that handles more than a specified amount of hazardous or extremely hazardous materials, termed a "reportable quantity," to submit a Hazardous Materials Business Plan to its Certified Unified Program Agency. Business plans must include an inventory of the types, quantities, and locations of hazardous materials at the facility. Businesses are required to update their business plans at least once every three years and the chemical portion of their plans every year. Also, business plans must include emergency response plans and procedures to be used in the event of a significant or threatened significant release of a hazardous material. These plans need to identify the procedures to follow for immediate notification to all appropriate agencies and personnel of a release, identification of local emergency medical assistance appropriate for potential accident scenarios, contact information for all company emergency coordinators, a listing and location of emergency equipment at the business, an evacuation plan, and a training program for business personnel. The requirements for hazardous materials business plans are specified in the California Health and Safety Code and 19 CCR.

**Hazardous Materials Transportation in California:** California regulates the transportation of hazardous waste originating or passing through the State in Title 13, CCR. The California Highway Patrol (CHP) and Caltrans have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. Caltrans has emergency chemical spill identification teams at locations throughout the State.

**California Fire Code:** While NFC Standard 45 and NFPA 704 are regarded as nationally recognized standards, the California Fire Code (24 CCR) also contains state standards for the use and storage of hazardous materials and special standards for buildings where hazardous materials are found. Some of these regulations consist of amendments to NFC Standard 45. State Fire Code regulations require emergency pre-fire plans to include training programs in first aid, the use of fire equipment, and methods of evacuation.

**AB 440:** On October 5, 2013, the Governor signed AB 440 (Gatto), giving cities, counties, and some housing authorities the authority to compel cleanup of contaminated properties. AB 440 gives municipalities the right to obtain environmental information from property owners, the authority to compel cleanup of properties, cost recovery for cleanup efforts, and immunity from liability during the cleanup process. AB 440 expands on the previous Polanco Act provisions by applying to properties with the presence or perceived presence of a release of hazardous materials that contributes to the vacancies, abandonment of property, or reduction in property utilization.

### 3.5.2.3 Local Regulations

**San Francisco Bay Regional Water Quality Control Board:** West Oakland is located within the jurisdiction of the San Francisco Bay Water Board. The Water Board provides for protection of State waters in accordance with the Porter-Cologne Water Quality Act. The Water Board can act as lead agency to provide oversight for sites where the quality of groundwater or surface waters is threatened, and has authority to require investigations and remedial actions.

**Alameda County Department of Environmental Health[2] and Oakland Fire Department[3]:** The Alameda County Department of Environmental Health and Oakland Fire Department are the primary agencies responsible for local enforcement of State and federal regulations pertaining to hazardous materials management and oversight of hazardous materials investigations and remediation in Alameda County.

~~**Urban Land Redevelopment Program:** The Oakland Urban Land Redevelopment Program is a collaborative effort by the City of Oakland and the principal agencies charged with enforcing environmental regulations, including DTSC, the Regional Water Board, and Alameda County Department of Environmental Health, to facilitate the cleanup and redevelopment of contaminated properties in Oakland. The program is coordinated by the City and is specific to Oakland sites. The Program clarifies environmental investigation requirements and establishes Oakland-specific, risk-based corrective action standards for qualifying sites. Implementation of this program is intended to provide assurance that human health and environmental resources will be protected without needlessly delaying future construction and development projects.~~

**Oakland Hazardous Materials Regulation:** the City of Oakland assumed authority and responsibility for the administration and enforcement of the unified hazardous waste and hazardous materials management program within the city. The Office of Emergency Services is the administering agency for the CUPA program in Oakland. The CUPA programs include coordination of the local hazardous waste generator programs, underground and above ground storage tank management, and investigations of leaking underground storage tank sites. The Oakland Fire Department also implements the City of Oakland Hazardous Materials Assessment and Reporting Program, which requires notification of hazardous materials storage, use and handling, and an assessment as to whether this storage, use and handling would cause a public health hazard.

**City of Oakland Hazardous Materials Release Response Plan Program:** The Oakland Fire Department requires any business that handles more than a threshold quantity of a hazardous material (varies by chemical) to develop and submit to the Oakland Fire Department a Hazardous Materials Business Plan. The Hazardous Materials Business Plan must include and address facility information including the inventory of hazardous materials, facility map, location of

[2] https://www.acgov.org/aceh/hazard/
[3] http://www2.oaklandnet.com/government/o/OFD/s/HAZMAT/index.htm

hazardous materials storage, emergency response plans and procedures, training, release reporting, underground storage tanks, and hazardous waste treatment/tiered permitting.

In addition to the above, the City of Oakland's General Plan Safety Element has policies relevant to the management of hazards and hazardous materials, e.g., minimize the potential risks to human and environmental health and safety associated with the past and present use, handling, storage and disposal of hazardous materials; and reduces the public's exposure to toxic air contaminants.

### 3.5.3 SIGNIFICANCE CRITERIA

The impacts associated with hazards will be considered significant if any of the following occur:

1. Non-compliance with any applicable design code or regulation.
2. Non-conformance to National Fire Protection Association standards.
3. Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
4. Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.
5. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
6. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

### 3.5.4 EVALUATION OF HAZARDS AND HAZARDOUS MATERIALS IMPACTS

As discussed previously, the Notice of Preparation and Initial Study (see Appendix A) found that the implementation of the West Oakland Community Action Plan could result in potential hazard impacts from implementing certain of the Strategies.

It is expected that the direct effects of the West Oakland Community Action Plan would be reductions in criteria pollutant and TAC emissions through the implementation of Strategies. Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines; several strategies could result in new hazards associated with modifications to energy-generating facilities, as well as the increased use of hazardous materials associated with air pollution control equipment.[4] This subchapter evaluates the potential impacts on hazards and hazardous materials that could result in future projects due to implementation of the West Oakland Community Action Plan. The potential hazard impacts associated with the Strategies that the Air District would implement are summarized in Table 3.5-3.

[4] It should be noted that the Initial Study indicated that modifications to refineries associated with the production of alternative fuels could also generate potentially significant hazard impacts. Since the preparation of the NOP/IS, the Strategies that would have encouraged the use of alternative fuels have been modified to encourage the use of zero emission vehicles, eliminating the potential impacts of alternative fuels.

**TABLE 3.5-3**

**Control Strategy with Potential Hazard/Hazardous Materials Impacts**

| Strategy # | Description | Control Methodology | Potential Hazard Impacts |
|---|---|---|---|
| ~~47~~ 52 | Incentives to support the development of hydrogen fuel cell infrastructure. | Reduce emissions through the development of hydrogen cells | Potential hazards due to increased use of hydrogen. |
| ~~61~~ 66 | District works with Schnitzer Steel to study the feasibility of installing a shore power or bonnet system to capture vessel emissions | Bonnet system could include SCR and filtration system or shore power could be used. | Potential hazards associated with the use of ammonia to control NOx emissions from vessels. |

### 3.5.4.1 Ammonia Use in SCRs

Proposed Strategy 61 may require or encourage the use of a bonnet system that could include an SCR to reduce NOx emissions. Ammonia or urea is used to react with the NOx, in the presence of a catalyst, to form nitrogen gas and water. In some SCR installations, anhydrous ammonia is used. Although ammonia is currently used in SCRs and other applications throughout the Bay Area, safety hazards related to the transport, storage, and handling of ammonia exist. Ammonia has acute and chronic non-cancer health effects and also contributes to ambient PM10 emissions under some circumstances.

**Onsite Release Scenario:** The use of anhydrous ammonia involves greater risk than aqueous ammonia because it is stored and transported under pressure. In the event of a leak or rupture of a tank, anhydrous ammonia is released and vaporizes into the gaseous form, which is its normal state at atmospheric pressure and produces a toxic cloud. Aqueous ammonia is a liquid at ambient temperatures and gas is only produced when a liquid pool from a spill evaporates. Under current Office of Emergency Services' regulations implementing the CalARP requirements, both anhydrous and aqueous ammonia (20 percent or greater) are regulated under the California Code of Regulations Title 19, Section 2770.5.

The Schnitzer Steel facility is located in an industrial area adjacent to the Port, so that a SCR unit would be located within an industrial area. However, the use and storage of anhydrous ammonia could be expected to result in significant hazard impacts as there is the potential for anhydrous ammonia to migrate off-site and expose individuals to concentrations of ammonia that could lead to adverse health impacts. In the event of a release, anhydrous ammonia would form a vapor cloud (since anhydrous ammonia is a gas at standard temperature and pressure) and migrate from the point of release. The number of people exposed and the distance that the cloud would travel would depend on the meteorological conditions present. Depending on the location of the spill, a number of individuals could be exposed to concentrations of ammonia that would exceed the Emergency Response Planning Guidelines-2 (ERPG2) concentrations.

In the event of an aqueous ammonia release, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a release from onsite vessels or storage tanks, spills would be released into a containment area, which would limit the surface area of the spill and the subsequent toxic emissions. The containment area would limit the potential pool size, minimizing the amount of spilled material that would evaporate, form a vapor cloud, and impact residences or other sensitive receptors in the area of the spill. Significant hazard impacts associated with a release of aqueous ammonia would not be expected. Therefore, the use of aqueous ammonia is expected to be preferred over anhydrous ammonia.

**Transportation Release Scenario:** Use and transport of anhydrous ammonia involves greater risk than aqueous ammonia because it is stored and transported under pressure. In the event of a leak or rupture of a tank, anhydrous ammonia is released and vaporizes into the gaseous form, which is its normal state at atmospheric temperature and pressure, and produces a toxic cloud. Aqueous ammonia is a liquid at ambient temperatures and pressure, and gas is only produced when a liquid pool from a spill evaporates. Deliveries of ammonia would be made to the facility by tanker truck via public roads. The maximum capacity of a tanker truck is 150 barrels. Regulations for the transport of hazardous materials by public highway are described in 49 Code of Federal Regulations (CFR) 173 and 177. Anhydrous ammonia and aqueous ammonia (greater than 10 percent) is considered a hazardous material under 49 CFR 172 (§172.101).

Although trucking of ammonia and other hazardous materials is regulated for safety by the U.S. Department of Transportation, there is a possibility that a tanker truck could be involved in an accident spilling its contents. The factors that enter into accident statistics include distance traveled and type of vehicle or transportation system. Factors affecting automobiles and truck transportation accidents include the type of roadway, presence of road hazards, vehicle type, maintenance and physical condition, and driver training. A common reference frequently used in measuring risk of an accident is the number of accidents per million miles traveled. Complicating the assessment of risk is the fact that some accidents can cause significant damage without injury or fatality.

The actual occurrence of an accidental release of a hazardous material cannot be predicted. The location of an accident or whether sensitive populations would be present in the immediate vicinity also cannot be identified. In general, the shortest and most direct route that takes the least amount of time would have the least risk of an accident. Hazardous material transporters do not routinely avoid populated areas along their routes, although they generally use approved truck routes that take population densities and sensitive populations into account.

The hazards associated with the transport of regulated (CCR Title 19, Division 2, Chapter 4.5 or the CalARP requirements) hazardous materials, including ammonia, would include the potential exposure of numerous individuals in the event of an accident that would lead to a spill. Factors such as amount transported, wind speed, ambient temperatures, route traveled, and distance to sensitive receptors are considered when determining the consequence of a hazardous material spill.

In the unlikely event that the tanker truck would rupture and release the entire 150 barrels of aqueous ammonia, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a road accident, the roads are usually graded and channeled to prevent water accumulation and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent toxic emissions. Additionally, the roadside surfaces may not be paved and may absorb some of the spill. Without this pooling effect on an impervious surface, the spilled ammonia would not evaporate into a toxic cloud and impact residences or other sensitive receptors in the area of the spill. An accidental aqueous ammonia spill occurring during transport is, therefore, not expected to have significant impacts.

In the unlikely event that a tanker truck would rupture and release the entire contents of anhydrous ammonia, the ammonia would be expected to form a vapor cloud (since anhydrous ammonia is a gas at standard temperature and pressure) and migrate from the point of release. There are federal, State and local agencies with jurisdiction over hazardous materials and waste that are responsible for ensuring that hazardous materials and waste handling activities are conducted in accordance with applicable laws and regulations. While compliance with these laws and regulations will minimize the chance of an accidental release of anhydrous ammonia, the potential will still exist that an unplanned release could occur. The number of people exposed and the distance that the cloud would travel would depend on the meteorological conditions present. Depending on the location of the spill, a number of individuals could be exposed to high concentrations of ammonia resulting in potentially significant impacts.

### 3.5.4.2 Hydrogen Fuel Cells

Hydrogen is the simplest, lightest and most plentiful element in the universe. In its normal gaseous state, hydrogen is colorless, odorless, tasteless, non-toxic and burns invisibly. Most hydrogen is made from natural gas through a process known as steam reforming. Reforming separates hydrogen from hydrocarbons by adding heat. Hydrogen can also be produced from a variety of sources including water and biomass. Hydrogen can be used as a combustion fuel or in fuel cell vehicles to produce electricity to power electric motors. Most automakers have placed fuel cell electric vehicles (FCEVs) with customers, or plan to introduce FCEVs to the early commercial market soon. Currently, approximately 6,800 FCEVs have been sold or leased in California and 31 fuel cell buses are in operation. The Alameda-Contra Costa Transit District (AC Transit) operates buses that use hydrogen fuel cell technologies, with bus engines that have operated over 25,000 hours (California Fuel Cell Partnership, 2019).

The generation and distribution of hydrogen as a consumer product is also still in developmental stages. Currently there are 39 hydrogen refueling stations within California, with 11 of those in the Bay Area. An additional 10 fueling stations are under construction or undergoing planning/approval within the Bay Area, including one in Oakland (California Fuel Cell Partnership, 2019). The closest existing or planned hydrogen fueling stations within or adjacent to Oakland include the following:

1. 1172 45$^{th}$ St. Emeryville, CA 94608

2. 1250 University Avenue, Berkeley, CA 94702 (has planning approval, expected to be completed in 2019).
3. 350 Grand Avenue, Oakland, CA 92610 (under construction, expected to be completed in 2019)

Most of the refueling stations depend on bulk liquid hydrogen delivery; however, a few hydrogen gas pipeline stations and on-site steam reformer stations exist. The physical hazards associated with bulk liquid transport and storage are similar to liquid natural gas, as they are both cryogenic liquids. The physical hazards associated with pipeline and steam reformer stations are similar to compressed natural gas, as they are both compressed gases. In general, the fire hazards associated with hydrogen spills or leaks are higher than conventional fuels. This is due to the wide flammability range and low ignition energy of hydrogen. However, hydrogen tanks are built to more rigorous standards than conventional fuel tanks, which reduces the likelihood of spills or leaks.

The main additional hazard associated with the use of hydrogen versus conventional fuels is the difficulty in seeing hydrogen fires and potentiality of a large fire stemming from a release in the case of an accident (e.g., a tanker truck accident). Another potentially significant hazard is a release of hydrogen in an enclosed space (e.g., garage or vehicle maintenance facility).

Compared with diesel fuel and gasoline, the following can be stated about hydrogen:

1. Diesel fuel and gasoline are toxic to the skin and lungs and hydrogen is non-toxic and non-reactive, so if released, it does not present a health hazard to humans.

2. Diesel fuel gasoline vapors are heavier than air (for specific gravity of air = 1, gasoline is 3.4, diesel fuel is 4.0) while hydrogen is 14 times lighter than air. If released, hydrogen will quickly dissipate into the atmosphere.

3. Hydrogen has an extremely low ignition energy requirement; about 20 microjoules can ignite hydrogen/air, which is about 10 times less than what is required to ignite a gasoline/air mixture (PNL, 2004).

4. Hydrogen is clear, odorless, and tasteless. It burns with an extremely hot, but nonluminous flame which is difficult to see. The flame of burning hydrogen has few warning properties.

5. Hydrogen has an unusually large flammability range and can form ignitable mixtures between four and 75 percent by volume in air. Given confinement and good mixing, hydrogen can be detonated over the range of 18 to 59 percent by volume in air.

Hydrogen is non-toxic and disperses more readily in air than gasoline or diesel. Based upon the preceding information, health hazards associated with hydrogen are approximately equivalent or less when compared to conventional fuels. Furthermore, hydrogen is limited in its use as a transportation fuel.

While hydrogen fuel cell technology is promising, its use in the future is dependent on many things (cost-effectiveness of the technology, availability of hydrogen, etc.), so that the extent to which it may be used in the future to replace petroleum fuels is currently unknown. Hydrogen technologies are controlled through codes and standards in a manner similar to other fuels. Key standards include the National Fire Protection Association (NFPA) 2 Hydrogen Technologies Code, and the NFPA 853 Standard for Fuel Cell Energy Systems. Table 3.5-4 provides an overview of key regulations, codes and standards related to hydrogen infrastructure safety.

The regulations, codes and standards related to hydrogen infrastructure safety address all key aspects of system design, construction, operation, and maintenance. Compliance with these requirements should reduce the potential hazards associated with hydrogen use to a safe level. Further, the hazards associated with hydrogen are not expected to be higher than the hazards associated with the use of conventional gasoline or diesel. For these reasons, the use of hydrogen fuel is not expected to generate significant adverse hazard impacts.

### 3.5.4.3 Construction Activities at Contaminated Sites

West Oakland contains numerous sites which are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (the Cortese List). The Cortese list identifies public drinking water wells with detectable levels of contamination, hazardous substances sites selected for remedial action, sites with known toxic material identified through the abandoned site assessment program, sites with underground storage tanks having a reportable release, and all solid waste disposal facilities from which there is a known migration. Implementation of the Strategies could require future construction activities within sites that have been contaminated.

Any required treatment, remediation or disposal of contaminated soil or groundwater would be required to comply with all local, State, and federal regulations. A Remedial Action Plan, Soil Management Plan, and Groundwater Management Plan, if applicable, would be required to address issues such as dust suppression, protection of surface waters and storm waters, noise attenuation, etc. The Air District may also impose specific requirements to protect ambient air quality from dust, hydrocarbon vapors, or other airborne contaminants that may be released during site remediation activities. A Risk Management Plan and a Site Health and Safety Plan in conformance with federal and CalOSHA regulations could also be required. These plans would include identification of chemicals of concern, potential hazards, personal protection clothing and devices, and emergency response procedures as well as required fencing, dust control or other site control measures needed during excavation to protect the health and safety of workers and the public. OSHA requirements mandate an initial training course and subsequent annual training for workers at contaminated sites. Site-specific training may also be required. For transportation of hazardous materials for disposal, the application would be required to follow state and federal regulations for manifesting the wastes, using licensed waste haulers, and disposing of the materials at a permitted disposal or recycling facility.

The District's Strategies (Table 3.5-3) to provide incentives to support the development of hydrogen fuel cell infrastructure and conduct feasibility studies with Schnitzer Steel will have less than significant impact. Any potential future projects by other agencies will be required to conduct environmental analysis per CEQA. With compliance with the required local, State and federal regulations for treatment, remediation or disposal of contaminated soil or groundwater, the hazards to the public or the environment from hazardous materials at sites required for implementation of the Strategies in the West Oakland Community Action Plan, are expected to be less than significant.

**TABLE 3.5-4**

**Overview of Regulations, Codes, and Standards Related to Hydrogen Infrastructure and Safety**

| Regulations, Codes, Standards | Description |
|---|---|
| **Federal Regulations** | |
| OSHA Regulations 29 CFR 1910 Subpart H | Safe storage, use and handling of hydrogen in the workplace |
| DOT Regulations 49 CFR 171-179 | Safe transport of hydrogen in commerce |
| **Hydrogen Technologies Specific Fire Codes and Standards** | |
| NFPA 2 Hydrogen Technologies | Comprehensive code for hydrogen technologies constructed of extract material from documents such as NFPA 55 and 853 and original material |
| NFPA 55 Compressed Gas and Cryogenic Fluids Code | Comprehensive gas safety code that addresses flammable gases as a class of hazardous materials and also contains hydrogen-specific requirements |
| NFPA 853 | Covers installation of all commercial fuel cells |
| **Hydrogen Technologies Component, Performance, and Installation Standards** | |
| American Society of Mechanical Engineers (ASME) B31.3 and B31.12 Piping and Pipelines | Piping design and installation codes that also cover material selection |
| ASME Boiler and Pressure Vessel Code | Addresses design of steel alloy and composite for pressure vessels |
| Compressed Gas Association (GSA) S Series | Addresses requires for pressure relief devices for containers |
| CGA H Series | Addresses requirements for components and systems |
| Underwriters Laboratory | Addresses requirements for sensors |
| Canadian Standards Association FC1 | Addresses requirements for stationary fuel cells |
| Society of Automotive Engineers | Addresses dispensing and dispenser nozzles |

Source: Rivkin, et al., 2015

## 3.5.5 MITIGATION MEASURES

The hazards and hazardous material impacts are expected to be less than significant if future projects are implemented for the following reasons:

1. Ammonia Use in SCRs: The use of ammonia in SCRs could be potentially significant due to implementation of the Strategies. However, the use of aqueous ammonia at concentrations less than 20 percent by volume is expected to reduce hazard impacts associated with ammonia use to less than significant.

2. Hydrogen Fuel Cells: The hazard impacts associated with the increased use of hydrogen are expected to be less than significant, since compliance with the numerous regulations, codes and standards would minimize potential impacts.

3. Contaminated Sites: The hazards associated with construction activities at contaminated sites are expected to be less than significant, as compliance with existing local, State and federal regulations would minimize the potential impacts to less than significant.

As no significant impacts were identified, no mitigation measures are required.

### 3.5.6 CUMULATIVE IMPACTS

As concluded in the above hazards and hazardous materials analysis, implementation of the Strategies in the West Oakland Community Action Plan, is not expected to cause or contribute to significant adverse hazard impacts. Therefore, overall hazards and hazardous materials impacts, including accidental releases of hazardous materials during transport, were concluded to be less than significant. Because hazards and hazardous materials impacts do not exceed the applicable hazards and hazardous materials significance thresholds, they are not considered to be cumulatively considerable (CEQA Guidelines §15064(h)(1)) and, therefore are not expected to generate significant adverse cumulative hazards and hazardous materials impacts.

In addition to evaluating whether any action the District may take in implementing the proposed West Oakland Community Action Plan will cause significant hazards and hazardous materials impacts by itself, the EIR must also evaluate whether any District action may contribute to significant cumulative impacts caused by other existing and reasonably foreseeable future activities. Specifically, CEQA Guidelines Section 15064(h) requires an evaluation of whether the District's implementation of the proposed Plan will result in any "cumulatively considerable" contribution to an existing (or reasonably foreseeable future) significant hazards and hazardous materials impact. The geographical location for the cumulative analysis is the jurisdictional boundaries of the Air District, which includes all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties, and portions of southwestern Solano and southern Sonoma counties.

#### 3.5.6.1 Impacts of Past, Present and Reasonably Foreseeable Future Projects

As described in Section 3.5.1, a number of hazards currently exist in the Bay Area including those associated with the transport and use of hazardous materials and hazardous waste. A total of 1,396 hazardous materials incidents in the Bay Area were report to OES in 2018, with 308 in Alameda County. In addition, there are currently hazards from existing contaminated sites, and the use of air pollution control equipment and related materials required for their use including ammonia and caustic materials. Further, the use of fossil fuels results in potential impacts associated with fire, explosions, and accidental releases during fuel transport, storage, dispensing and use. Alternative fuels such as hydrogen, natural gas and propane may also result in hazards. However, the hazards associated with alternative fuels are generally less than or equivalent to hazards associated with the use of fossil fuels.

### 3.5.6.2 Contribution of the Proposed Project

The West Oakland Community Action Plan is not expected to introduce any new hazards into West Oakland and, as analyzed in Section 3.5.4 above, the impacts on hazards and hazardous materials are less than significant. Further, the Plan is expected to result in minimal hazard impacts and the reduction in use of fossil fuels is expected to reduce hazards associated with its use. Therefore, hazards and hazardous materials impacts associated with the Plan are not cumulatively significant and would not make a considerable contribution to cumulatively significant hazards/hazardous materials impacts. The Air District concludes that the West Oakland Community Action Plan will not result in any significant hazards or hazardous materials impacts, individually or cumulatively, that must be addressed in this Program EIR.

CEQA requires mitigation measures to be implemented to avoid or minimize any significant impacts. As no significant hazard and hazardous material impacts have been identified, no mitigation measures to reduce or avoid impacts are proposed for the West Oakland Community Action Plan.

# CHAPTER 3.6

## UTILITIES AND SERVICE SYSTEMS

Introduction
Regulatory Setting
Existing Setting
Significance Criteria
Environmental Impacts
Mitigation Measures
Cumulative Utilities and Service System Impacts

# 3.6 UTILITIES AND SERVICE SYSTEMS

## 3.6.1 INTRODUCTION

This subchapter of the EIR evaluates the potential utilities and service system impacts associated with implementation of the West Oakland Community Action Plan, which aims to reduce residents' exposure to diesel PM, fine particulate matter, and TACs.

As discussed in the Initial Study, in accordance with AB 617, the Community Action Plan was developed through monthly meetings with the West Oakland Steering Committee and provides strategies to reduce exposure to air pollution and related health effects in West Oakland. The Notice of Preparation and Initial Study (see Appendix A) evaluated the potential impacts on utilities and service systems associated with implementation of the Strategies in the Community Action Plan. The Notice of Preparation and Initial Study determined that some Strategies have the potential to generate additional solid and/or hazardous waste because of the limited landfill space. No impacts were identified on water conveyance facilities, wastewater treatment facilities, or storm water drainage facilities and these topics are not addressed further in the EIR (see Appendix A). This subchapter evaluates the potential utilities and service system impacts that could result due to implementation of the West Oakland Community Action Plan.

## 3.6.2 ENVIRONMENTAL SETTING

### 3.6.2.1 Solid Waste

Permit requirements, capacity, and surrounding land use are three of the dominant factors limiting the operations and life of landfills. Landfills are permitted by the local enforcement agencies with concurrence from California's Department of Resources Recycling and Recovery (CalRecycle). Local agencies establish the maximum amount of solid waste which can be received by a landfill each day and the operational life of a landfill. Landfills are operated by both public and private entities.

There are three primary classes of landfill sites permitted to receive varying severity of waste materials. Class I sites are facilities that can accept hazardous waste as well as municipal solid waste, construction debris, and yard waste. Class II sites may receive certain designated waste along with municipal solid waste, construction debris, and yard waste. Class III sites can only accept non-hazardous waste, e.g., solid waste construction debris, wood and yard waste, and certain non-hazardous industrial waste.

A total of 14 active landfills are located within the nine counties that make up the Bay Area, with a total capacity of over 42,600 tons per day (see Table 3.6-1).

**TABLE 3.6-1**

**Number of Class III Landfills Located within the Bay Area and Related Landfill Capacity[1]**

| County | Number of Landfills | Capacity (tons/day) |
|---|---|---|
| Alameda | 2 | 13,668 |
| Contra Costa | 2 | 5,000 |
| Marin | 1 | 2,300 |
| Napa | 1 | 600 |
| San Francisco | 0 | 0 |
| San Mateo | 1 | 3,598 |
| Santa Clara | 4 | 8,250 |
| Solano | 2 | 6,730 |
| Sonoma | 1 | 2,500 |
| **TOTAL** | **14** | **42,646** |

(1) Source: CalRecycle, 2019b

Two active landfills are located within Alameda County with a total capacity of 13,668 tons per day (see Table 3.6-2).

**TABLE 3.6-2**

**Class III Landfills Located within Alameda County and Related Landfill Capacity**

| Landfill | Total Tons Disposed 2017[1] | Total Tons ADC[2] 2017[1] | Permitted Tons/Day[3] | Remaining Permitted Capacity (million cubic yards)[3] | Estimated Year of Closure[3] |
|---|---|---|---|---|---|
| Altamont Landfill & Resource Recovery | 971,262 | 186,194 | 11,150 | 65.4 | 2025 |
| Vasco Road Sanitary Landfill | 260,706 | 208,848 | 2,518 | 7.4 | 2022 |
| **TOTAL** | **1,231,969** | **395,042** | **13,668** | **72.8** | **N/A** |

1. CalRecycle, 2019a Multi-year Countywide Destination Summary
2. Alternative Daily Cover (ADC) means cover material other than earthen material placed on the surface of the active face of a municipal solid waste landfill at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging.
3. CalRecycle, 2019b Solid Waste Information System (SWIS) Facility/Site Search

The Altamont Landfill is a Subtitle D-approved landfill providing non-hazardous Class II and Class III disposal and one of the largest landfill operations in Northern California. It accepts for disposal all non-hazardous municipal solid wastes (MSW), non-hazardous industrial and special wastes, de-watered wastewater treatment plant sludge (biosolids), treated auto shredder wastes, contaminated soils, liquids for solidification, asbestos wastes, yard waste for composting, and construction/demolition debris. Altamont receives approximately 500 trucks per day, contributing to both re-use and disposal flow rates at the landfill. These include transfer trucks, large-end dump trucks, and residential and commercial MSW collection vehicles from throughout the surrounding communities and the Bay Area.

The Altamont Landfill hosts an on-site landfill gas to liquefied natural gas (LNG) plant, windmills, and two solar landfill gas-powered turbines. The facility maintains one of the industry's first renewable landfill gas to electricity plants, generating enough electricity to power the equivalent of 8,000 homes annually as well as the daily operation of its landfill gas to liquefied natural gas (LNG) plant. The LNG plant can produce up to 13,000 gallons of natural gas daily, powering up to 300 waste collection vehicles per day. The landfill is estimated to be able to operate its renewable energy plants for another 30 years without adding any more organic waste to it. In addition to the landfill gas electricity plant, the Altamont Landfill has designated space for 248 windmills producing approximately 20 megawatts annually and two solar landfill gas-powered turbines producing 3.3 megawatts each. Finally, the landfill is exploring power production fueled by methane gas from the landfill's natural decomposition process.

The Vasco Road Landfill is a 246-acre Class III municipal refuse disposal site and accepts residential, commercial, municipal garbage, but also recyclables and green waste. A portion of the landfill is Subtitle D-approved and meets the criteria and design requirements for a Class II waste management unit. It accepts for disposal construction materials and debris, metals, organics, paper, plastic, and tires.

### 3.6.2.2 Hazardous Waste

Hazardous material, as defined in 40 CFR 261.20 and 22 CCR Article 9, is disposed of in Class I landfills. California has enacted strict legislation for regulating Class I landfills. The California Health and Safety Code requires Class I landfills to be equipped with liners, a leachate collection and removal system, and a ground water monitoring system.

Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. There are three operating hazardous waste disposal facilities in California but none are located within the Bay Area: The Kettleman Hills Hazardous Waste Facility in Kings County, the Buttonwillow Landfill in Kern County, and the Westmorland Chemical Waste Facility in Imperial County.

The Kettleman Hills Hazardous Waste Facility has been in operation for more than 30 years and is located on 1,600 acres approximately halfway between San Francisco and Los Angeles in Kings County. The site is operated by Waste Management and is permitted to dispose of or treat and store hazardous waste from all over California. The facility accepts almost all solid, semi-solid, and liquid hazardous waste. However, the Kettleman Hills landfill is not permitted to accept biological agents or infectious wastes, regulated radioactive materials, or compressed gases and explosives.

The Kettleman Hill hazardous waste facility was permitted to increase its capacity by about five million cubic yards in May of 2014 (DTSC, 2019a), therefore, the facility has a capacity of about five million cubic yards. CWM has also applied to the U.S. EPA to both renew and modify its existing permits to allow for the expansion of the landfill. The expansion would provide another 12-14 years of life.

The Buttonwillow Facility has been in operation since 1982 and is located on 320 acres in the unincorporated community of Buttonwillow in Kern County. The site is operated by Clean Harbors Environmental Services and is fully permitted to manage a large number of RCRA hazardous wastes, California hazardous waste, and non-hazardous waste for stabilization treatment, solidification, and landfill. Typical waste streams include contaminated soils, hazardous waste for treatment of metals, plating waste, and hazardous and non-hazardous liquids and the facility can accept in excess of 200 loads of waste per day. The permitted capacity at the Buttonwillow landfill is in excess of 10 million cubic. Clean Harbors is currently receiving waste and expected to continue to receive waste for an additional 70 years (Clean Harbors, 2015).

The Westmorland Chemical Waste Facility has been in operation since 1980 and is located on 640 acres in the city of Westmorland in Imperial County. The site is operated by Clean Harbors Environmental Services and is fully permitted to manage a wide variety of regulated materials including RCRA hazardous waste, NORM waste from geothermal operations, Animal and Plant Health Inspection Service (APHIS) soils, and California-regulated waste materials. The facility has a design capacity of five million cubic yards and an annual receiving capacity of 440,000 cubic yards of waste.

Hazardous waste also can be transported to permitted facilities outside of California. The nearest out-of-state landfills are U.S. Ecology, Inc., located in Beatty, Nevada; Laidlaw Environmental Services located in Lake Point, Utah; Envirosafe Services, in Grandview, Idaho; Chemical Waste Management, Inc. in Arlington, Oregon, and Laidlaw Environmental Services in Deer Trail, Colorado.

The most common types of hazardous waste generated in Alameda County include contaminated soils from site remediation efforts, asbestos-containing waste, organic solids, inorganic solid waste, oil/water separation sludge, and waste/mixed oils (see Table 3.6-3). Not all hazardous wastes generated are disposed of in a hazardous waste facility or incinerator. Many of the wastes generated, including waste oil, are recycled.

## TABLE 3.6-3

## Hazardous Waste Generation in the Alameda County 2017 (tons per year)(1)

| Waste Name | Tons/year |
|---|---|
| Contaminated Soils From Site Clean-Up | 61,600 |
| Asbestos-Containing Waste | 9,983 |
| Other Organic Solids | 6,218 |
| Other Inorganic Solid Waste | 5,602 |
| Oil/Water Separation Sludge | 4,575 |
| Waste Oil And Mixed Oil | 4,489 |
| Unspecified Organic Liquid Mixture | 3,486 |
| Unspecified Oil-Containing Waste | 2,209 |
| Blank / Unknown | 2,239 |
| Liquids Ph<=2 with Metals | 1,399 |
| Unspecified Sludge Waste | 1,395 |
| Baghouse Waste | 1,344 |
| Household Wastes | 1,037 |
| Off-Spec, Aged, Or Surplus Organics | 979 |
| Aq Sol (2 < Ph < 12.5) With Organic Residues < 10% | 879 |
| Aq Sol With Metals(Smaller Than Restricted Levels) | 831 |
| Aq Sol (2 < Ph < 12.5) W Org Residues >= 10% | 830 |
| Unspecified Aqueous Solution (2 < Ph < 12.5) | 808 |
| Oxygenated Solvents | 766 |
| Unspecified Solvent Mixture | 714 |
| Liquids Ph<=2 | 701 |
| Unspecified Alkaline Solution | 520 |
| Polychlorinated Biphenyls & Materials | 431 |
| Liquids With Halogenated Organic Comp >= 1000 Mg/L | 402 |
| Alkaline Solution (Ph>=12.5) W/O Metals | 382 |
| Liquids With Nickel >= 134 Mg/L | 357 |
| Off-Spec, Aged, Or Surplus Inorganics | 342 |
| Solids/Sludges With Halogenated Organic Comp >= 1,000mg/Kg | 301 |
| Other Empty Containers >= 30 Gallons | 218 |
| Laboratory Waste Chemicals | 211 |
| Fly Ash, Bottom Ash, And Retort Ash | 201 |
| Other Spent Catalyst | 185 |
| Metal Dust And Machining Waste | 152 |
| Hydrocarbon Solvents | 141 |
| Latex Waste | 94 |
| Pharmaceutical Waste | 89 |
| Polymeric Resin Waste | 81 |
| Alkaline Solution (Ph>=12.5) W/ Metals | 71 |
| Liquids With Chromium (Vi) >= 500 Mg/L | 55 |
| Tank Bottom Waste | 44 |

**TABLE 3.6-3 (cont.)**

| Waste Name | Tons/year |
|---|---|
| Liquids With Cyanides >= 1000 Mg/L | 37 |
| Aq Sol 2 < Ph < 12.5 with Reactive Anions | 36 |
| Empty Containers < 30 Gallons | 32 |
| Adhesives | 31 |
| Liquids With PCBs >= 50 Mg/L | 31 |
| Metal Sludge | 30 |
| Organic Liquids (Nonsolvents) W Halogens | 28 |
| Detergent And Soap | 13 |
| Organic Liquids With Metals | 12 |
| Photochemicals / Photoprocessing Waste | 12 |
| Gas Scrubber Waste | 11 |
| Liquids With Cadmium >= 100 Mg/L | 9 |
| Liquids With Mercury >= 20 Mg/L | 8 |
| Organic Solids With Halogens | 7 |
| Halogenated Solvents | 7 |
| Pesticides/Pesticide Production Waste | 6 |
| Paint Sludge | 5 |
| Other Still Bottom Waste | 4 |
| Organic Monomer Waste | 2 |
| Sewage Sludge | 2 |
| Liquids With Lead >= 500 Mg/L | 2 |
| Biological Waste (Food Processing, Etc.) | 1 |
| Pesticide Rinsewater | 1 |
| Liquids With Arsenic >= 500 Mg/L | 1 |
| Liquids With Selenium >= 100 Mg/L | 1 |
| **Totals** | **114,451** |

Source: DTSC, 2019b

(1) Waste names and totals are reported verbatim, rounded to the nearest ton.

## 3.6.3 REGULATORY SETTING

### 3.6.3.1 Federal Regulations

The U.S. EPA is the primary federal agency charged with protecting human health from pollution and with safeguarding the natural environment: air, water, and land. Since 1970, Congress has enacted numerous environmental laws including the Resource Conservation and Recovery Act (RCRA), CERCLA, and TSCA. 40 CFR, Part 258 Subtitle D of the RCRA establishes minimum location standards for siting municipal solid waste landfills. Because California laws and regulations governing the approval of solid waste landfills meet the requirements of Subtitle D, the U.S. EPA delegated the enforcement responsibility to the State of California.

Hazardous material, as defined in 40 CFR Part 261.20 and 22 CCR Article 9, is required to be disposed of in Class I landfills. California has enacted strict legislation for regulating Class I landfills. The California Health and Safety Code requires Class I landfills to be equipped with liners, a leachate collection and removal system, and a ground water monitoring system.

The Resource Conservation and Recovery Act (RCRA) gives the U.S. EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste by "large-quantity generators" (1,000 kilograms/month or more). Under RCRA regulations, hazardous wastes must be tracked from the time of generation to the point of disposal. At a minimum, each generator of hazardous waste must register and obtain a hazardous waste activity identification number. If hazardous wastes are stored for more than 90 days or treated or disposed at a facility, any treatment, storage, or disposal unit must be permitted under RCRA. Additionally, all hazardous waste transporters are required to be permitted and must have an identification number. RCRA allows individual states to develop their own program for the regulation of hazardous waste as long as it is at least as stringent as RCRA. In California, the U.S. EPA has delegated RCRA enforcement to the State of California.

The Hazardous Materials Transportation Act (HMTA) is the federal legislation regulating the trucks that transport hazardous wastes. The primary regulatory authorities are the U.S. Department of Transportation (DOT), the Federal Highway Administration (FHWA), and the Federal Railroad Administration (FRA). The HMTA requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practicable moment (49 CFR Subchapter C, Part 171).

### 3.6.3.2 State Regulations

**California Integrated Waste Management Act (AB 939):** The California Integrated Waste Management Act of 1989 (AB 939) (Sher) was enacted to reduce dependence on landfills as the primary means of solid waste disposal and to ensure an effective and coordinated approach to safe management of solid waste generated with California. AB 939 established a hierarchy of waste management practices that include: (1) source reduction; (2) recycling (or reuse) and composting; (3) transformation; and (4) environmentally safe transformation/land disposal. AB 939 required disposal of waste by local jurisdictions be cut by 25 percent by 1995 and by 50 percent by 2000.

The Act requires the preparation of a Countywide Integrated Waste Management Plan (CIWMP), including a Siting Element that demonstrates a remaining landfill disposal capacity of at least 15 years to serve all jurisdictions in the county. The Countywide Siting Elements includes a combination of strategies to demonstrate adequate capacity, that may include existing, proposed, and tentative landfills or expansion; increased diversion efforts; and the export of solid waste for disposal. A Source Reduction and

Recycling Element (SRE), a Household Hazardous Waste Element, and Facility Element are also required as part of the CIWMP.

**California Solid Waste Reuse and Recycling Act (CSWRRA, AB 2176).** In 1991, the California Solid Waste Reuse and Recycling Act (CSWRRA) was enacted to assist local jurisdictions in accomplishing the goals set for in AB 939. AB 2176 (Montanez 2004) requires that any development projects that have submitted an application for a building permit must also include adequate and accessible areas for the collection and loading of recyclable materials.

**Title 27, California Code of Regulations:** CalRecycle (formerly known as the California Integrated Waste Management Board (CIWMB)) has numerous responsibilities in implementing the federal and state regulations summarized above. CalRecycle is the state agency responsible for permitting, enforcing and monitoring solid waste landfills, transfer stations, material recovery facilities (MRFs), and composting facilities within California. Permitted facilities are issued Solid Waste Facility Permits (SWFPs) by CalRecycle. CalRecycle also certifies and appoints Local Enforcement Agencies (LEAs), county or city agencies which monitor and enforce compliance with the provisions of SWFPs. CalRecycle is also responsible for monitoring implementation of AB 939 by the cities and counties.

**Solid Waste Diversion Rule (AB 341):** In 2011, AB 341 (Chesbro), directed CalRecycle to develop and adopt regulations to mandate commercial recycling. In 2012, the final regulation was approved and a policy goal declared that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020.

**Prohibition on Local Disposal Limits (AB 845):** AB 845 (Ma 2012) prohibits an ordinance enacted by a city or county from otherwise restricting or limiting the importation of solid waste into a privately owned solid waste facility in that city or county based on place of origin.

**Engineered Municipal Solid Waste (AB 1126):** AB 1126 (Gordon 2013) was signed in September 28, 2013, and defines the terms “engineered municipal solid waste (EMSW) conversion” and “EMSW facility.” AB 1126 stipulates that solid waste processed through an EMSW conversion facility would be consider disposal, and the energy generated by such a facility would not be considered renewable.

**Reducing GHG Emissions in California (AB 32):** As part of the California Global Warming Solutions Act of 2006, CARB was directed to adopt a Scoping Plan by 2009, which lays out initial measures needed to meet the 2020 target of reducing GHG emissions back to 1990 levels. The First Update to the Scoping Plan was released in 2014 stated that CARB and CalRecycle will work to eliminate landfill disposal of organic materials, a major source of GHG (methane).

**Organic State Laws (AB 1594 and 1826):** On September 28, 2014, Governor Brown signed two bills into law that are intended to substantially reduce the amount of organic waste that is disposed in California landfills. AB 1594 (Williams 2014) states that for the purposes of complying with the waste diversion mandates of AB 939, beginning January 1, 2020, the use of green waste will be considered disposal and not recycling. A jurisdiction must include information on how it intends to address compliance with the waste diversion mandates of AB 939, beginning August 1, 2018. Jurisdictions which are not able to comply with AB 939 will be required to identify and address barriers to recycling green material, if sufficient capacity at organics waste recycling facilities is not available. AB 1826 (Chesbro 2014) requires jurisdictions to implement an organic waste recycling program for business that would include outreach, education, and monitoring of affected businesses by January 1, 2016.

**Conversion Technology (SB 498)**: Governor Brown signed into law SB498 (Lara) on September 28, 2014, that requires 50 percent diversion of solid waste, of which 10 percent can come from transformation or biomass conversion. State law formerly limited "biomass conversion" to only the controlled combustion of organic materials, such as wood, lawn, and garden clippings, agricultural waste, leaves, tree pruning, and non-recyclable producing electricity or heat. SB498 expanded the definition of biomass conversion to include non-combustion thermal conversion technologies. By doing so, SB498 allows for the cleaner and more efficient non-combustion conversion technologies to be used to convert biomass into fuels and products in addition to heat and/or electricity.

**RCRA:** Authority for the statewide administration and enforcement of RCRA rests with the California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control (DTSC). While the DTSC has primary State responsibility in regulating the generation, transfer, storage and disposal of hazardous materials, DTSC may further delegate enforcement authority to local jurisdictions. In addition, the DTSC is responsible and/or provides oversight for contamination cleanup, and administers state-wide hazardous waste reduction programs. DTSC operates programs to accomplish the following: (1) deal with the aftermath of improper hazardous waste management by overseeing site cleanups; (2) prevent releases of hazardous waste by ensuring that those who generate, handle, transport, store, and dispose of wastes do so properly; and (3) evaluate soil, water, and air samples taken at sites. The DTSC conducts annual inspections of hazardous waste facilities. Other inspections can occur on an as-needed basis.

The Hazardous Waste Control Act (HWCA) created the State hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The act is implemented by regulations contained in Title 26 of the CCR, which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transportation; design and permitting of recycling, treatment, storage, and disposal facilities; treatment standards; operation of facilities and staff training; and closure of facilities and liability requirements. These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the HWCA and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

**Hazardous Waste Source Reduction and Management Review Act of 1989**: The Act requires generators of 12,000 kilograms/year of typical/operational hazardous waste to conduct an evaluation of their waste streams every four years and to select and implement viable source reduction alternatives. This Act does not apply to non-typical hazardous waste (such as asbestos and polychlorinated biphenyls).

#### 3.6.3.3 Local Regulations

**Alameda County Waste Reduction and Recycling Initiative (Measure D):** In addition to AB 939, the 1990 voter Initiative Measure D (Alameda County Waste Reduction and Recycling Initiative) mandates all cities in Alameda County to divert 75 percent of their solid waste from landfills by the year 2020.

**City of Oakland Waste Reduction and Recycling Plan:** Oakland Municipal Code Chapter 15.34 requires building permit applications for new construction, demolition, or alterations (with a valuation of $50,000 or greater) to be accompanied by an approved Waste Reduction and Recycling Plan (WRRP). The WRRP is required to document the ways that the applicant will reduce the quantity of construction and demolition debris disposed at landfills by 65 percent or more. The City does not approve building permits for projects until the WRRP is approved.

**City of Oakland Zero Waste Strategic Plan:** The City of Oakland adopted a Zero Waste Goal in March 2004, and developed the Zero Waste Strategic Plan in November 2006. The main strategies outlined in the plan include: (1) expand and improve local and regional recycling and composting; (2) develop and adopt new rules and incentives to reduce waste disposal; (3) preserve land for sustainable development and green industry infrastructure; (4) advocate for manufacturer responsibility for produced waste, ban problem materials; and (5) educate, promote, and advocate for a Zero Waste Sustainability Agenda.

### 3.6.4 SIGNIFICANCE CRITERIA

The impacts to utilities/service systems will be considered significant if any of the following criteria are met:

> The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

## 3.6.5 EVALUTION OF UTILITIES AND SERVICE SYSTEM IMPACTS

As discussed previously, the Notice of Preparation and Initial Study (see Appendix A) found that the implementation of the West Oakland Community Action Plan could result in potential solid waste impacts from implementing certain of the Strategies.

It is expected that the direct effects of the West Oakland Community Action Plan would be reductions in criteria pollutant and TAC emissions through the implementation of Strategies. Of the strategies that the District would implement, a number of them could result in the generation of solid waste. Replacing diesel engines with new engines and encouraging the use of zero emissions mobile sources could generate additional waste as old equipment would be taken out of service. This subchapter evaluates the potential impacts on utilities and service systems (specifically solid and hazardous waste impacts) that could result due to implementation of the West Oakland Community Action Plan. The potential solid waste impacts are summarized in Table 3.6-4.

**TABLE 3.6-4**

**Control Strategy with Potential Solid Waste Impacts**

| Strategy # | Description | Control Methodology | Potential Solid Waste Impacts |
|---|---|---|---|
| ~~61~~ 66 | District works with Schnitzer Steel to study the feasibility of installing a shore power or bonnet system to capture vessel emissions | Bonnet system could include SCR and filtration system or shore power could be used. | Potential waste impacts associated with disposal of catalysts/filters. |
| ~~70~~ 75 | Develop a program for energy efficient upgrades that may include high efficiency filtration | Use of air filtration systems rated MERV 13 or higher | Spent filters |
| Various Measures (14, ~~36~~ 41, ~~43~~ 48, ~~44~~ 49, ~~45~~ 50, ~~46~~ 51, ~~47~~ 52, ~~48~~ 53, ~~49~~ 54, ~~65~~ 70) | The District investigates the conversion of sources from conventional to zero emission sources or higher Tier engines. | Replace old equipment with new equipment. | Could result in the disposal of older equipment including engines, cars, trucks, tug/barge engines, locomotive engines, lawn/garden equipment, and standby engines. |

### 3.6.5.1 Potential Solid Waste Impacts due to Air Pollution Control Technologies

Construction activities associated with installing air pollution control equipment could generate solid waste due to demolition and site preparation/grading/excavating. Specifically, demolition activities could generate demolition waste while site preparation, grading, and excavating could uncover contaminated soils since the facilities affected by the Plan that may require additional air pollution control equipment are located in existing industrial or commercial areas. For example, construction activities to install power at Schnitzer Steel under Control Strategy 61 and the construction of enclosures under Control Strategy 63 could potentially encounter contaminated soil. Excavated soil, which if it is found to be contaminated, would need to be characterized, treated, and disposed of offsite in accordance with applicable regulations. Where appropriate, the soil can be recycled if it is considered or classified as non-hazardous waste or it can be disposed of at a landfill that accepts non-hazardous waste. Otherwise, the material will need to be disposed of at a hazardous waste facility.

Solid or hazardous wastes that may be generated from construction-related activities would consist primarily of materials from the demolition of any equipment, buildings, or possibly hardscaped (asphalt, pavement, etc.). Construction-related waste would be disposed of at a Class II (industrial) or Class III (municipal) landfill. There are 14 Class III landfills within the Bay Area. Based on a search of the Cal Recycle's Solid Waste Information System (SWIS), the landfills that accept solid waste in the Bay Area have a combined disposal capacity of over 42,600 tons, which is expected to be sufficient capacity to handle the one-time waste that may be generated from construction activities.

Proposed Strategies may have potential impacts on solid waste due to the addition of pollution control equipment that may need disposal and replacement (e.g., Strategy ~~#61~~ #66 – Schnitzer Steel, and Strategy ~~#70~~ #75 – addition of filtration systems on existing buildings). Strategies such as ~~#61~~ #66 that study the feasibility and provide funding (~~#70~~ #75), is difficult to quantify the number of facilities that would employ these types of equipment, the rate of disposal necessary to maintain the equipment, type of waste generated by the equipment (i.e., hazardous or non-hazardous) and the timing by which these technologies would come into use. Future projects would provide further environmental analysis per CEQA.

Particulate Filters

Under Strategy ~~#61~~ #66, Schnitzer Steel could implement a bonnet system to capture emissions from ships while at dock. Bonnet systems generally include a filtration system (e.g., baghouse or electrostatic precipitator) to remove particulate matter from the ship exhaust. Strategy ~~#70~~ #75 would use air filtration systems on schools, day care facilities, hospitals, apartments and homes in West Oakland to reduce exposure to air pollutants. While it is speculative to identify the number of facilities and the quantity of equipment that would utilize particulate filters, the quantity of particulate matter collected on filters is expected to be small. It is difficult to quantify the number of facilities that would employ this type of equipment, the rate of disposal necessary to maintain the equipment, type of waste generated by the equipment (i.e., hazardous or non-hazardous) and the timing by which these technologies would come into use.

Filters collect particulate emissions from stationary and mobile sources of particulate emissions. This type of filtration control equipment can effectively remove particulate matter, including heavy metals, asbestos, as well as other toxic and nontoxic compounds. The particulate filter system consists of a filter positioned in the exhaust stream designed to collect a significant fraction of the particulate matter emissions while allowing the exhaust gases to pass through the system and are effective in removing particulate matter (including diesel particulate matter) from exhaust gases. Polytetrafluoroethylene (PTFE) membranes or High Efficiency Particulate Air (HEPA) filters can increase a system's removal efficiency up to 99.9 percent. In general, as particulate size decreases, the surface area to volume ratio increases, thus, increasing the capacity of these filters to adsorb smaller particles (including hazardous materials). An increase in the use of membranes and filters may result in an incremental increase in solid waste requiring disposal in landfills over what would be produced if the West Oakland Plan were not adopted. In some cases, waste generated will be hazardous (e.g., the collection of toxic emissions). The increase in the amount of waste generated from the use of filters and the collection of additional particulate matter are expected to be small, because filtration control equipment is already used in practice or required by existing rules, especially for stationary sources. The incremental amount of material collected by filters is expected to be small. The overall benefit will be filters to collect particulate emissions from stationary and mobile sources, which will reduce exposure in West Oakland.

Filters and the associated waste that are considered solid waste (i.e., not hazardous) could be disposed of at a number of landfills in northern California. The permitted capacity of the landfills in the Bay Area is over 42,600 tons per day (see Table 3.6-1) and have sufficient capacity to handle the small increase in waste.

There are no hazardous waste landfills within the Bay Area. Hazardous waste can be transported to permitted facilities both within and outside of California. Hazardous waste is expected to be transported to Clean Harbors in Buttonwillow, California. The permitted capacity at the Buttonwillow landfill is in excess of 10 million cubic yards so it would have sufficient capacity to handle the small amounts of waste that could be generated by filters/baghouses (Clean Harbors, 2015). The nearest out-of-state hazardous waste landfills are U.S. Ecology, Inc., located in Beatty, Nevada and Clean Harbors in Grassy Mountain, Utah. U.S. Ecology, Inc. is currently receiving waste, and is in the process of extending the operational capacity for an additional 35 years (U.S. Ecology, 2015). Clean Harbors is currently receiving waste and expected to continue to receive waste for an additional 70 years (Clean Harbors, 2015). Therefore, the potential impacts of the use of additional filtration equipment on solid/hazardous waste generation are less than significant, and will provide overall health benefits

<u>Selective Catalytic Reduction</u>

Control Strategy 61 (use of the bonnet system at Schnitzer Steel) could require the installation of a new SCR system. The catalyst in SCR beds generally uses various ceramic materials to carry oxide or precious metals to aid in the capture and conversion of NOx into $N_2$ and water in exhaust streams. SCRs require periodic regeneration or replacement of the catalyst bed. Regeneration of catalyst is preferred, due to the cost of new catalyst, however, if the catalyst cannot be regenerated, metals used in the catalyst can be recovered. These metals could then be recycled and the remaining material would most likely need to be disposed of at a landfill.

If the catalyst is not hazardous, jurisdiction for its disposal then shifts to local agencies such as regional water quality control boards or county environmental agencies. The Regional Water Quality Control Board has indicated that if a spent catalyst is not considered a hazardous waste, it would probably be considered a Designated Waste. A Designated Waste is characterized as a non-hazardous waste consisting of, or containing pollutants that, under ambient environmental conditions, could be released at concentrations in excess of applicable water objectives, or which could cause degradation of the waters of the state. The type of landfill that the material is disposed at will depend upon its final waste designation. The use of SCRs is expected to be limited to one bonnet system at Schnitzer Steel so that its use is not expected to be wide-spread. Due to the regeneration of catalysts used in SCRs and the fact that this technology is not expected to be widely used because of cost, no significant impacts on waste disposal are expected The District's feasibility study with Schnitzer Steel of installing a shore-power or bonnet system to capture and abate vessel emissions at the West Oakland facility by 2021 will not have significant impacts.

### 3.6.5.2 Early Retirement of Equipment

Control Strategy 49 would include incentives to retire old equipment and purchase cleaner equipment, such as electric lawn and garden equipment, battery electric transportation refrigeration units, and cargo handling equipment. Also, Strategies in the West Oakland Community Action Plan could incentivize the early retirement of vehicles (cars, trucks, tugs and barge engines, locomotive engines, and stationary/stand by engines).

Approximately 80 percent of a retired vehicle can be recycled and reused in another capacity. Batteries, catalytic converters, tires, and other recoverable materials (e.g., metal components) are removed and the rest of the vehicle is shredded. The shredded material is then sent for recovery of metal content. Therefore, the amount of solid waste landfilled as a result of the proposed measures would be smaller than the size of the vehicle. Additionally, there are a limited number of vehicles that can be scrapped per year. These vehicles would be scrapped in the near future, regardless of the Strategies as they are older vehicles. Some equipment, e.g., trucks, locomotives engines and stationary engines can be sent to other locations for use, e.g., outside of California or to other countries. The same is true for lawn care equipment and cargo handling equipment. New equipment would replace older equipment. If the equipment has reached the end of its useful life, it would be scrapped. However, if it has not reached the end of its life, it would be expected to be used in other locations. Therefore, the Strategies would not necessarily result in an increase in the generation of waste, rather they would result in an earlier generation of the waste. Engines, if not relocated to another area, would likely be scrapped for their metal content and not put into landfills. Based on the above, the increase in solid waste is expected to be accounted for within CalRecycle's permitted capacity of the landfills within the Bay Area of about 42,600 tons per day so that no significant impacts would be expected.

The California Integrated Waste Management Act of 1989 (AB 939) requires cities and counties in California to reduce the amount of solid waste disposed in landfills by 25 percent by 1995 and by 50 percent by 2000, through source reduction, recycling and composting activities. More recently, as part of the California Global Warming Solutions Act of 2006, an update to the Scoping Plan was developed that stated that CARB and CalRecycle will work to eliminate landfill disposal of organic materials, a major source of GHG (methane) emissions. In addition, SB 498 was signed into law in 2014 that requires 50 percent diversion of solid waste and encouraged the use of non-combustion thermal conversion technologies. As discussed above the increase in solid waste that is expected to be diverted to a landfill is small and many of the waste streams are recyclable. The District's Strategy ~~#49~~ #54 to provide grant incentives up to $1 million dollars for replacing cleaner equipment in West Oakland by 2021 will not have significant impacts.

#### 3.6.5.3 Spent Batteries from Zero-Emission Vehicles

While the West Oakland Community Action Plan would encourage electrification of mobile sources, the Air District is not responsible for implementation of these Strategies that incentivize the use of zero-emission vehicles (assumed to be electric vehicles) and are expected to reduce the use of conventional vehicles and trucks within California and the Bay Area. Conventional vehicles use lead acid batteries; therefore, a reduction in the use of conventional vehicles would lead to a reduction in use of lead-acid batteries. Lead-acid batteries have a three to five year life, which is much less than the life of the vehicle so that the batteries need to be replaced every so often. Electric vehicles and hybrid batteries last a much longer time than lead-acid batteries. Most of the batteries in electric vehicles have warranties for 10 years or 150,000 miles. Toyota has reported that its battery packs have lasted for more than 180,000 miles in testing. A large number of Ford Escape Hybrid and Toyota Prius taxicabs in New York and San Francisco have logged over 200,000 miles on their original battery packs (Edmunds, 2014). Therefore, electric and hybrid batteries last much longer than lead-acid batteries so that an increase in the use of electric/hybrid vehicles would result in a decrease in the generation of spent lead-acid batteries that require recycling.

Batteries in hybrids are much larger than batteries in conventional vehicles. The current hybrid batteries weigh about 110 pounds and tend to be composed of nickel metal hydride (NiMH) batteries which are charged by an internal combustion engine driven generator and/or by a regenerative braking system that captures power from deceleration and braking. The recycling of hybrid battery packs is still in its infancy as there have not been many battery packs surrendered for recycling. The NiMH batteries found in hybrid vehicles are basically "zero-landfill" products, meaning that whatever cannot be recycled is typically consumed in the recycling process. The primary metals recovered during recycling are nickel, copper and iron. Some principal rare earth metals, neodymium and lanthanum, are also recovered (Edmunds, 2014). Improper disposal of NiMH batteries poses less environmental hazard than that of lead-acid or nickel-cadmium batteries because of the absence of lead and cadmium, which are considered to be toxic. Most industrial nickel is recycled, due to the relatively easy retrieval of the magnetic element from scrap using electromagnets, and due to its high value.

NiMH and lithium-ion batteries are generally recycled because the material within the batteries is valuable. Further some manufacturers offer incentives to prevent illegal disposal of the batteries. Most car manufacturers offer a program to take back used or damaged battery packs, including Toyota and Nissan (Green Car Reports, 2016). Recycling is attractive for several reasons, including supporting a closed-loop supply chain and supporting the principles of environmentalism and sustainability. A closed-loop supply chain would protect manufactures from volatility in the lithium market since approximately 70 percent of the global lithium deposits are concentrated in South America (MNTRC, 2014).

Two recycling firms have the technology to recycle NiMH and Lithium-ion batteries. One of these companies is the Belgium-based metals recycling company Umicore. Umicore is the European leader and is expanding in the U.S. The only company in North America with the capacity to recycle Lithium-ion batteries is Retriev Technologies (previously known as Toxco), which was awarded a federal grant to build and operate an advanced lithium battery recycling facility at their existing Lancaster, Ohio site (Edmunds, 2014). Retriev Technologies has been recycling lithium batteries for over 20 years.

Larger battery packs, such as hybrid and electric vehicles are manually disassembled and then fed by conveyor to an automated crusher. The crusher produces metal solids, metal-enriched liquid, and plastic fluff. The metal solids in lithium ion batteries may contain copper, aluminum and cobalt (depending on the type of battery) which can all be used as raw materials in new products. The metal-enriched liquid is solidified using filtering technology, and is sent off-site for further metal purification (Retriev Technologies, 2019).

Retriev Technologies operation uses a pyrometallurgical process to separate components in NiCad and NiMH batteries to enable the recovery of cadmium and the removal of battery separator materials. The operations produce cadmium ingots and nickel-enriched material that can be reused as a raw material in many applications, such as stainless steel production. Retriev's process has been classified by the U.S. EPA as the Best Demonstrated Available technology for cadmium recovery (Retriev Technologies, 2019).

Most battery and fuel cell technologies currently employ materials that have high economic value and, therefore, are recyclable. Additionally, both regulatory requirements and market forces require or encourage recycling. A number of federal and state regulations and requirements have been imposed that require the recycling of batteries.

Recycling of lead-acid and nickel-cadmium batteries is a well-established activity. Eighty percent of lead consumed in the United States is used to produce lead-acid batteries and the lead recovery rate from batteries is approximately 80 to 90 percent (the remainder is plastic and fluids, e.g., sulfuric acid). According to the Lead-Acid Battery Consortium, 95 to 98 percent of all battery lead is recycled.

Because most batteries from electric vehicles are recycled, it is unlikely that the increase in battery use would significantly adversely affect landfill capacity in California. As mentioned earlier, electric batteries generally hold significant residual value, and 95 to 98 percent of all lead-acid batteries are recycled. In addition, the electric batteries that would power electric vehicles are packaged in battery packs and cannot be as easily disposed of as a single 12-volt conventional vehicle battery. It should be noted that the increased use of electric vehicles may actually result in a reduction of the amount of solid and hazardous waste generated, as NiMH and Lithium-ion in batteries have a much longer life span than conventional lead-acid batteries. Further, their size (over 100 pounds) makes them more difficult to handle and transport for unauthorized disposal.

Electric vehicles do not require the various oil and gasoline filters that are required by vehicles using internal combustion engines. Furthermore, electric vehicles do not require the same type or amount of engine fluids (oil, antifreeze, etc.) that are required by vehicles using internal combustion engines. Approximately 4,489 tons per year of waste oil was generated in the Alameda County in 2017 (see Table 3.6-3). Because of the widespread use and volume of waste oil, a portion of waste oil can be illegally disposed of via sewers, waterways, on land, and disposed of in landfills. Waste oil that is illegally disposed can contaminate the environment (via water, land or air). In addition, a substantial amount of motor oil leaks onto the highways from vehicles each year. This motor oil can be washed into storm drains and eventually ends up in the ocean.

Since electric motors do not require motor oil as a lubricant, replacing internal combustion engines with electric engines will reduce the potential impacts of motor oil use and disposal. Release of contaminants due to engine oil that burns up in, or leaks from, engines or due to burning of recovered engine oil for energy generation will also be correspondingly reduced. Additional use of electric vehicles is expected to have a beneficial environmental impact by reducing the amount of motor oil used, recycled, potentially illegally disposed, or washed into storm drains and ending up in the ocean.

Illegal or improper disposal of electric batteries could result in significant solid waste impacts by allowing hazardous wastes to be disposed in municipal landfill. However, the recycling of batteries is required under law. Further some manufacturers pay for used batteries from electric and hybrid vehicles. The value, size, and length of life of NiMH and Lithium-ion batteries are such that recycling is expected to be more predominant than with lead acid batteries. Therefore, the use of electric vehicles is not expected to result in an increase in the illegal or improper disposal of electric batteries. Further, batteries associated with electric vehicles are required to be recycled. Therefore, no significant increase in the disposal of hazardous or solid waste is expected due to increased use of electric vehicles.

## 3.6.6 MITIGATION MEASURES

The District's Strategies of feasibility studies, grants/incentives for future programs of energy upgrades and high efficiency filtration systems, investigation of the conversion of sources from conventional to zero emission sources, and encouraging the use of cleaner engines (Table 3.6-4), will have less than significant impacts. The amount of solid and hazardous waste generated is expected to be minimal and not expected to exceed the capacity of designated landfills. Based on the preceding analysis, due to the recycling value of the materials involved, the increased use of zero emission vehicles and subsequent generation of batteries and other types of waste from mobile sources and air pollution control technology and devices, the Plan was found to result in less than significant impacts. This is because the amount of solid and hazardous waste generated is expected to be minimal and not expected to exceed the capacity of designated landfills.

CEQA requires mitigation measures to be implemented to avoid or minimize any significant impacts. As no significant utilities and service systems impacts have been identified, no mitigation measures are required for solid/hazardous waste impacts.

## 3.6.7 CUMULATIVE UTILITIES AND SERVICES SYSTEMS IMPACTS

In addition to evaluating whether any action the District may take in implementing the proposed West Oakland Community Action Plan will cause significant utilities and service system impacts by itself, the EIR must also evaluate whether any District action may contribute to significant cumulative impacts caused by other existing and reasonably foreseeable future activities. Specifically, CEQA Guidelines Section 15064(h) requires an evaluation of whether the District's implementation of the proposed Plan will result in any "cumulatively considerable" contribution to an existing (or reasonably foreseeable future) significant utilities and service systems impact. The geographical location for the cumulative analysis is the jurisdictional boundaries of the Air District, which includes all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties, and portions of southwestern Solano and southern Sonoma counties.

### 3.6.7.1 Impacts of Past, Present and Reasonably Foreseeable Future Projects

As described in Section 3.6.2, the Bay Area has sufficient solid waste landfill capacity within the Bay Area and hazardous waste facilities are available within the state of California.

### 3.6.7.2 Contribution of the Proposed Project

The West Oakland Community Action Plan's strategies aforementioned will provide overall short and long term benefits, and are expected to result in minimal waste generation and are not expected to exceed the capacity of designated landfills. Therefore, utility and service system impacts associated with the Plan are not cumulatively significant and would not make a considerable contribution to a cumulatively significant utilities/service systems impact. The Air District concludes that the Plan will not result in any significant solid/hazardous waste impacts, individually or cumulatively, that must be addressed in this EIR.

CEQA requires mitigation measures to be implemented to avoid or minimize any significant impacts. As no significant utilities/service system impacts have been identified, no mitigation measures to reduce or avoid impacts are proposed for the West Oakland Community Action Plan.

# CHAPTER 3.7

## OTHER CEQA SECTIONS

Growth Inducing Impacts
Significant Environmental Effects Which Cannot Be Avoided and Significant Irreversible Environmental Changes
Potential Environmental Impacts Found Not to be Significant

# 3.7 OTHER CEQA SECTIONS

## 3.7.1 GROWTH INDUCING IMPACTS

### 3.7.1.1 Introduction

- CEQA defines growth-inducing impacts as those impacts of a proposed project that "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects, which would remove obstacles to population growth" (CEQA Guidelines §15126.2(e)).
- To address this issue, potential growth-inducing effects are examined through the following considerations:
- Facilitation of economic effects that could result in other activities that could significantly affect the environment;
- Expansion requirements for one or more public services to maintain desired levels of service as a result of the proposed project;
- Removal of obstacles to growth, e.g., through the construction or extension of major infrastructure facilities that do not presently exist in the project area or through changes in existing regulations pertaining to land development;
- Adding development or encroachment into open space; and/or
- Setting a precedent that could encourage and facilitate other activities that could significantly affect the environment.

### 3.7.1.2 Economic and Population Growth, and Related Public Services

A project would directly induce growth if it would foster economic or population growth or the construction of new housing in the surrounding environment. The West Oakland Community Action Plan would maximize emission reductions and reduce residents' cumulative exposure to criteria air pollutants, diesel particulate matter, $PM_{2.5}$, and toxic air contaminants. The Plan does not include policies that would encourage the development of new businesses or housing, or population generating uses or infrastructure that would directly encourage such uses. The Plan does not change jurisdictional authority or responsibility concerning land use or property issues. Land use authority falls solely under the purview of the local governments, such as the City of Oakland. Therefore, the Plan would not directly trigger new development or alter land use policies.

The West Oakland Community Action Plan may require construction activities within the West Oakland community to implement some of the Strategies (e.g., control equipment at stationary sources, new electric vehicle charging stations, and hydrogen fueling stations). However, the Plan would not directly or indirectly stimulate substantial population growth or necessitate the construction of new community facilities that could lead to additional growth in West Oakland. It is expected that construction workers will be largely drawn from the existing workforce pool (about 7.6 million people) in northern California. Considering the existing workforce in the region, it is expected that a sufficient number of workers are available locally and that few workers would relocate for construction jobs potentially created by the Plan, as no major construction activities would be expected. Further, the Plan would not be expected to result in an increase in local population, housing, or associated public services (e.g., fire, police, schools, recreation, and library facilities) since no increase in population or the permanent number of workers is expected. Likewise, the proposed project would not create new demand for secondary services, including regional or specialty retail, restaurant, recreation, or entertainment uses. As such, the Plan would not foster economic or population growth in the region in a manner that would be growth-inducing.

### 3.7.1.3 Removal of Obstacles to Growth

A project would remove an obstacle to growth if it would expand existing infrastructure such as new roads or wastewater treatment plants. The Strategies that the Air District would implement as part of the Plan would not remove barriers to population growth, as it involves no changes to a General Plan, zoning ordinance or a related land use policy that would directly or indirectly cause the growth of new populations, communities, or currently undeveloped areas. Likewise, the Plan Schedule would not result in an expansion of existing public service facilities (e.g., police, fire, libraries, and schools) or the development of public service facilities that do not already exist.

The Plan would provide incentives to electrify mobile and stationary emission sources, increasing electricity use. However, the increased electricity use is within what PG&E has forecast for its service area. While the electricity use associated with electric vehicles is expected to increase, PG&E predicts that its overall sales in electricity would remain the same or increase slightly (up to eight percent for the entire PG&E service area by 2030). The expected increases in energy efficiency and solar photovoltaic production are expected to offset a majority of the growth in electric vehicles, as well as economic and population driven growth.

### 3.7.1.4 Development or Encroachments Into Open Space

Development can be considered growth-inducing when it is not contiguous to existing urban development and introduces development into undeveloped, open space areas. The West Oakland Community Action Plan would implement Strategies within an existing developed, urbanized community. New development outside of the boundaries of the community is not expected to occur. Therefore, the proposed Plan would not result in development within or encroachment into an open space area.

#### 3.7.1.5 Precedent Setting Action

The West Oakland Community Action Plan aims to further emission reductions of criteria and TAC pollutant emissions in West Oakland. The Strategies that would be implemented as part of the proposed project (e.g., use of air pollution control equipment, replacement of older engines with new, cleaner models, and electrification of mobile sources) has been used and proven to be effective methods of emission reductions. Requiring technologies and measures that have been demonstrated to be effective to control air emissions would not result in precedent-setting actions that might cause significant environmental impacts.

#### 3.7.1.6 Conclusion

The West Oakland Community Action Plan would not be considered growth-inducing, because it would not result in an increase in production of resources or cause a progression of growth that could significantly affect the environment either individually or cumulatively.

### 3.7.2 SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED AND SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 15126.2 of the CEQA Guidelines requires that an EIR describe significant environmental impacts that cannot be avoided, including those effects that can be mitigated but not reduced to a less than significant level. As evaluated in the preceding portions of Chapter 3 of this EIR, implementation of the Strategies in the West Oakland Community Action Plan within the Air District's jurisdiction would not generate any significant unavoidable environmental impacts.

### 3.7.3 POTENTIAL ENVIRONMENTAL IMPACTS FOUND NOT TO BE SIGNIFICANT

The environmental effects of the West Oakland Community Action Plan that may have potentially significant adverse effects on the environment are identified, evaluated, and discussed in detail in the preceding portions of Chapter 3 of this EIR and in the Initial Study (see Appendix A) per the requirements of the CEQA Guidelines (§15126(a) and §15126.2). The potentially significant adverse environmental impacts as determined by the Initial Study (see Appendix A) are: air quality, energy, greenhouse gases, hazards and hazardous materials, and utilities and service systems (solid/hazardous waste only). The analysis provided in the Initial Study has concluded that the following environmental topics would be less than significant: aesthetics; agriculture and forestry resources; biological resources; cultural resources; geology and soils; hydrology and water quality;

land use and planning; mineral resources; noise, population and housing; public services, recreation, transportation, tribal cultural resources, utilities and service systems (other than solid/hazardous waste); and wildfire. The reasons for finding the environmental resources to be less than significant are explained in the following subsections, which are summarized from the Initial Study (see Appendix A) unless otherwise noted.

### 3.7.3.1 Aesthetics

West Oakland has a distinct visual character influenced by its historic residential neighborhoods, heavy industrial areas (including the Port of Oakland), and a mixing of the two. West Oakland is also characterized by a significant amount of vacant and underutilized land distributed throughout the area. Areas that have retained high visual quality tend to be those removed from industrial areas with consistent or unique architecture, or proximity to a landmark or focal point (City of Oakland, 2014).

A scenic vista is a location that offers a high quality and visually interesting view. There are no officially designated scenic vistas within the West Oakland area. Because there are no officially designated scenic vistas in the West Oakland Community itself, the Community Action Plan would not result in any impacts on a scenic vista.

Interstate 580 has been designated as a scenic highway from the San Joaquin County line to State Route 205, which is over 40 miles from West Oakland. The MacArthur Freeway is a designated scenic highway from San Leandro City limit to State Route 24 in Oakland, which is over 13 miles from West Oakland. Interstate 680 is designated as a scenic highway from Mission Boulevard in Fremont to the Contra Costa County line, which is about 20 miles from West Oakland away at its closest point. Thus, any physical changes in the West Oakland area that occur as a result of the proposed project would not be visible from any scenic highways due to distance separation and intervening topography (e.g., hills). There are no unique rock outcrops or plant life that could be considered a visual resource. Thus, modifications that occur as a result of the proposed project are not expected to damage or degrade existing scenic resources.

Physical modifications at facilities associated with implementation of Strategies in the Community Action Plan would be limited to existing facilities, and primarily industrial facilities. Other Strategies would encourage the use of zero and near-zero emissions mobile sources (vehicles, trucks, buses, locomotives), and provide shore power or use of a bonnet system for ships. Thus, they are not expected to be visible to the residential areas or have significant adverse aesthetic impacts to the surrounding community. Additionally, new air pollution control equipment is not expected to block any scenic vista, degrade the visual character or quality of the area, or result in significant adverse aesthetic impacts. Further, these facilities are existing facilities that currently operate and have existing lighting for nighttime operations. Therefore, implementation of the Community Action Plan Strategies is not expected to require any additional lighting to be installed as a result of the installation of new or modified equipment. New light sources, if any, would be located in industrial areas and are not expected to be noticeable in residential areas. Most local land use agencies have ordinances that limit the intensity of lighting and its effects on adjacent property owners. Therefore, implementation of the Community Action Plan is not expected to have significant adverse aesthetic impacts to the surrounding community.

### 3.7.3.2 Agriculture and Forestry Resources

The West Oakland community is characterized as an urban area that has been developed. Approximately 59 percent of the land use is residential, 23 percent is utilized as industrial, commercial and auto-related/parking uses, while government/institutional and utilities uses occupy the remaining 18 percent of the land (City of Oakland, 2014). There are no farmland (agricultural) or forest resources located within the West Oakland community.

Implementation of the Community Plan would not involve changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use, since agricultural and forest land resources are not located within the West Oakland community. Therefore, implementation of the Plan would have no impacts on agriculture and forestry resources.

### 3.7.3.3 Biological Resources

Wildlife within the West Oakland area is expected to be relatively low due to the urban nature of the area, absence of natural habitat, the proximity of streets and development, and level of human activity. Most of the land within the West Oakland area is developed and little open space is available. Virtually all the native habitat in the area has been removed and replaced with landscape species. Wildlife is limited to species that are compatible with human activities and includes birds (crows, starling, sparrows, pigeons) and small rodents (e.g., opossums, mice) that would typically be associated with developed urban areas.

Physical modifications associated with implementation of the Community Action Plan would be limited to changes within and urbanized area that lacks native habitat. According to the Open Space, Conservation and Recreation Element of the City of Oakland General Plan, there are no candidate species, sensitive species, or special status species known to occur within the West Oakland area (City of Oakland, 2014). The proposed project may require the construction of new equipment or development in the West Oakland area, but those physical changes would occur in already urbanized and developed areas.

There are a number of special-status animals that may potentially use habitat in the project area, including the peregrine falcon, Cooper's hawk, red-shouldered hawk, red-tailed hawk, pallid bat, silver-haired bat, hoary bat, and big free-tailed bat. Tree removal, building demolition and other construction activities can cause disturbance, noise or loss of habitat for resident or migratory birds and mammals, including special-status species that may forage in the project area. The City of Oakland enforces Standard Conditions of Approval on all development within the City including Tree Removal During Breeding Season. Implementation of the existing City requirements and compliance with federal and state requirements would minimize the potential impacts of any project activities on nesting birds and minimize the potential impacts to less than significant.

According to the Open Space, Conservation and Recreation Element of the City of Oakland General Plan, no riparian habitat, wetlands, or other sensitive natural communities have been identified within the West Oakland area because the area is largely paved and developed (City of Oakland, 2014). The proposed project may require the construction of new equipment or development in the West Oakland area, but those physical changes would occur in already urbanized and developed areas. Therefore, the proposed project would not be expected to impact riparian, wetlands, or other sensitive communities.

Any project that would involve the removal of any tree protected by the Tree Protection Ordinance would be required to first obtain a permit from the City and comply with any conditions of the permit, including replacement plantings and protection of remaining trees during construction activities. Compliance with City's Tree Project Ordinance would minimize potential conflicts with local policies or ordinance protecting biological resources to less than significant. Further, the AB 617 Community Plan is expected to encourage the planting of additional trees to provide buffers between industrial and residential areas and improved air quality in the West Oakland Area providing a beneficial impact on biological resources.

There is no Habitat Conservation Plan, Natural Community Conservation Plan or other adopted habitat conservation plan applicable to the West Oakland area. Therefore, the proposed project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

### 3.7.3.4 Cultural Resources

There are approximately 1,421 Local Register properties within West Oakland. Of this total, 32 designated historic properties and properties rated of the highest importance (National Register properties, landmarks, heritage properties, study list properties S-7 Preservation Combining Zone properties, and Potential Designated Historic Properties) are within West Oakland. The great majority of the Local Register properties are located in the residential neighborhoods of West Oakland.

In addition, the City of Oakland recognizes three Areas of Primary Importance (API) that contain a total of approximately 831 contributing properties including 721 separate properties with the Oakland Point API, 84 contributing properties within the Oak Center API, and four contributing properties within the Southern Pacific Railroad Industrial API.

In areas where there are sensitive historic resources, the City of Oakland requires pre-construction surveys and the use of qualified archaeological monitors during grading operations to identify historic resources. These standard requirements, along with the fact that the Strategies in the West Oakland Community Action Plan are not expected to impact or require removal of historic structures, would limit impacts on historic cultural resources to less than significant.

The West Oakland area is located on the margins of the San Francisco Bay shoreline and near locations of former intermittent and perennial watercourses, which were historically used by Native Americans. Thus there is the potential for the presence of unrecorded cultural resources to be buried in West Oakland. In areas where there are sensitive resources, the City of Oakland requires pre-construction surveys and the use of qualified archaeological monitors during grading operations to identify historic resources. These standard requirements, along with the fact that the Strategies is the West Oakland Community Action Plan are not expected to require extensive construction or grading activities, are expected to limit impacts to historic cultural resources to less than significant.

### 3.7.3.5 Geology and Soils

Most of the Bay Area is located within the natural region of California known as the Coast Ranges geomorphic province, with the eastern portions of Contra Costa and Alameda Counties extending into the neighboring Great Valley geomorphic province, located east of the Coast Ranges. Much of the Coast Ranges province is composed of marine sedimentary and volcanic rocks located east of the San Andreas Fault. The region west of the San Andreas Fault is underlain by a mass of basement rock that is composed of mainly marine sandstone and various metamorphic rocks. The organic, soft, clay-rich sediments along the San Francisco and San Pablo Bays are referred to locally as Bay Mud and can present a variety of engineering challenges due to inherent low strength, compressibility and saturated conditions. Landslides in the region occur in weak, easily weathered bedrock on relatively steep slopes.

West Oakland is located on the San Francisco Bay, which is a seismically active region, situated on a tectonic plate boundary marked by the San Andreas Fault System. Under the Alquist-Priolo Earthquake Fault Zoning Act, Earthquake Fault Zones were established by the California Division of Mines and Geology along "active" faults, or faults along which surface rupture occurred in Holocene time (the last 11,000 years). The San Andreas and the Hayward faults are the two faults considered to have the highest probabilities of causing a significant seismic event in the Bay Area. The Hayward fault is the closest fault to West Oakland, located approximately 3.5 miles to the east along the southwestern base on the East Bay hill, paralleling Highway 13. Other principal faults capable of producing significant ground shaking in the Bay Area include the Rodgers Creek-Healdsburg, Concord-Green Valley, Marsh Creek-Greenville, San Gregorio-Hosgri, West Napa and Calaveras faults (ABAG, 2017). A major seismic event on any of these active faults could cause significant ground shaking and potential surface fault rupture.

New development potentially resulting in earthquake hazards is expected to be limited to the construction of air pollution control equipment or measures at industrial facilities. New construction (including modifications to existing structures) requires compliance with the California Building Code. Compliance with the California Building Code would minimize the impacts associated with existing geological hazards. Therefore, no significant impacts would be expected.

Construction associated with Strategies in the Plan is would be limited to urban areas, and primarily industrial facilities. All construction would take place at already existing facilities that have been previously graded. Thus, the proposed project is not expected to result in substantial soil erosion or the loss of topsoil as construction activities are expected to be limited to existing operating facilities that have been graded and developed, so that no major grading would be required.

### 3.7.3.6 Hydrology and Water Quality

The City of Oakland is responsible for the construction and maintenance of the local storm drainage system, while the Alameda County Flood Control and Water Control District constructs, operates, and maintains major trunk lines and flood control facilities in Oakland.

Stormwater runoff within West Oakland is conveyed by gravity through storm drain pipes to the Alameda County Flood Control and Water Control District Ettie Street Pump Station, located at the northern end of Ettie Street near I-580, where the stormwater is lifted and discharged to the Bay.

Implementation of Strategies such as replacing diesel engines, adding filtration systems to existing buildings, the use of zero emission sources, and generating additional electricity would not be expected to result in water use or wastewater discharge. The Strategies would not be expected to require the use of additional water, result in the discharge of wastewater, or result in impacts to water quality, since the Strategies do not involve the use of water.

Construction activities associated with land disturbance of more than one acre would requirement compliances with the Construction General Permit for Discharges of Storm Water Associated with Construction Activity Water Quality (Order No. 99-08-DWQ, NPDES No. CAS000002). Should any wastewater be generated, compliance with existing General Plan policies, Municipal Code regulations, and federal, state and local regulations would reduce impacts related to wastewater discharge to less than significant.

As discussed above, the control Strategies that the District would implement are not expected to require extensive construction or grading, that would result in alteration of the existing drainage pattern of the area, or increase the rate or amount of surface water runoff. The West Oakland area is urbanized and developed so the project is not expected to add impervious surfaces that would alter surface water runoff. Further, there are no natural streams or rivers in the West Oakland area, so the project would not alter the course of a stream or river. Therefore, the impact of the Community Action Plan on surface water discharge is expected to be less than significant.

No portion of West Oakland is located within a 100-year or 500-year flood hazard area, as mapped on the National Flood Insurance Program Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency. For these reasons, no significant impacts associated with flooding would be expected.

Tsunamis are seismically induced sea waves that, upon entering shallow near-shore waters, may reach heights capable of causing widespread damage to coastal areas. The western portion of West Oakland, generally west of Mandela Parkway, is subject to tsunami inundation (City of Oakland, 2014). The Alaska Tsunami Warning Center, State Warning System and Oakland emergency alert system, including the outdoor warning sirens in West Oakland, would provide early notification of an advancing tsunami allowing evacuation of people. Given the rare occurrence of tsunamis, the distance of West Oakland to the Bay shoreline, and the emergency alert system enabling evacuation of people, implementation of the Community Action Plan would not place additional structures in areas that are expected to be impacted by tsunami inundation.

The groundwater basin is not currently being used for municipal water supply (City of Oakland, 2014). Further, implementation of the Community Action Plan is not expected to require additional water supplies. Therefore, the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

### 3.7.3.7 Land Use and Planning

The land uses in the West Oakland area vary greatly and are described below.

- Land uses to the north include the Emeryville portion of the East Bay Bridge Shopping Center, which contains regional commercial, community commercial, and medium-density residential uses. Other residential, light industrial, office and public uses are located further to the north in Emeryville.

- Interstate 580 is located along the northern boundary of West Oakland. North of Interstate 580 is the Longfellow residential neighborhood, near MacArthur Boulevard and 40$^{th}$ Street in North Oakland.

- To the northeast is the MacArthur BART Station, within the median of State Route 24. This area includes the MacArthur Transit Village, which provides 624 high-density, multifamily housing units, retail space, and a BART parking garage.

- Interstate 980 is located along the eastern boundary of West Oakland. East of Interstate 980 are the Pill Hill and Uptown neighborhoods, Downtown Oakland, City Center, Old Oakland, and the 19th Street and 12th Street BART stations.

- To the southeast is the waterfront Jack London district with Jack London Square, Amtrak's Oakland Jack London Square Station, and the Oakland Ferry Terminal.

- The Port of Oakland lies southwest of West Oakland. Interstate 880, the Union Pacific Railroad, and the Burlington Northern and Santa Fe (BNSF) Railroad are located along the southern and western boundary of West Oakland. The Union Pacific Intermodal Yard lies south of Interstate 880, ~~within~~ outside of the Port *Area*. Port shipping terminals line the Oakland Estuary/Inner Harbor Channel further south and the Outer Harbor Channel to the west. The BNSF Intermodal Yard and Middle Harbor Park are to the southwest.

- Interstate 880 is located along the western boundary of West Oakland area. The Union Pacific Railroad and the BNSF Railroad, and the Outer Harbor Intermodal Terminal (formerly known as the Knight Rail Yard) are located underneath and immediately west of Interstate 880. The former Oakland Army Base (OARB), and former OARB Redevelopment Area, lies west of Interstate 880. ~~The Oakland Base Reuse Authority currently leases space for various transportation, industrial and commercial uses until the former Army Base is redeveloped for permanent non-military uses.~~

- Land uses to the northwest of West Oakland include the East Bay Municipal Utilities District Main Wastewater Treatment Plant; the Interstates 80, 580, and 880 Interchange; and the Emeryville Crescent State Marine Reserve on the shore of San Francisco Bay. The eastern terminus of the San Francisco-Oakland Bay Bridge, and the bridge toll plaza and maintenance area lie further to the northwest (City of Oakland, 2014).

West Oakland is currently subject to existing conditions that disrupt and divide the community. These conditions include the location of heavy industrial and transportation uses immediately adjacent to residential uses, and the separation of West Oakland from downtown Oakland, the waterfront at Jack London Square, Middle Harbor Park, and the rest of the City by freeways that surround the community. Implementation of the Strategies in the West Oakland Plan would not be to physically divide the community, beyond the divisions that currently exist, as any new facilities would be expected to occur within the confines of the existing facilities. Further, implementation of the Strategies under the jurisdiction of the Air District would not be expected to require any changes to land use or result in development that could conflict with a land use plan, policy, or regulation. Land use authority falls solely under the purview of the local governments and the Air District is specifically excluded from infringing on existing city or county land use authority (California Health and Safety Code §40414). Therefore, the proposed project would not disrupt or divide the physical arrangement of the West Oakland community or any surrounding community or lead to any significant change in land use.

### 3.7.3.8 Mineral Resources

According to the California Department of Conservation Division of Mines and Geology's Aggregate Resources Map, West Oakland is not currently considered an Aggregate Resource sector. The Leona quarry was the last mine in Oakland to be identified as a regionally significant source of aggregated resources. Areas with this designation are judged to be of prime importance in meeting future mineral needs in the region, and land use decisions must consider the importance of these resources to the region as a whole. The Leona Quarry has been closed for many years and there is no other land in Oakland with such a designation (City of Oakland, 2014).

No known mineral resources are located within West Oakland and the area is not designated as a locally important mineral resource recovery site under the City of Oakland General Plan Land Use and Transportation Element or Open Space, Conservation and Recreation Element. Therefore, no impacts on mineral resources are expected due to implementation of the West Oakland Community Action Plan.

### 3.7.3.9 Population and Housing

The population of West Oakland grew from approximately 23,400 to 25,250 people between 1990 and 2011, an increase of 15 percent, which is faster than the overall growth rate for the City of Oakland of 11 percent. The number of households in West Oakland decreased from 8,683 to 8,431 between 1990 and 2011, in part due to the demolition and reconstruction of the Chestnut/Linden and Westwood Gardens public housing projects. The average household size in West Oakland increased between 1990 and 2011 from 2.67 to 2.90 persons per household and the percentage of households with children rose from 40 to 60 percent. In 2011, West Oakland had an estimated 10,444 housing units, of which 8,431 were occupied, leaving a 19.3 percent vacancy rate, while the vacancy rate in Oakland was 6.3 percent, substantially less than West Oakland (City of Oakland, 2014).

According to the Association of Bay Area Governments (ABAG), population in the Bay Area is currently about 7.6 million people and is expected to grow to about 9.6 million people by 2040 (ABAG, 2017). The proposed project is not anticipated to generate any significant effects, either directly or indirectly, on the Bay Area's population or population distribution. In addition, it is not expected that the affected facilities would need to hire additional personnel to operate new air pollution control equipment at existing facilities or add filtration systems to existing buildings. It is expected that the existing labor pool would accommodate the labor requirements for the temporary construction workers, as the existing labor pool is over seven million people. As such, adopting the Community Action Plan is not expected to induce substantial population growth.

Construction associated with the proposed project is expected to be limited to constructing new air pollution control equipment or facility modifications at existing facilities. The implementation of the Community Action Plan is not expected to result in the creation of any industry/business that would affect population growth, directly or indirectly induce the construction of single- or multiple-family units, or require the displacement of people or housing elsewhere in the Bay Area. Based upon these considerations, significant population and housing impacts are not expected from the implementation of the proposed project.

### 3.7.3.10 Public Services

The Oakland Fire Department operates 25 fire stations. There are two fire stations within the West Oakland. The Oakland Fire Department provides fire protection (prevention and suppression), and local emergency response (rescue, hazardous materials response, and first responder emergency medical services) services to West Oakland. In addition to firefighting and emergency medical response capabilities, the Oakland Fire Department also has a Hazardous Materials Unit that operates from Station 3 in West Oakland and responds citywide to emergencies involving hazardous materials. The Oakland Fire Department's response time goal is seven minutes, 90 percent of the time.

The Oakland Police Department provides police services throughout the city. The Oakland Police Department has approximately 660 sworn police officers, approximately 297 support staff, and 10 reserve officers. The Oakland Police Department has geographically divided the City into three command areas, 57 community policing beats and 35 patrol beats (City of Oakland, 2014).

The Oakland Unified School District operates the public school system in the City of Oakland. The Oakland Unified School District administers 77 elementary schools, 19 middle schools, one junior high school, 31 high schools, and two K-12 schools. It is also responsible for three alternative schools, two special education schools, three continuation schools, three community day schools, and one opportunity school. The District's overall enrollment peaked in 1999 at 55,000, dropped to 39,000 by 2007, and is continuing to decline. Declining enrollment is projected to continue (City of Oakland 2014). Oakland Unified School District has four elementary schools, two middle schools and one high school in West Oakland. Oakland Unified School District charter schools in West Oakland include: Oakland Charter High School, KIPP Bridge Charter School, Oakland School of the Arts, and the American Indian Public Charter School II.

The City of Oakland General Plan establishes a parkland standard of four acres per 1,000 residents (for parks that meet the active recreational needs of the community as opposed to passive recreational open space). Oakland provides 1.33 acres of local serving park acreage per 1,000 residents, which falls short of the General Plan parkland standard.

According to the City of Oakland General Plan Open Space, Conservation and Recreation (OSCAR) Element, West Oakland has 56.70 acres of parkland, including schoolyards and athletic fields, which equates to 2.43 acres of parkland per 1,000 residents, or 60 percent of the General Plan parkland standard. Despite this deficiency, West Oakland has more parkland than any other flatland neighborhoods in Oakland.

Implementation of the Community Action Plan would not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives. The facilities affected by the proposed project are existing facilities for which public services are already required and no increase in the need for such services is expected. Further, a number of industrial facilities have existing security and fire-fighting capabilities, e.g., port facilities, and are able to respond to fire and security issues independent of public police and fire services. There will be no increase in population as a result of the implementation of the Community Action Plan and, therefore, no need for physically altered government facilities.

As discussion above, the proposed project is not expected to induce population growth because the existing local labor pool (e.g., workforce) is sufficient to accommodate the expected temporary construction work force. No increase in permanent workers is expected to be required to operate the equipment that may be installed at affected facilities. Therefore, there will be no increase in local population and thus no impacts are expected to local schools or parks.

### 3.7.3.11 Recreation

Recreational parks in West Oakland include Brush Street, Bertha Port, Crescent, Cypress Freeway Memorial, DeFremery, Durant, Fitzgerald, Grove Shafter, Lowell, Marston Campbell, McClymonds, Poplar, Raimondi, South Prescott, Saint Andrews Plaza, Union Plaza, Wade Johnson, Willow Street, Wood Street Pocket Park, and 25th Street. Other nearby parks outside the area also serve West Oakland residents, including Middle Harbor Park and Portview Park in the Port of Oakland. Recreation centers in West Oakland include DeFremery Recreation Center, West Oakland Senior Center, and Willie Keyes Community Center.

As discussed under “Land Use” above, there are no provisions in Community Action Plan that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments; no land use or planning requirements will be altered by the Strategies that the District would implement. Implementation of these types of control measures would occur within existing developed facilities and would not impact recreational facilities. Further, no increase in permanent workers is expected at the affected facilities; thus, there would be no increase in population that would result in more frequent use of recreational facilities.

### 3.7.3.12 Transportation

(Note: The initial conclusions of the Initial Study indicated that transportation impacts may potentially occur due to the implementation of the Community Action Plan Strategies and that they would be further evaluated in the Draft EIR. After further development of the Strategies and review of their potential impacts, it was determined that the none of the Strategies that were under the jurisdiction of the Air District would increase traffic or involve any significant changes to traffic circulation, traffic hazards, increases in vehicle miles traveled, or impacts on emergency access. Therefore, further review of the potential transportation impacts in the Draft EIR was not warranted.)

Regional vehicular access to and within West Oakland is provided by a freeway system that includes Interstate 80, Interstate 580, Interstate 880, Interstate 980, and State Route 24. Other key roadways in West Oakland include Frontage Road, Mandela Parkway, Adeline Avenue, and Market Street.

A Level of Service analysis completed at major intersections in West Oakland indicated under weekday morning and evening peak hours, all intersections currently operate at acceptable levels of service during peak hours (level of service D or better) (City of Oakland, 2014).

Transit service is provided by the Alameda-Contra Costa Transit District (AC Transit) and BART. AC Transit provides an extensive network of fixed route bus services in Alameda and Contra Costa counties. It also offers Transbay service to destinations in San Francisco, San Mateo and north Santa Clara counties. AC Transit service is comprised of 10 transit routes throughout West Oakland.

Implementation of Strategies such as replacing diesel engines, adding filtration systems to existing buildings, the use of zero emission sources, producing alternative fuels and generating additional electricity would not be expected to result in a substantial increase in traffic. Further, construction workers would be temporary and the traffic would cease once construction activities are complete.

Following construction activities, the Strategies would not be expected to generate a substantial increase in traffic, either workers or trucks. As discussed in "Population and Housing", it is not expected that the affected facilities would need to hire additional personnel to operate new air pollution control equipment at existing facilities or add filtration systems to existing buildings, so no increase in permanent worker traffic would be expected. Further, the project would not conflict or be inconsistent with CEQA Guidelines § 15064.3 subdivision(b).

### 3.7.3.13 Tribal Cultural Resources

As discussed under Cultural Resources above, the West Oakland area is located on the San Francisco Bay shoreline and near locations of former intermittent and perennial watercourses that were historically used by Native Americans. Thus, there is the potential for the presence of unrecorded tribal cultural resources to be buried in West Oakland. Of the Strategies that the Air District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other Strategies would encourage the use of zero emissions mobile sources (trucks, buses, locomotives). Implementation of these types of control measures would not be expected to require extensive construction or grading that could impact tribal cultural resources. In areas where there are sensitive resources, the City of Oakland requires pre-construction surveys and the use of qualified archaeological and tribal monitors during grading operations to identify historic resources. These standard requirements, along with the fact that the Strategies in the West Oakland Community Action Plan are not expected to require extensive construction or grading activities, are expected to limit impacts on historic cultural resources to less than significant.

### 3.7.3.14 Utilities and Service Systems

The potential increase in energy consumption associated with the Community Action Plan was evaluated in the EIR (see ~~Draft~~ Final EIR, Subsection 3.3 – Energy). The potential increase in solid/hazardous waste associated with the Community Action Plan was also evaluated in the EIR (see ~~Draft~~ Final EIR, Subsection 3.6 – Utilities and Services Systems).

The potential water use, wastewater impacts, and storm water drainage impacts associated with the West Oakland Community Action Plan were discussed under Hydrology and Water Quality. As discussed in Section 3.7.3.6 – Hydrology and Water Quality above, the Strategies that the District would implement as part of the Community Action Plan would not be expected to require the use of additional water, result in the discharge of wastewater, result in impacts to water quality, or result in changes to the stormwater drainage system.

One of the Strategies that the Air District would encourage is the installation of vegetative borders to act as biofilters between Interstate 880 and the Prescott neighborhood in West Oakland. Installation of vegetation would likely require the use of additional water to allow for the growth of healthy landscape vegetation, especially when vegetation is first planted. The use of native vegetation would assure that vegetation that is planted would use minimal water, e.g., 50-150 gallons per week, which is well below the CEQA significance threshold for water use. Therefore, the project is not expected to result in significant impacts to water supplies.

### 3.7.3.15 Wildfires

The California Department of Forestry and Fire Protection (CalFIRE) maps areas of significant fire hazard based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones, determine the requirements for special building codes designed to reduce the potential impacts of wildland fires on urban structures. West Oakland is located within an existing urbanized area that is surrounded by development. No wildlands are located in the immediate or surrounding area and the area is not within or near lands classified as very high fire hazard severity zones. West Oakland is outside Oakland's Wildfire Prevention Assessment District boundary, which indicates that it is likely not subject to significant wildfire hazard. For these reasons, implementation of the Community Action Plan would not expose people or structures to wildfires, would not impair an adopted emergency response plan or emergency evacuation plan for wildfires, would not expose people to pollutants from a wildfire or the uncontrolled spread of a wildfire and would not expose people or structures to flooding or landslides as a result of post-fire slope or drainage changes. Therefore, no potential significant adverse impacts resulting from wildfires are expected from the proposed project.

# CHAPTER 4

## ALTERNATIVES ANALYSIS

Introduction
Project Objectives
Description of Project Alternatives
Environmental Impacts of Project Alternatives
Conclusion
Comparison of Alternatives

# 4.0 ALTERNATIVES ANALYSIS

## 4.1 INTRODUCTION

This ~~Draft~~ Final Environmental Impact Report (DEIR) provides a discussion of alternatives to the proposed project as required by CEQA. According to the CEQA Guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project and provide means for evaluating the comparative merits of each alternative (CEQA Guidelines 15126.6(a)). In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative. (CEQA Guidelines 15126.6(a)). For example, "[a]n EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative." (CEQA Guidelines 15126.6(f)(3)).

The alternatives included in CEQA documents are typically developed by breaking down the project into distinct components and varying the specifics of one or more of the components. Different compliance approaches that generally achieve the objectives of the project may also be considered as project alternatives.

The discussion of alternatives is required to focus on alternatives to the proposed project or its location that are capable of avoiding or substantially lessening any significant effects of the proposed project on the environment (CEQA Guidelines 15126.6(b)). As discussed in Chapter 3 of this EIR and the Initial Study (see Appendix A), the Strategies that the Air District would implement under the West Oakland Community Action Plan are not expected to result in significant impacts to any environmental resources including aesthetics, agricultural resources, air quality, biological resources, cultural resources, energy, greenhouse gases, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, tribal cultural resources, utilities service systems, and wildfires. Because no significant impacts have been identified for the proposed project, alternatives are not required to be analyzed in this EIR.

However, in order to provide a full environmental review and fulfill the intent of CEQA, an alternatives analysis has been prepared. An EIR is required to describe a reasonable range of feasible alternatives to the proposed project that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts of the proposed project (CEQA Guidelines §15126.6(a)). The intent of this alternatives analysis is to foster informed decision making and public participation by analyzing reasonable alternatives to the Strategies in the West Oakland Community Action Plan and disclosing whether there may be an alternative which would achieve the Plan's objectives while also avoiding or substantially lessening any significant impacts.

## 4.2 PROJECT OBJECTIVES

CEQA Guidelines Section 15124(b) requires an EIR to include a statement of objectives, which describes the underlying purpose of the proposed project and may discuss the project benefits. The purpose of the statement of objectives is to aid the lead agency in identifying alternatives and the decision-makers in preparing a statement of findings and a statement of overriding considerations, if necessary. The objectives of the West Oakland Community Action Plan are summarized as follows:

- For the Air District and West Oakland community to work together to address the disparities in air pollution and related health effects in the West Oakland community.
- To reduce criteria pollutant and toxic air contaminant emissions from stationary sources of air pollution within and adjacent to West Oakland.
- To reduce criteria pollutant and toxic air contaminant emissions from mobile sources, such as heavy-duty trucks and light-duty vehicles that travel in West Oakland and on surrounding freeways and streets;
- To reduce criteria pollutant and toxic air contaminant emissions from mobile sources that serve the Port of Oakland, such as cargo equipment, port trucks, locomotives, ocean-going ships, and harbor craft in the San Francisco Bay; and
- To improve the health of residents, workers, and visitors to West Oakland through a reduction in emissions and exposure to air pollutants.

## 4.3 ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines §15126.6(c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reason underlying the lead agency's determination. Section 15126.6(c) also states that "[a]mong the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives; (ii) infeasibility; or (iii) inability to avoid significant environmental impacts."

AB 617 requires air districts to work with the community to develop emission reductions measures to reduce air emissions and exposure to air emissions. Achieving the goals of AB 617 is likely going to require implementation of the identified Strategies in the Plan and collaboration with the Air District, the West Oakland Community, as well as the City of Oakland, Port of Oakland, California Air Resources Board (CARB), East Bay Municipal Utility District (EBMUD), California Department of Transportation (Caltrans), Pacific Gas & Electric Co. (PG&E), Alameda County Transportation Commission (ACTC), Bay Area Rapid Transit (BART), Oakland Unified School District (OUSD), Alameda County Public Health Department (ACPHD), and East Bay Clean Energy. The Strategies in the Plan were developed in consultation with these agencies and the West Oakland Indicators Project and were chosen as the Strategies most likely to be effective in reducing air emissions and exposure to air emissions. Alternatives that consider other

Strategies than those in the Plan may also be feasible, but other feasible Strategies have not yet been developed at this time. If the West Oakland Community Action Plan fails to meet the goals and targets in the Plan, additional Strategies would likely be required to reduce the disproportionate impacts from pollution.

Developing a Plan that would focus strategies on only TAC emissions or only criteria pollutant emissions was considered. However, TAC emissions and particulate emissions are closely related, e.g., diesel particulate matter. Only controlling criteria pollutant emissions would not be expected to provide sufficient emission reductions of TAC emissions to reduce the high cumulative exposure burden of air pollution on the residents of West Oakland. Controlling TAC emissions would likely result in larger reductions in air pollution and the related reduction in health risk impacts, although emission reductions in criteria pollutants would also be expected (e.g., particulate matter). Since both criteria and toxic air contaminants result in a high cumulative exposure burden to West Oakland, controlling both would provide the most benefit to the community.

Delaying the implementation of the Community Action Plan was evaluated, but determined not to be feasible. Delaying implementation could have the result of worsening potential environmental and health impacts. Not having a community action plan in West Oakland would neither meet the project's objectives, nor comply with AB 617's deadlines. Delaying implementation would also delay any benefits associated with the Plan and was determined not to be feasible.

## 4.4 DESCRIPTION OF THE PROJECT ALTERNATIVES

The possible alternatives to the West Oakland Community Action Plan are limited by the nature of the project. Other than the No Project Alternative, the other alternative is limited to implementing only those Strategies within the jurisdiction of the Air District.

### 4.4.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

CEQA Guidelines §15126.6(e) requires evaluation of a "'No project' alternative." Under the No Project Alternative, it is assumed that the West Oakland Community Action Plan would not be implemented. There would be no Strategies to control stationary or mobile emission sources. The land use Strategies to limit exposure to emissions would also not be implemented, nor would the health programs to limit exposure to emissions, and improve the health of residents and sensitive receptors in West Oakland.

Alternative 1 would not comply with AB 617, which directs communities and air districts to work together to address air pollution and related health effects in overburdened communities, like West Oakland. CARB has selected West Oakland as an area with a high cumulative exposure burden to both toxic and criteria air pollutants. Under the requirements of AB 617, the Air District is directed to develop and approve a community emissions reduction program for West Oakland by October 1, 2019, which is consistent with the state-wide strategy and includes emission reduction targets, specific reduction measures, a schedule for implementation of the measures, and an enforcement plan. The West Oakland Community Action Plan complies with the AB 617 requirements for overburdened communities.

Therefore, Alternative 1 would not comply with the AB 617 requirements. Per CEQA Guidelines §15364, "'Feasible' means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." Alternative 1 would not comply with the AB 617 requirements and would not be considered feasible at this time.

It should be noted that it would be unlikely that the Air District and other agencies would remain out of compliance with AB 617 indefinitely and some action would likely be taken in the future to comply, as CARB and the other agencies could implement Strategies that are in their jurisdiction. Nonetheless, for the purpose of comparison and public disclosure, it will be assumed that no action will be taken under the No Project Alternative.

### 4.4.2 ALTERNATIVE 2 – DISTRICT ONLY STRATEGIES

AB 617 requires each air district for which CARB has determined that there is an area with a high cumulative exposure burden to both toxic and criteria air pollutants, to prepare an emission reduction program, in consultation with the local communities. Under Alternative 2, only the Strategies for which the Air District has jurisdiction for would be implemented (see Table 4-1).

Alternative 2 would not comply with AB 617, which directs communities and air districts to improve air quality and health beyond existing State and regional programs, and to work together to address air pollution and related health effects in overburdened communities, like West Oakland. CARB has selected West Oakland as an area with a high cumulative exposure burden to both toxic and criteria air pollutants. Under the requirements of AB 617, the Air District is required to work with community representatives to develop and approve a community emissions reduction program for West Oakland by October 1, 2019. In compliance with the Final Community Air Protection Blueprint (2018), "The communities selected in the first year of the Program will see additional new actions through potential regulations, focused incentive investments, enforceable agreements, and engagement with local land use authorities to reduce emissions and exposure to air pollution" (p.4). Alternative 2 would only partially meet the requirements of AB 617, as the Strategies to be implemented by other agencies would not occur as part of a comprehensive implementation Plan.

# TABLE 4-1

## West Oakland Community Action Plan – Alternative 2, Air District Only Strategies

| # | Strategies | Authority |
|---|---|---|
| | **Land Use** | |
| 2 | The Air District will continue to engage in environmental review processes for development projects in West Oakland, such as the Oakland A's Ballpark and the MacArthur Maze Vertical Clearance Project, including coordinating with community partners and lead agency staff, providing data and technical assistance, and reviewing and commenting on CEQA documents through 2025. | Air District |
| 3 | The Air District will study the potential air pollution and health outcomes of allowing truck traffic on I-580 and designating a truck lane on I-880. Allowing truck traffic on I-580 would require legislative approval, re-engineering, and re-construction. | Air District |
| 6 | The City of Oakland uses incentives and subsidies to relocate businesses away from West Oakland that do not conform with the zoning designations adopted in the West Oakland Specific Plan. The Air District will provide emissions data and technical support to assist the City in these efforts and to ensure that any relocated businesses do not cause exposure issues at the new location. | City of Oakland, Air District |
| 12 | The Air District and the West Oakland Environmental Indicators Project intends to implement the green infrastructure project currently under development between Interstate I-880 and the Prescott neighborhood in West Oakland by 2021. | Air District |
| 14 | The Air District provides subsidized loans for local small businesses to install energy storage systems (e.g. batteries, fuel cells) to replace stationary sources of pollution (e.g. back-up generators). | Air District |
| 16 | The City of Oakland, in partnership with the Steering Committee, CARB and the Air District, studies the exposure reduction benefit of requiring solid or vegetative barriers to be incorporated into site design between buildings and sources of air pollution (for example, a freeway). | City of Oakland CARB, Caltrans, Air District |
| 21 | The Air District works with the City and Port of Oakland and other agency and local partners to create a Sustainable Freight Advisory Committee to provide recommendations to each agency's governing board or council. The Committee's scope includes: air quality issues, enhanced/increased enforcement of truck parking and idling, improved referral and follow-up to nuisance and odor complaints related to goods movement, improvements to the Port appointment system, charging infrastructure and rates, developing land-use restrictions in industrial areas, funding, and consideration of video surveillance to enforce truck parking, route, and idling restrictions. | Air District, Port of Oakland, City of Oakland |
| 24 | The Air District works with agency and local partners to improve referral and follow-up on nuisance and odor complaints by 2021. This work includes updates to complaint processes, enforcement procedures, and coordination with other public agencies regarding odors, backyard burning, and other complaints. | Air District |
| | **Mobile Sources** | |
| ~~36~~ 41 | The Air District works with CARB to streamline the process for providing financial incentives for fueling infrastructure, and for low and zero-emission equipment. The Air District increases outreach and assistance to individual owner-operators and small companies by providing two workshops and enhanced outreach in West Oakland by 2022. | Air District |
| ~~43~~ 48 | The Air District plans to offer up to $7 million per year to replace older autos through the Vehicle Buy Back program, and up to $4 million per year through the Clean Cars for All program to replace older autos and provide an incentive for a hybrid electric, plug-in hybrid electric, battery | Air District |

| # | Strategies | Authority |
|---|---|---|
| | electric vehicle, or Clipper Card for public transit. | |
| ~~44~~ 49 | The Air District offers financial incentives to replace box and yard diesel trucks with zero emission trucks owned by West Oakland businesses every year. | Air District |
| ~~45~~ 50 | The Air District plans to offer financial incentives to upgrade tugs and barges operating at the Port of Oakland with cleaner engines every year. | Air District, Port of Oakland |
| ~~46~~ 51 | The Air District plans to offer financial incentives to upgrade line-haul, passenger, and switcher (yard) locomotives with cleaner engines every year. | Air District |
| ~~47~~ 52 | The Air District plans to offer financial incentives to support the development of a hydrogen refueling station and the purchase of trucks and off-road equipment powered by fuel cells every year. | Air District |
| ~~48~~ 53 | The Air District offers financial incentives to replace long-haul diesel trucks with zero-emission trucks owned by West Oakland businesses every year. | Air District |
| ~~49~~ 54 | The Air District will award up to $1 million in funding incentives to pay for the cost of purchasing cleaner equipment in West Oakland, potentially including: electric lawn and garden equipment, battery electric Transport~~ation~~ Refrigeration Units, and cargo-handling equipment, by 2021. | Air District |
| ~~52~~ 57 | Through the Pilot Trip Reduction Program, the Air District offers incentives for the purchase of electric bicycles for bike share programs. | Air District |
| ~~61~~ 66 | The Air District works with ~~Schnizter~~ Schnitzer Steel to study the feasibility of installing a shore-power or bonnet system to capture and abate vessel emissions at the West Oakland facility by 2021. | Air District |
| ~~62~~ 67 | The Air District intends to seek authority in 2021 to reduce emissions and risk from magnet sources, such as the Port of Oakland, freight operations and warehouse distribution centers. | Air District |
| | **Stationary Sources** | |
| ~~63~~ 68 | The Air District proposes amendments to existing regulations to further reduce emissions from metal recycling and foundry operations, such as changes to: 1) Rule 6-4: Metal Recycling and Shredding Operations, which requires metal recycling and shredding facilities to minimize fugitive PM emissions through the development and implementation of facility Emission Minimization Plans; and 2) Rule 12-13: Foundry and Forging Operations, which requires metal foundries and forges to minimize fugitive emissions of PM and odorous substances through the development and implementation of facility Emission Minimization Plans by 2025. | Air District |
| ~~64~~ 69 | The Air District's Rule 11-18: Reduce Risk from TACS at Existing Facilities requires selected Bay Area facilities to reduce risk or install best available retrofit control technology for toxics on all significant sources of toxic emissions. Based on the results of the ~~Technical Assessment~~ facility-specific health risk assessment, the Air District may require Schnitzer Steel and the East Bay Municipal Utility District to adopt a Risk Reduction Plan if the health risk ~~determined by the facility-wide health risk assessment~~ exceeds a risk action level per the requirements of Rule 11-18 implementation. | Air District |
| ~~65~~ 70 | The Air District intends to provide incentives to replace existing diesel stationary and standby engines (fire pumps, dryers, conveyor belts, cranes) with Tier 4 diesel or cleaner engines. Priority is given to upgrading Tier 0, 1 & 2 engines located closest to schools, senior citizen centers, childcare facilities, and hospitals. | Air District |
| ~~66~~ 71 | The Air District proposes new regulations to reduce emission sources from autobody and other coating operations, including the use of vanishing oils and rust inhibitors by 2025. | Air District |
| ~~67~~ 72 | The Air District proposes new regulations to reduce emissions from wastewater treatment plants and anaerobic digestion facilities, such as a regulation to reduce emissions of methane, reactive organic gases, and oxides of nitrogen by ~~2019~~ 2020. | Air District |

| # | Strategies | Authority |
|---|---|---|
| ~~68~~ 73 | The Air District proposes ~~a regulation~~ amendments to existing Regulation 8-5 to further reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020. Organic liquid storage tanks are defined in Regulation 8-5. | Air District |
| | **Health Programs** | |
| ~~70~~ 75 | The Air District intends to develop and fund a program to reduce exposure to air pollution at schools, day care facilities, senior centers, health facilities, public facilities, apartments and homes in West Oakland by 2021. This ~~s~~Strategy includes policies or grants for building energy efficiency upgrades to reduce infiltration of pollutants and the installation of high-efficiency air filtration systems (rated MERV 14 or higher). | Air District |
| ~~75~~ 80 | The Air District researches actions that are potentially exposure-reducing, such as: 1) an engineering evaluation of exhaust stacks and/or vents to determine if relocation will reduce local exposure; (2) a study to determine if smart air filtration systems can reduce exposure by in-taking air during daily non-peak vehicle travel times, such as between midnight and four a.m.; and (3) a study of the potential air quality benefits of a centralized package delivery site such as personal lockers by 2025. | Air District |
| ~~82~~ 87 | CARB conducts a technology assessment of commercial cooking rules and control strategies and proposes incentives and/or a Suggested Control Measure for commercial cooking. The Air District offers incentives and/or proposes a regulation to reduce emissions from commercial cooking. | Air District, CARB |
| ~~84~~ 89 | The Alameda ~~County Transportation Commission~~ CTC and Caltrans will continually engage with the community, at a minimum through participation in quarterly meetings of the WOCAP implementation committee, ~~starting with the early planning and budgeting stages of transportation projects that are being developed by ACTC in West Oakland~~ on early project planning and delivery for projects in West Oakland where Alameda CTC and Caltrans is the project sponsor in order to ensure projects do not increase transportation impacts on residents. These projects will undergo appropriate reviews to assess the environmental and health impacts, and potential local benefits, and adopt associated mitigation measures so they do not result in a net increase in air pollution or health inequities for residents most impacted by the county’s freight transportation system in West Oakland. | ACTC, Caltrans, Air District |

# 4.5 ENVIRONMENTAL IMPACTS OF PROJECT ALTERNATIVES

## 4.5.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

### 4.5.1.1 Air Quality

Under Alternative 1, the West Oakland Community Action Plan would not be implemented. Therefore, no construction emissions from the implementation of strategies are expected under the No Project Alternative. Potential construction emissions associated with the construction of enclosures would be avoided, although these impacts would not exceed significance thresholds and would not be considered significant. Nonetheless, they would be eliminated under Alternative 1.

The emission benefits that are expected from the proposed project are presented in Table 3.2-17. For some of the Strategies that would be implemented by the Air District (as well as some of the Strategies implemented by other agencies), emission reductions are unknown at this time but would nonetheless be expected to occur. Under Alternative 1, the emission reductions (i.e., beneficial impacts) associated with ROG, CO, NOx, SOx, $PM_{10}$ and $PM_{2.5}$ would also not occur.

The potential increase in TAC emissions associated with the proposed project were also determined to be less than significant. Further, the proposed project is expected to result in a beneficial reduction in TAC emissions, as well, as criteria pollutants. However, it is not possible to estimate the potential TAC emissions reductions at this point until appropriate implementation actions and engineering analyses have been completed and so forth. Nonetheless, electrification of stationary and mobile sources that use diesel, for example, would be expected to result in a decrease in diesel particulate emissions in the West Oakland area. The potential TAC emissions reductions under the proposed project would be eliminated under Alternative 1. Therefore, Alternative 1 would fail to reduce the high cumulative exposure burden to air pollution to the residents of West Oakland.

### 4.5.1.2 Energy

The West Oakland Community Action Plan would increase the penetration of zero and near-zero vehicles, potentially provide electrification for marine vessels at berth, and increase the future demand for electricity in the Bay Area and other areas of California that provide electricity to West Oakland. The Plan would be expected to result in an increase of approximately one GWh of electricity (see Table 3.3-3). The potential electricity impacts were determined to be less than significant as they are within the energy forecast and expected electricity production for PG&E.

Under Alternative 1, the potential increase in electricity associated with the West Oakland Community Action Plan would be eliminated, as well as the estimated reduction in the use of gasoline and diesel fuel. It is expected that PG&E would still move forward with electricity sufficient to power up to two million cars due to other state directives.

#### 4.5.1.3 Greenhouse Gases

The West Oakland Community Action Plan would increase the penetration of zero and near-zero vehicles, increasing the generation of electricity. The potential increase in electric vehicles as part of Strategies in the Plan is within the range of vehicles that PG&E has forecast for its service area of two million vehicles. PG&E expects to meet its forecast GHG benchmarks by 2030, so that the project is not expected to result in an increase in GHG emissions. Under Alternative 1, there would be no further increase in electricity associated with the West Oakland Community Action Plan and no increase in GHG due to electricity generation, as none of the Strategies in the Plan would be implemented.

The Plan is expected to result in an overall decrease in GHG emissions associated with incentives for zero and near-zero emission vehicles and for supplying shore power to Schnitzer Steel. The GHG emission reductions were expected to range from 205 to 246 MT/year of $CO_2e$ emissions and outweigh any GHG emission increases associated with implementation of the Plan. Under Alternative 1, the expected GHG emission reductions associated with the Plan would not occur as no Strategies in the Plan would be implemented.

#### 4.5.1.4 Hazards and Hazardous Materials

The hazard impacts associated with implementation of the Plan's strategies are expected to be less than significant, primarily since compliance with numerous existing local, State and federal regulations would minimize the potential impacts associated with the use of ammonia, hydrogen fuel cells, and the cleanup of contaminated sites.

Under Alternative 1, none of the potential Strategies associated with the Plan would be implemented and the potential hazards associated with implementing some of the Strategies, including transport of materials, use of hazardous materials, and handling of hazardous materials associated with a few of the strategies would be eliminated.

#### 4.5.1.5 Utilities and Service Systems

The potential solid and hazardous waste impacts associated with the Plan were determined to be less than significant. Due to the recycling value of materials involved, notwithstanding the increased use of batteries in zero emission vehicles, as well as other types of waste from mobile sources and air pollution control equipment, state reduction goals for solid waste are not impeded, and thus the potential waste impacts were determined to be less than significant. Under Alternative 1, no Strategies would be implemented; therefore, there would be no increase in solid or hazardous waste.

### 4.5.2 ALTERNATIVE 2 – DISTRICT ONLY STRATEGIES

The impacts under Alternative 2 are expected to be similar to the impacts evaluated for the proposed Plan in this EIR. As discussed in Section 3.2.4, the West Oakland Community Action Plan includes Strategies that would be implemented by other agencies and organizations. Including them in the Plan serves to provide a comprehensive picture of all activities. However, these activities by other agencies are not dependent on approval of the Strategies that are under the authority of the Air District. As these actions by independent agencies will occur independently of the District's approval of the Strategies under their authority, the EIR does not address the implementation of the Strategies that would be implemented by other agencies.

#### 4.5.2.1 Air Quality

Under Alternative 2, only the District Strategies would be implemented. The construction emissions associated with the enclosures would still occur. As discussed in Section 3.2.4.1, construction emissions are not expected to exceed significance thresholds and would not be considered significant. Nonetheless, they would be eliminated under Alternative 2.

The emission benefits associated with ROG, CO, NOx, SOx, $PM_{10}$ and $PM_{2.5}$ under Alternative 2 would be expected to be the same as analyzed for the proposed project in Table 3.2-17, as that table included the evaluation for Strategies that would be implemented by the Air District, for which there is sufficient information to evaluate potential impacts. For the Strategies in the West Oakland Community Action Plan that would be implemented by other agencies and organizations, the emission reductions are unknown at this time but would nonetheless be expected to occur. Under Alternative 2, there would be no further emission reduction benefits from the Strategies in the Plan that would be implemented by other agencies and organizations.

The potential increase in TAC emissions associated with the proposed project were also determined to be less than significant. Further, the proposed project is expected to result in a beneficial reduction in TAC emissions, as well as criteria pollutants. However, it is not possible to estimate the potential TAC emissions reductions at this point until appropriate strategy implementation actions and engineering analyses have been completed and so forth. Nonetheless, electrification of stationary and mobile sources that use diesel, for example, would be expected to result in a decrease in diesel particulate emissions in the West Oakland area. The potential TAC emissions reductions under the proposed project would be expected to be the same as analyzed for the project Plan under Alternative 2.

The TAC emission reductions under the Plan would likely be less under Alternative 2, since the proposed Plan would implement a number of additional Strategies from other agencies than would be implemented under Alternative 2. Therefore, it is doubtful that Alternative 2 would substantially reduce the high cumulative exposure burden of air pollution to the residents of West Oakland.

#### 4.5.2.2 Energy

The West Oakland Community Action Plan would increase the penetration of zero and near-zero vehicles and increase the future demand for electricity in the Bay Area and other areas of California that provide electricity to West Oakland. The Plan would be expected to result in an increase of up to one GWh of electricity (see Table 3.3-3). The potential electricity impacts were determined to be less than significant as it is within the energy forecast and expected electricity production for PG&E.

Under Alternative 2, the potential increase in electricity associated with the West Oakland Community Action Plan would be the same as evaluated under the proposed project, as well as the estimated reduction in the use of gasoline and diesel fuel. It is expected that PG&E would still move forward with electricity sufficient to power up to two million cars due to other state directives. While sufficient information was not available to evaluate the impacts associated with Strategies that would be implemented under the Plan by other agencies, the energy increases under the Plan would likely be greater than under Alternative 2, since the proposed Plan would implement a number of additional Strategies from other agencies than would be implemented under Alternative 2.

#### 4.5.2.3 Greenhouse Gases

The West Oakland Community Action Plan would increase the penetration of zero and near-zero vehicles, increasing the generation of electricity and potentially increase GHG emissions associated with generating electricity. The potential increase in electric vehicles as part of Strategies in the Plan is within the range of vehicles that PG&E has forecast for its service area of two million vehicles. PG&E expects to meet its forecast GHG benchmarks by 2030, so that the project is not expected to result in an increase in GHG emissions. Under Alternative 2, the increase in electricity would be expected to be similar as that analyzed for the project. There could be additional electricity requirements under the proposed project because strategies would be implemented by other agencies and some of those would be expected to have additional electricity requirements.

The Plan is expected to result in an overall decrease in GHG emissions associated with incentives for zero and near-zero emission vehicles and for supplying shore power to Schnitzer Steel. The GHG emission reductions were expected to range from 205 to 245 MT/year of $CO_2e$ emissions and outweigh any GHG emission increases associated with implementation of the Plan. Under Alternative 2, the expected GHG emission reductions associated with the Plan would be expected to be the same at this time, as the impacts associated with Strategies in the Plan that would be completed by other agencies is unknown.

#### 4.5.2.4 Hazards and Hazardous Materials

The hazard impacts associated with implementation of the Plan are expected to be less than significant, primarily since compliance with numerous existing local, State and federal regulations would minimize the potential impacts associated with the use of ammonia, hydrogen fuel cells, and the cleanup of contaminated sites.

Under Alternative 2, the same strategies that were evaluated for the proposed project would be implemented under Alternative 2. The impacts associated with the use of ammonia, hydrogen fuel cells and from the cleanup of contaminated sites would be the same as the proposed project and less than significant. Therefore, hazard impacts under Alternative 2 would be less than significant.

#### 4.5.2.5 Utilities and Service Systems

The potential solid and hazardous waste impacts associated with the Plan were determined to be less than significant. Due to the recycling value of materials involved, notwithstanding the increased use of batteries in zero emission vehicles, as well as other types of waste from mobile sources and air pollution control equipment, state reduction goals for solid waste are not impeded, and thus the potential waste impacts were determined to be less than significant. Under Alternative 2, the impacts on solid and hazardous waste would be expected to be the same because the same Strategies evaluated for the project would be implemented under Alternative 2; therefore, the impacts on utilities and service systems would be less than significant.

## 4.6 CONCLUSION

Alternative 1 – the No Project Alternative would theoretically reduce the potential construction emissions associated with implementing the Plan. Further, there would be no criteria pollutant or TAC emission reductions achieved under Alternative 1. Alternative 1 is not feasible due to legal factors, as it would violate the requirements of AB 617. Further, Alternative 1 would not achieve any of the project objectives.

The impacts under Alternative 2 would essentially be the same as the proposed project because all of the proposed Strategies that are within the Air District's jurisdiction would be implemented under Alternative 2. However, under Alternative 2, there would be no further emission reduction benefits from the Strategies in the Plan that would be implemented by other agencies and organizations. Alternative 2 would result in some emissions reductions if all of the Air District's strategies were implemented and would partially achieve the project objectives of reducing criteria and TAC emissions and the related exposure. However, Alternative 2 would not be expected to achieve the goals and targets under the West Oakland Community Action Plan and would likely require that additional emission reduction Strategies be implemented. Moreover Alternative 2 would fail to be consistent with the intent of AB 617 for regional air districts to work together with local community groups, agencies, and individuals in ameliorating air pollution in overburdened local communities like West Oakland.

## 4.7 COMPARISON OF ALTERNATIVES

Pursuant to CEQA Guidelines §15126.6(d), an EIR should include sufficient information about each alternative to allow meaningful comparison with the proposed project. Section 15126.6(d) also recommends the use of a matrix to summarize the comparison. Table 4-2 provides this matrix comparison displaying the major characteristics and significant environmental effects of each alternative. Table 4-2 lists the alternatives considered in this EIR and how they compare to the proposed project. Table 4-2 presents a matrix that lists the significant adverse impacts as well as the cumulative impacts associated with the proposed project and the project alternatives for all environmental topics analyzed. The table also ranks each section as to whether the proposed project or a project alternative would result in greater or lesser impacts relative to one another.

As shown in Table 4-2, Alternative 1 would reduce potential impacts associated with the proposed project as no Strategies in the Plan would be implemented. Alternative 1 would also eliminate any criteria or TAC emission reductions and eliminate the beneficial impacts of the Plan and would not achieve any of the project objectives. Alternative 2 would have essentially the same impacts as the proposed project because the same Strategies evaluated as part of the project would be implemented under Alternative 2. Alternative 2 would not result in any significant impacts and would be expected to achieve some of the emission reductions in the project objectives, but not all. Alternative 2 would be considered the environmentally superior alternative as it would achieve more of the project objectives and emissions reductions than Alternative 1.

The proposed project would be considered the preferred alternative as it would be expected to achieve all of the project objectives and emission reductions associated with the implementation of the Plan and would be expected to reduce the emissions and related health impacts to the West Oakland Community more effectively than Alternative 2. Therefore, the proposed project is the preferred alternative.

## TABLE 4-2

## COMPARISON OF ALTERNATIVES

| ENVIRONMENTAL TOPIC | Proposed Project | Alternative 1 No Project Alternative | Alternative 2 District Only Strategies |
|---|---|---|---|
| **Air Quality** | | | |
| Construction Emissions | NS | NS (-) | NS (=) |
| Operational Criteria Pollutants | NS | NS (-) | NS (=) |
| Toxic Air Contaminants | NS | NS (-) | NS (=) |
| Emission Reduction Benefits | B | No benefit | B(-) |
| Cumulative Air Quality Impacts | NS | NS (-) | NS (=) |
| **Energy** | | | |
| Electricity Use | NS | NS (-) | NS (=) |
| Cumulative Energy Impacts | NS | NS (-) | NS (=) |
| **Greenhouse Gas Emissions** | | | |
| GHG Impacts | NS | NS (-) | NS (=) |
| Cumulative GHG Emissions | NS | NS (-) | NS (=) |
| **Hazards and Hazardous Materials** | | | |
| Operational Hazard Impacts | NS | NS (-) | NS (=) |
| Transportation Hazard Impacts | NS | NS (-) | NS (=) |
| Cumulative Hazards Impacts | NS | NS (-) | NS (=) |
| **Utilities and Service System Impacts** | | | |
| Solid Waste Impacts | NS | NS (-) | NS (=) |
| Hazardous Waste Impacts | NS | NS (-) | NS (=) |
| Cumulative Utilities Impacts | NS | NS (-) | NS (=) |

Notes:
NS = Less than significant
B = Beneficial Impact
(-) = Potential impacts are less than the proposed project.
(+) = Potential impacts are greater than the proposed project.
(=) = Potential impacts are approximately the same as the proposed project.

**CHAPTER 5**

# REFERENCES

References
Organizations and Persons Consulted
List of Environmental Impact Report Preparers

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## 5.2 ORGANIZATIONS AND PERSONS CONSULTED

The CEQA statues and Guidelines require that organizations and persons consulted be provided in the EIR. The following organizations and persons have provided input into this document.

Song Bai
Yvette DiCarlo
Victor Douglas
Areana Flores
Josephine Fong
Joel Freid
Andrea Gordon
Henry Hilken
Alison Kirk
Ada Márquez
David Ralston
Stephen Reid
Annie Seagram

## 5.3 LIST OF ENVIRONMENTAL IMPACT REPORT PREPARERS

Bay Area Air Quality Management District
San Francisco, California

Environmental Audit, Inc.
Placentia, California

# APPENDIX A

## NOTICE OF PREPARATION AND INITIAL STUDY

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Notice of Preparation

Bay Area Air Quality Management District

AB 617 West Oakland Community Action Plan

Draft Environmental Impact Report (EIR)

| | |
|---|---|
| To: | Interested Agencies, Organizations and Individuals |
| Project: | AB 617 West Oakland Community Action Plan – Draft Environmental Impact Report |
| Location: | City of Oakland, California |
| Lead Agency: | Bay Area Air Quality Management District |
| Comment Period: | May 14, 2019 to June 14, 2019 |

Interested agencies, organizations and individuals are invited by the Bay Area Air Quality Management District (Air District) to comment on the scope and content of the environmental impact report that will be prepared for the AB 617 West Oakland Community Action Plan in compliance with the California Environmental Quality Act (CEQA). Assembly Bill (AB) 617 (C. Garcia 2017) requires the adoption and implementation of community emissions reduction plans for identified jurisdictions with disproportional impacts from air pollution. Pursuant to AB 617, the proposed plan includes strategies at the local community level to maximize emission reductions and reduce residents' cumulative exposure to criteria air pollutants and toxic air contaminants. The West Oakland Community Action Plan is an integrated, multi-pollutant, community air quality plan to eliminate and reduce health risk disparities in West Oakland. The Air District and the West Oakland Environmental Indicators Project jointly developed the proposed plan for the West Oakland community.

The Air District is the lead agency undertaking the AB 617 West Oakland Community Action Plan and the preparation of a program-level Draft Environmental Impact Report (EIR) for that Plan. The AB 617 Plan identifies 80 potential control measures and strategies to reduce air pollution from a variety of stationary and mobile sources located in West Oakland, including the Port of Oakland. The purpose of this Notice of Preparation (NOP) is to seek comments about the scope and content of the environmental impact report that will be prepared for the Plan.

Written comments on the AB 617 West Oakland Community Action Plan will be accepted until June 14, 2019 via email or mail to:

Ada E. Márquez
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
amarquez@baaqmd.gov

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# CHAPTER 1

## PROJECT DESCRIPTION

Introduction

Agency Authority

Project Location

Background

Project Description

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# 1.0 PROJECT DESCRIPTION

## 1.1 INTRODUCTION

Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) asks communities and air districts to work together to address air pollution and related health effects in overburdened communities like West Oakland. AB 617's community-focused approach provides a new framework for addressing the long-standing disparities in air pollution and related health effects across the state.

AB 617 requires the adoption and implementation of community emissions reduction plans for targeted jurisdictions with disproportionate impacts from air pollution. Pursuant to AB 617, the Bay Area Air Quality Management District (Air District) and the West Oakland Environmental Indicators Project jointly developed a community emissions reduction plan, referred to as the Community Action Plan, for West Oakland. The proposed plan includes strategies at the community level to maximize emission reductions and reduce residents' cumulative exposure to criteria air pollutants, diesel particulate matter (Diesel PM), fine particulate matter ($PM_{2.5}$), and toxic air contaminants. The West Oakland Community Action Plan is an integrated multi-pollutant community air quality plan to eliminate health risk disparities in West Oakland. This Community Action Plan documents the Steering Committee's effort to study air pollution in West Oakland, and to identify and to prioritize Action Strategies that once implemented, will work towards eliminating West Oakland's air pollution burden.

The government agencies with primary responsibility for implementing the strategies in the Community Action Plan include the City of Oakland, Port of Oakland, Alameda County Public Health Department, Air District, and California Air Resources Board.

## 1.2 AGENCY AUTHORITY

CEQA, Public Resources Code §21000 et seq., requires that the environmental impacts of proposed projects be evaluated and that feasible methods to reduce, avoid or eliminate significant adverse impacts of these projects be identified and implemented. To fulfill the purpose and intent of CEQA, the Air District is the lead agency for this project and has prepared the Notice of Preparation/Initial Study for the proposed West Oakland Community Action Plan.

The Lead Agency is the "public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment" (Public Resources Code Section 21067). It was determined that the Air District has the primary responsibility for supervising or approving the project as a whole and is the most appropriate public agency to act as lead agency (CEQA Guidelines Section 15051(b)).

## 1.3 PROJECT LOCATION

The Air District has jurisdiction of an area encompassing 5,600 square miles. The Air District includes all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties, and portions of southwestern Solano and southern Sonoma counties. The San Francisco Bay Area is characterized by a large, shallow basin surrounded by coastal mountain ranges tapering into sheltered inland valleys. The combined climatic and topographic factors result in increased potential for the accumulation of air pollutants in the inland valleys and reduced potential for buildup of air pollutants along the coast. The Basin is bounded by the Pacific Ocean to the west and includes complex terrain consisting of coastal mountain ranges, inland valleys and bays (see Figure 1).

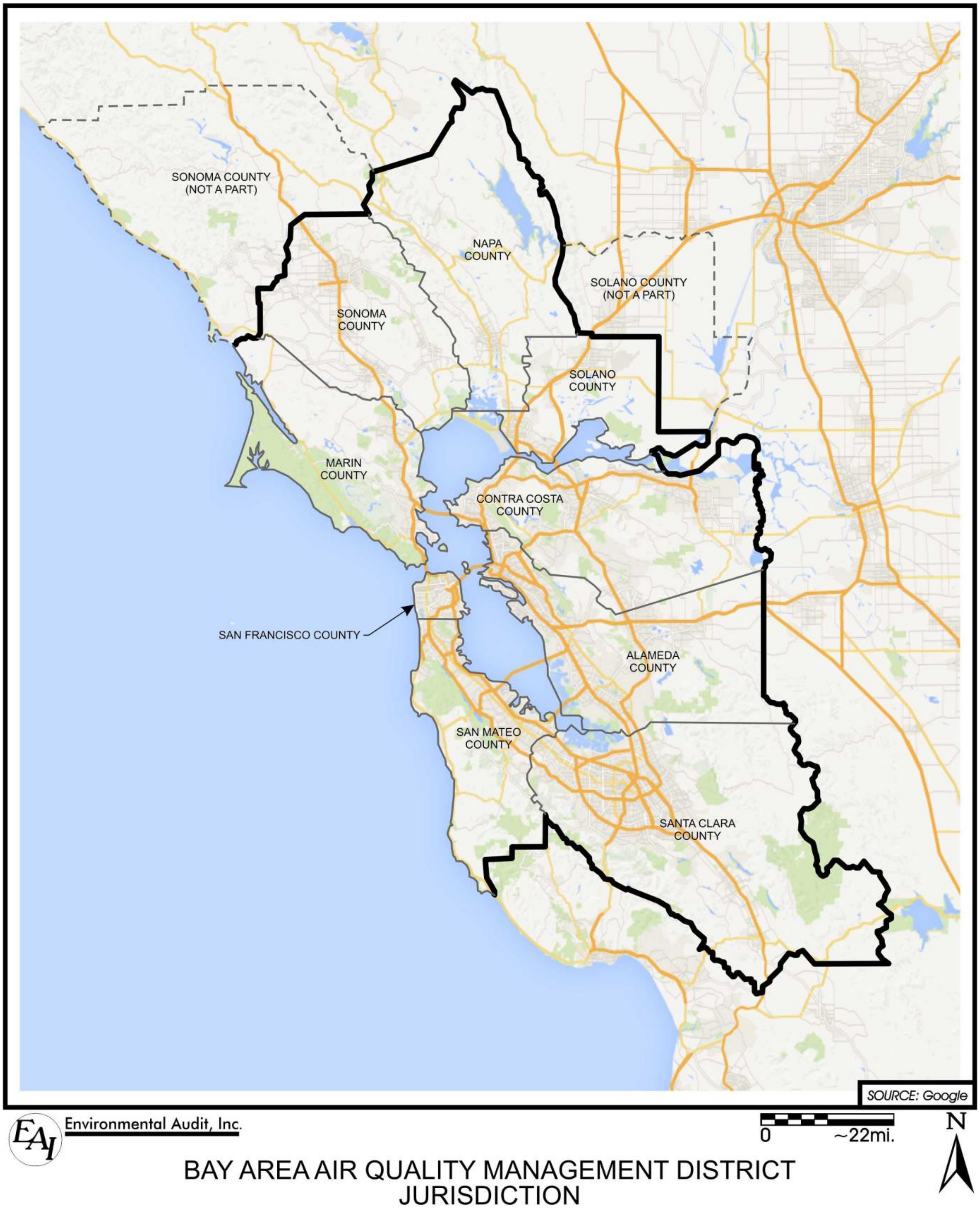
The proposed Community Action Plan will apply to West Oakland, which is part of the City of Oakland (see Figure 2). West Oakland is bounded by the Port of Oakland, the Union Pacific rail yard, and Interstates 80, 580, 880, and 980 (see Figure 3).

## 1.4 PROJECT BACKGROUND

AB 617 directs the state's California Air Resources Board (CARB), in consultation with local air districts, to identify and select communities that have a high cumulative exposure burden to air pollution. Once selected, these communities will work with local air districts on community emission reduction programs and/or air quality monitoring requirements. With the adoption of AB 617, the state acknowledges that many communities around the state continue to experience disproportionate impacts from air pollution. AB617 requires all of the following and more:

1. Air Districts in nonattainment areas must implement Best Available Retrofit Control Technologies (BARCT) on all sources subject to the AB 32 Cap-and-Trade Program. The Air District approved their BARCT requirements in December 2018.
2. CARB must establish and maintain a clearinghouse of best available control technology (BACT), and BARCT.
3. Air pollution violation maximum penalties were increased and will adjust with inflation.
4. CARB was required to prepare an air monitoring plan for all areas of the state by October 1, 2018.
5. Based on air monitoring plan information, CARB must select communities with high cumulative exposure burden to both toxic and criteria air pollutants by July 1, 2019.
    a. Each air district with a high cumulative burden community must deploy a community air monitoring system in that community within one year, and provide the air quality data to CARB for publication.
6. By January 1, 2020, and each January 1 thereafter, CARB will select additional communities with high cumulative exposure burden.

a. Each air district with a high burden community must deploy a community air monitoring system in that community within one year, and provide the air quality data to CARB for publication.

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BAY AREA AIR QUALITY MANAGEMENT DISTRICT
JURISDICTION

Project No. 3100 Figure 1

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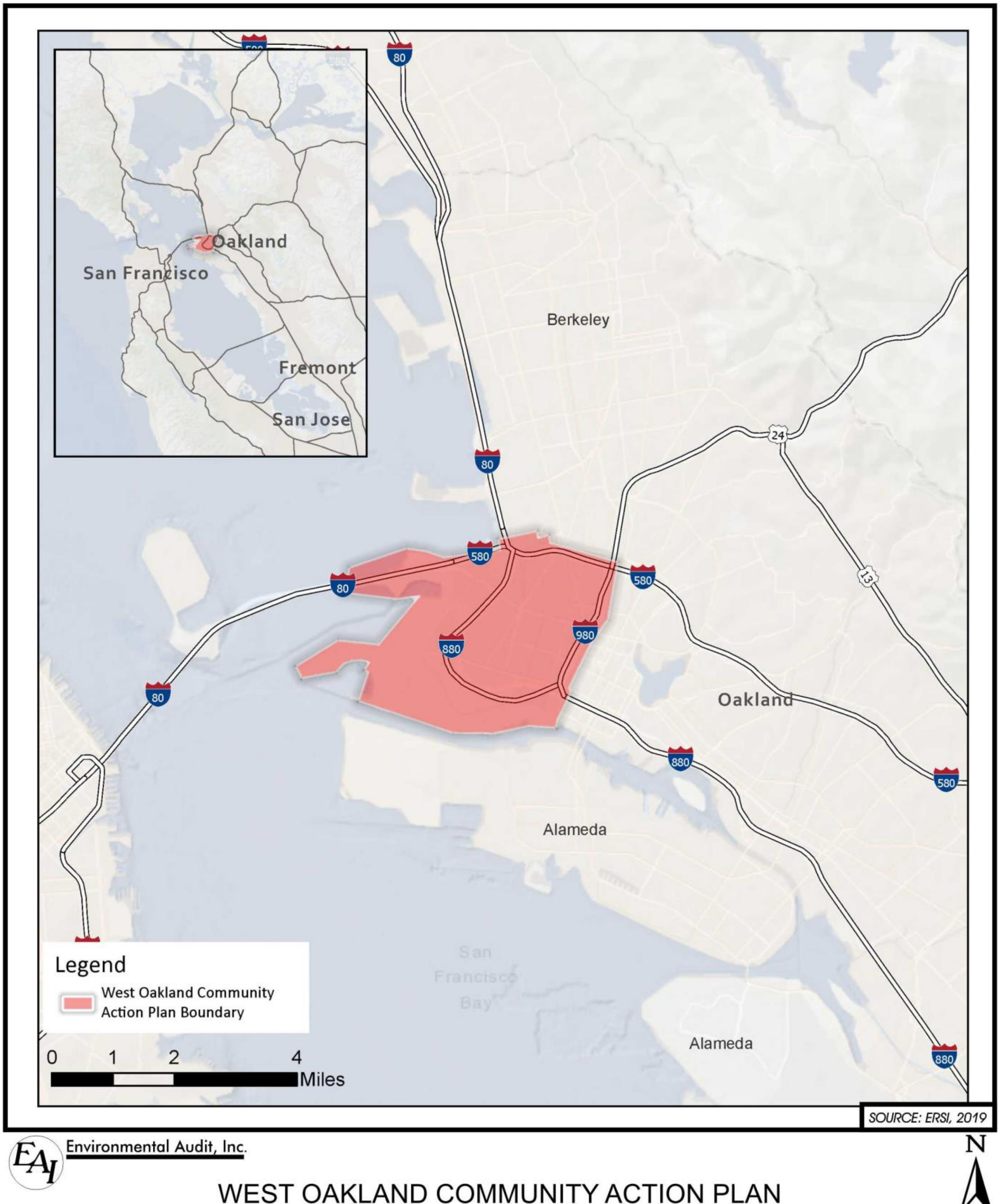


WEST OAKLAND COMMUNITY ACTION PLAN
REGIONAL AND VICINITY MAP

Project No. 3100 Figure 2

N:\3100\Regional Map.cdr


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WEST OAKLAND COMMUNITY ACTION PLAN
PLANNING BOUNDARY

Project No. 3100

Figure 3

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7. CARB must prepare a state-wide strategy to reduce emissions of toxic and criteria pollutants in communities affected by high cumulative exposure burden, by October 1, 2018, and update the strategy every five years. Criteria for the state-wide strategy recognized that disadvantaged communities and sensitive receptors are a priority, and include:
    a. A methodology for assessing and identifying contributing sources, and estimating their relative contribution to elevated exposure (source apportionment).
    b. Assessment of whether an air district should update and implement the risk reduction audit and emissions reduction plan for any facility if the facility causes or significantly contributes to the high cumulative exposure burden.
    c. Assessment of available measures for reducing emissions including BACT, BARCT, and toxics best available control technology (TBACT).
8. CARB selected locations for preparation of Community Emission Reduction Plans by October 1, 2018. CARB will select additional locations annually thereafter.
    a. Within one year, the air districts will adopt Community Emission Reduction Plans in consultation with CARB, individuals, community-based organizations, affected sources, and local governmental bodies.
    b. By October 2019, air districts adopt programs in first-year communities selected for community emissions reduction programs.
    c. The air districts' deadline to adopt the community emissions reduction programs is one year from community selection, which is October 1, 2019 for the first set of communities selected.
    d. The Community Emission Reduction Plans must be consistent with the state-wide strategy, and include emission reduction targets, specific reduction measures, a schedule for implementation of the measures, and an enforcement plan.
    e. The Community Emission Reduction Plans must be submitted to CARB for review and approval.
    f. The Community Emission Reduction Plans must achieve emission reductions in the community, based on monitoring or other data.
    g. The air districts must prepare an annual report summarizing the results and actions taken to further reduce emissions.
9. CARB will provide grants to community-based organizations for technical assistance and to support community participation in identification of communities with high exposure burden, and development and implementation of the Community Emission Reduction Plans.

AB 617 represents a significant enhancement to the approach CARB and local air districts take in addressing local air quality issues. The Air District has begun implementing programs that follow on from AB 617; these programs include the Community Air Risk Evaluation (CARE) Program, Health Risk Assessments for the AB 2588 Air Toxics "Hot Spots" Program, and Air District Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities. However, AB 617 presents myriad requirements and establishes challenging goals and timelines for implementation.

In August 2018, the District submitted the Community Health Protection Program to CARB which recommended the communities for the first five years of the state's Community Air Protection Program. The Air District recommended that West Oakland be eligible for a Community Action Plan in the first year of the AB 617 program. Maritime-freight industries, rail, large distribution centers, a cement plant, a power plant, metal facilities, small to medium industrial and manufacturing operations, major freeways and busy roadways used as trucking routes all impact the West Oakland community. These sources contribute to high levels of particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) concentrations and elevated cancer risk from toxic air contaminants. West Oakland is considered one of the most impacted areas in the San Francisco Bay Area due to the area's many sources of diesel particulate matter. As such, CARB approved West Oakland as a first-year priority community in the Bay Area. In addition, CARB approved Richmond for a Community Air Monitoring Plan. The currently proposed project will implement the required community emission reduction plan required under AB 617, which is referred to as the West Oakland Community Action Plan herein.

## 1.5 PROJECT DESCRIPTION

The West Oakland Community Action Plan is a joint effort between the West Oakland Environmental Indicators Project (Indicators Project) and the Air District, with direction from the West Oakland Community Action Plan Steering Committee. The West Oakland Environmental Indicators Project has a long history of community planning and advocacy to reduce residents' exposure to diesel particulate matter (Diesel PM), fine particulate matter ($PM_{2.5}$), and toxic air contaminants (TACs). The Steering Committee members are local stakeholders, including residents, community and local business leaders, and government agency representatives.

The Community Action Plan was developed through monthly meetings with the West Oakland Steering Committee, which began working on the Plan in July 2018. The Plan provides strategies for addressing the long-standing disparities in air pollution and related health effects in West Oakland. Once implemented, the Plan will work towards eliminating West Oakland's air pollution burden.

The goal of the Community Action Plan is to reduce emissions from air pollution sources within and adjacent to West Oakland air pollution sources, including:

- Stationary sources in West Oakland and adjacent to West Oakland, such as the East Bay Municipal Utility District wastewater treatment plant; recycling facilities such as Schnitzer Steel, CASS, and California Waste Solutions, Incorporated; gas stations, back-up diesel generators, and auto-body shops;
- Mobile sources, such as heavy-duty trucks and light-duty vehicles that travel in West Oakland and on the surrounding freeways; and
- Mobile sources that serve the Port of Oakland, such as cargo equipment, port trucks, locomotives, ocean-going ships, and harbor craft in the San Francisco Bay.

A summary table is provided at the end of this Chapter One as Appendix A that identifies the proposed strategies included in the Community Action Plan. A summary of those strategies is provided below.

### 1.5.1 Stationary Source Strategies

The Plan includes strategies to further control emissions from stationary sources in West Oakland. Strategies to control stationary sources to include considering: (1) replacing stationary diesel engines with Tier 4 diesel or cleaner engines; (2) reformulation of vanishing oils and rust inhibitors; (3) reducing toxic air contaminant emissions from existing industrial sources including Schnitzer Steel and the East Bay Municipal Utility District's Wastewater Treatment Plant; (4) potential new or amended regulations to further reduce emissions from metal recycling and foundry operations; (5) developing a regulation to reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks; and (6) identifying incentives to emissions from waste water treatment plants and anaerobic digestion facilities. The District may also consider developing an indirect source regulation to reduce emissions from freight operations.

### 1.5.2 Mobile Source Strategies

The Plan includes strategies to reduce emissions from mobile sources including vehicles, trucks, locomotives, and ships. A number of strategies would encourage the early retirement of old vehicles, the use of renewable fuels or increase the use of zero-emissions trucks, buses, and vehicles operating in West Oakland. Strategies to control emissions from locomotives and ships include: (1) increasing the use of shore-power or other emission control systems by vessels at berth in the Port of Oakland; (2) encouraging use of Tier 3 and 4 compliant diesel engines on tugs and barges; and (3) encouraging use of Tier 4 compliant engines on locomotives. A number of strategies would increase enforcement on a variety of different activities including illegal parking, excess idling, and not using appropriate truck routes.

### 1.5.3 Other Mobile Source Strategies

The Plan encourages other strategies to reduce emissions from mobile sources including: (1) encouraging car sharing for low-income individuals; (2) providing pedestrian and bicycle improvements to increase use of public transit, e.g., BART; (3) increasing street sweeping to minimize the re-entrainment into the air of particulates that collect on streets and freeways; (4) developing safe routes to school to minimize conflicts between pedestrians and trucks/vehicles; and (5) considering improvements to public transit along Grand Avenue.

### 1.5.4 Land Use Strategies

Land use strategies are aimed at modifying land uses to limit exposure to emissions. Under this category, the Plan includes strategies to reduce exposure to emissions by: (1)

relocating California Waste Systems and CASS to move sources away from sensitive receptors; (2) accelerating the relocation of auto and truck-related businesses that are non-conforming land uses; (3) developing regulations to prohibit certain freight businesses and truck yards in portions of West Oakland; (4) increasing urban tree planting and vegetative biofilters along streets/truck routes to help reduce exposure to emissions; (5) adopting development impact fees to fund various environmental mitigations including green infrastructure and transportation improvements; (6) installing solid barriers between buildings and air pollution sources (e.g., freeways) to reduce exposure to air pollution; (7) increasing electrical infrastructure to encourage zero emissions vehicles/trucks; and (8) improving and updating the complaint processes, enforcement procedures and coordination with other public agencies to better respond to odors and open burning complaints.

### 1.5.5 Health Programs

Health Program strategies are aimed at generally reducing exposure to air pollution. These strategies could include: (1) the installation of high efficiency air filtration systems on buildings to reduce exposure; (2) relocating exhaust stacks to reduce local exposure to air pollutants; (3) providing additional air monitoring to better detect sources of air pollution; and (4) better reporting of health data to identify public health impacts, as well as improvements.

Implementation of the Community Action Plan, once approved, will be the responsibility of a number of governmental agencies including the City of Oakland, Port of Oakland, Alameda County Public Health Department, Air District, and California Air Resources Board. Please see Appendix A for a list and description of all the proposed strategies in the West Oakland Community Action Plan.

## 1.6 OVERVIEW OF ANALYTICAL APPROACH

The West Oakland Community Action Plan is designed to be a comprehensive Plan for the District and other agencies and community groups to use to implement strategies to reduce West Oakland residents' exposure to diesel PM, $PM_{2.5}$, and TAC emissions. To implement the Plan, the Air District and other agencies and organizations propose to draw on a full repertoire of tools and resources. This repertoire includes the District's principal regulatory tool, which is its rulemaking authority granted to it under the California Health & Safety Code to adopt mandatory regulations requiring stationary-source facilities to take action to reduce their air emissions. It also includes the District's grants and incentives programs, which provide monetary incentives for implementing voluntary actions to reduce emissions. And it also includes the District's role in promoting sound policy development and healthy air choices throughout all sectors of our economy and society. This last tool encompasses efforts such as providing technical support to other agencies as they develop and implement their own policies and programs to help achieve clean air; promoting best practices by developing model ordinances, guidance documents and other similar documents; outreach and education efforts to engage with community groups and other organizations; and advocacy in support of legislative and regulatory action at the federal, state and local levels to promote the District's air quality and public health goals.

To facilitate the analysis of the potential impacts from implementation of the strategies in the Community Action Plan, the District has organized the strategies into four categories; (1) stationary-source regulatory actions; (2) grants and incentive actions; (3) technical support, education outreach, and advocacy actions; and (4) strategies to be implemented by other agencies. The following discussion outlines each of these categories in general.

### 1.6.1 Stationary Source Regulatory Action

The principal type of activity that the Air District will engage in under the West Oakland Community Action Plan is to explore, research and/or adopt, if appropriate, mandatory regulations and rules requiring stationary-source facilities to take actions to reduce their air emissions, pursuant to the District's rulemaking authority under the California Health & Safety Code. The enhanced rules and regulations that the Air District proposes to develop under the Community Action Plan will help to reduce emissions in West Oakland. These proposed regulatory measures are evaluated to determine whether they could also result in any significant ancillary adverse environmental impacts.

The West Oakland Community Action Plan proposes a number of control strategies that would reduce emissions of diesel PM, $PM_{2.5}$, and TAC emissions. Potential stationary source strategies include reducing reactive organic gas (ROG) and TAC emissions from organic liquid storage tanks; reducing emissions from the use of vanishing oils; new regulations to control emissions from wastewater treatment plants; modification to existing regulations to further reduce emissions from metal recycling and foundry operations; and installing shore-power or a "bonnet" system on ships that visit the Schnitzer Steel marine terminal. The potential impacts of these types of control strategies are evaluated in Chapter 2 of the Initial Study as their implementation could result in physical impacts.

In addition to new and modified rules and regulations, some of the Air District's proposed stationary source regulatory actions will enhance enforcement of existing regulations. These regulatory actions do not require any new or modified equipment at any facilities and as such, they are not expected to result in adverse physical environmental impacts. Action #21 which would create a Sustainable Freight Advisory Committee, that could include enhance enforcement of truck parking and idling, and which would also result in improved referral and follow-up of nuisance and odor complaints, both fall into this category of no adverse impacts. As this measure would not have any physical environmental impacts, it not addressed in the subsequent environmental analysis.

For a number of other proposed stationary source control measures, it is not clear at this point what type of regulatory action (if any) the Air District may take to implement them. For example, several control strategies involve potential rules where further study is needed to determine whether it is possible to obtain additional emissions reductions, and if so, how would that be accomplished. Such measures include Action #2 to further control emissions from storage tanks, and Action #3 to control emissions from autobody and other coating operations, including vanishing oils and rust inhibitors.

For these types of measures, it is not possible to evaluate with any specificity whether there may be a significant environmental impacts arising from the Air District's implementation actions, as the implementation actions themselves and/or any resulting physical changes to the environment are not yet known with any specificity. In such situations, CEQA does not require a CEQA document to engage in speculation about what might or might not occur from such strategies. CEQA Guidelines Section 15145 provides that "[i]f, after thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact." Accordingly, speculative implementation strategies of this type are not addressed in detail in the environmental analyses. The Air District has projected what implementation of the Community Action Plan may involve as precisely as is reasonably possible at the current stage of development and, wherever there are specific implementation actions and specific physical changes to the environment that are likely or reasonably possible to occur, they and their environmental impacts are evaluated in detail. But where it is not possible at this stage to project the nature or extent of an implementation action or any resulting environmental impacts beyond mere speculation, they are not evaluated, and indeed cannot be evaluated, in accordance with CEQA Guidelines Section 15145. In addition to the examples cited above, other measures which are considered too speculative to determine if nay environmental impacts might occur at this stage include Action #18 (air pollution and health outcomes of allowing truck traffic on I-580 and a truck lane on I-880); Action #65 (shortcut nitrogen removal from wastewater treatment plants); as well as some of the measures that would encourage zero emission mobile sources.

### 1.6.2 Grants and Incentives

In addition to the stationary source regulatory measures proposed as part of the Community Action Plan, the Air District is also proposing to use its grants and incentives programs to fund projects in furtherance of the Plan's goals of reducing air pollution and protecting public health. The main vehicle for funding strategies is the Air District's Transportation Fund for Clean Air (TFCA), which funds cost-effective projects aimed at reducing on-road motor vehicle emissions in the Bay Area, including vehicle replacement projects that fund the replacement of older, higher-emitting vehicles with cleaner zero emission vehicles or partial zero emission vehicles. Other sources of grants include the Carl Moyer Program, the Mobile Source Incentive Fund, and the Goods Movement Program.

The Air District is proposing to use the grants and incentive program to further the Plan's goals of reducing emissions in West Oakland. These control strategies call for using grant funding to target emissions reductions to be obtained from the transportation section, either by promoting emissions-free alternatives to motor vehicle travel such as walking and bicycling, or by promoting less-polluting vehicular transportation such as zero-emission mobile sources and public transit. In Strategy #41, the Air District would use up to $7 million per year to replace older autos through the Vehicle Buy Back program and, up to $4 million per year through the Clean Cars for All program to replace older autos and provide an incentive for a zero emission vehicle or to get a Clipper Card for public transit.

A number of other strategies would also provide financial incentives to reduce emissions including loans for local businesses to install energy storage systems to replace stationary sources of pollution (e.g., back-up generators) (Strategy #14); financial incentives to replace diesel trucks with zero emission trucks (Strategy #42); streamlining the process for funding for fueling infrastructure for low/zero emission equipment (Strategy #46); financial incentives to upgrade tugs, barges, and locomotives with cleaner engines (Strategy #59 and #60); financial incentives to support development of hydrogen refueling stations and the purchase of trucks and off-road equipment powered by fuel cells (Strategy #45); financial incentives for the purchase of electric bicycles (Strategy #50); financial incentives to pay for cleaner equipment, e.g., electric lawn and garden equipment, batteries for transportation refrigeration units, and cargo-handling equipment (Strategy #47); financial incentives to replace diesel trucks with zero emission trucks (Strategy #42); and incentives and grants for building energy efficiency upgrades and high efficiency air filtration systems (Strategy #69).

For these types of implementation actions, it is only possible to evaluate the Plan's potential environmental impacts in highly general terms. Strategies #15 and 18 may require construction activities to install electric charging stations, for example, but more information on the location and number of stations is needed to evaluate the magnitude of the impacts. Strategies #27, 41-47, 60, and 63 could fund the purchase and replacement of older internal combustion engines with newer engines. The disposal of older engines, vehicles, trucks, etc., could have an adverse impact associated with removing hazardous waste (anti-freeze, gasoline, oil) from the vehicles, but more information is needed specifically about how and where such activities would occur before a detailed analysis of potential impacts could be conducted. In addition, if electric vehicles are purchased with the grant funding there could be potential impacts associated with electricity production and supply. However, it is not possible to evaluate whether there could be any environmental impacts from individual projects the Air District might fund, or the nature and extent of any such impacts, as there are no specific projects at this point that have been proposed for grant funding and the availability of the funding, in most cases, is unknown. Given the unspecified nature of the particular activities that the Air District would fund through these strategies, there is no way to evaluate at this point whether there could potentially be any significant environmental impacts associated with them.

CEQA Guidelines Section 15145, as stated above, provides that "[i]f, after thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact." That is also the case here with respect to evaluating impacts from some projects that the Air District may fund under the Community Action Plan. It is not possible at this stage to determine – beyond mere speculation – the nature, extent, location, or timing of any activities that may result from projects funded under the Plan and, therefore, it is not possible to evaluate whether any such activities may generate a significant impact. In such situations, CEQA does not contemplate an attempt to assess the significance of purely speculative impacts. Potential environmental impacts will be addressed as the Air District implements the Plan and it becomes clear what specific projects the District may support. When specific projects are proposed, they will be subjected to a CEQA environmental analysis before they can be implemented. At that point, the specific details about the project, including what types of activity will be required and what the potential environmental impacts could be, will be evaluated. The future CEQA analysis will be able to conduct a full analysis of any potential environmental impacts at that time, as the nature, extent, amount of funding, location, timing, and duration of the activity will be known. For these reasons, the impacts analysis in Chapter 2 does not evaluate potential impacts from any projects that the Air District may fund through its grants and incentives programs, where the impacts are speculative.

### 1.6.3 Technical Support, Educational Outreach and Advocacy

The third category of actions the Air District is proposing in the West Oakland Community Action Plan involves measures to promote sound policy development and healthy air quality choices throughout all sector of the economy and society. These activities include promoting best practices by public agencies and other entities through information resources, model ordinances, guidance documents, etc.; outreach and education to engage with community groups and other organizations; and advocacy in support of legislative and regulatory action at the federal and state levels in order to promote the District's air quality and public health goals.

The Air District's technical support, educational and advocacy efforts are aimed at supporting and encouraging other agencies, organizations, businesses and individuals as they take action to address air pollution and climate change concerns in areas outside of the Air District's direct regulatory authority. The District regularly participates with such entities to support them in developing plans, policies and programs that are aligned with the Air District's clean air goals. The Air District has partnered and participated in multiple collaborative policy and planning efforts, such as: (1) *Plan Bay Area* in conjunction with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG); (2) CARB's *2016 Mobile Source Strategy*; (3) MTC's regional *Goods Movement Plan*; and (4) the *Bay Area Goods Movement Collaborative* convened by MTC and the Alameda County Transportation Commission.

Portions of the West Oakland Community Action Plan would continue and expand technical support, educational and advocacy efforts. For example, Strategy #38 continues the District's engagement in the environmental review process for development projects in West Oakland, providing data and technical assistance to lead agencies. The Air District provides this support through resources it has developed through its CEQA Guidelines document, and its *Planning Healthy Places* guidance document, among others. The Community Action Plan calls on the Air District to continue and enhance these efforts in West Oakland going forward.

The Air District also focuses advocacy efforts on supporting legislative and regulatory initiatives to promote clean air and climate protection. The West Oakland Community Action Plan includes actions for the Air District to seek authority to reduce emissions and risk from magnet sources such as the Port of Oakland, freight operations and warehouse distribution centers.

Finally, the Air District also engages in education and outreach efforts aimed at encouraging members of the public to generally make positive lifestyle choices to help improve air quality. For example, the Air District's existing "Spare the Air Every Day" Program encourages members of the public to reduce motor vehicle travel and other pollutant-emitting activities, especially on "Spare the Air" days when high ozone levels are predicted. The proposed West Oakland Community Action Plan incorporates education and outreach efforts through strategies that would provide education on measures that could reduce the use of energy and lead to more energy efficient buildings.

These technical support, education and advocacy efforts are not expected to result in any significant environmental impacts. Providing policy input by participating in the development of other agencies' plans and initiatives in those agencies' own regulatory areas, as the District has done with CARB's *Mobile Source Strategy* and MTC's *Goods Movement Plan*, does not involve any activities that could generate environmental impacts. Nor does providing technical support for implementing such plans and initiatives once they are adopted, for example identifying best practices to mitigate air quality impacts from infill development. And the same is true for other educational outreach and advocacy efforts the Air District will engage in under the proposed Plan, such as continuing to review and comment on CEQA documents, and providing educational programs to promote informed lifestyle choices related to clean air.

To the extent that the Air District's technical support, educational and advocacy efforts are aimed at promoting sound policy choices by other governmental agencies and private individuals, it is not possible to assess with any level of specificity how the District's efforts would result in specific actions by such third-parties that would result in physical changes to the environment. The Air District obviously hopes that its efforts will help influence positive outcomes. But it is not possible to predict beyond speculation what actions any other agency or private individual may take or not take as a result of the District's efforts, compared to what would occur absent any District action. As a result, it is not possible to assess whether there would be any physical changes to the environment that might occur as a result of the District's efforts under the Plan, let alone the extent of any potential adverse impacts associated with any such changes. Accordingly, under CEQA Guidelines Section 15145, such speculative impacts from the District's technical support, educational and advocacy efforts are not evaluated in Chapter 2.

### 1.6.4 Actions by Other Agencies

Finally, to be comprehensive, the West Oakland Community Action Plan also includes control strategies proposed to be implemented primarily or exclusively by other agencies, such as the City of Oakland and CARB. A large portion of the control strategies would be implemented by agencies other than the Air District.

The West Oakland Community Action Plan includes these control measures because they involve activities by other agencies in the region that further the same clean air goals for West Oakland that the Air District, and other agencies and organizations, are seeking to achieve under the Plan. Including them in the Plan serves to provide a comprehensive picture of all such activities throughout the region. These activities by other agencies are included for information purposes only, however. They are not dependent on approval of the control strategies that are under the authority of the Air District. Further, the Air District's approval of the control strategies will not authorize or commit those agencies to any action. As these actions and activities by independent agencies are not Air District actions and will occur independently of the District's approval of the control strategies under their authority, they are not direct or indirect effects resulting from approval of the Plan that must be analyzed in this document. Accordingly, Chapter 2 does not address implementation actions by other agencies that are independent of the Air District's implementation actions under the Community Action Plan.

# ATTACHMENT A: DRAFT STRATEGIES

| Action # | Section | Description | Authority |
|---|---|---|---|
| 1 | Land Use | The City of Oakland continues working with California Waste Solutions and CASS, Inc. to relocate operations to the former Oakland Army Base and works with the property owners and local residents to redevelop the former sites in West Oakland with new business and light industrial uses that fit into a green economy. | City of Oakland |
| 2 | Land Use | The Air District will continue to engage in environmental review processes for development projects in West Oakland, such as the Oakland A's Ballpark and the Macarthur Maze Vertical Clearance Project, including coordinating with community partners and lead agency staff, providing data and technical assistance, and reviewing and commenting on CEQA documents through 2025. | Air District |
| 3 | Land Use | The Air District will study the potential air pollution and health outcomes of allowing truck traffic on I-580 and designating a truck lane on I-880. Allowing truck traffic on I-580 would require legislative approval, re-engineering, and re-construction. | Air District |
| 4 | Land Use | Consistent with measures in the West Oakland Specific Plan, the City of Oakland identifies locations outside of West Oakland for heavier industrial businesses currently in West Oakland that contribute to air pollution emissions and negative health outcomes in West Oakland. | City of Oakland |
| 5 | Land Use | The City of Oakland amends existing City Ordinances and Administrative policies to accelerate relocation of auto- and truck-related businesses out of West Oakland that do not | City of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | conform with the zoning designations adopted in the West Oakland Specific Plan. | |
| 6 | Land Use | The City of Oakland uses incentives and subsidies to relocate auto- and truck-related businesses away from West Oakland that do not conform with the zoning designations adopted in the West Oakland Specific Plan. The Air District will provide emissions data and technical support to assist the City in these efforts. | City of Oakland |
| 7 | Land Use | The City of Oakland revises business licensing procedures to require current and proposed businesses to disclose truck visits per day and works with Caltrans to determine the number of trucks that park in the Caltrans right-of-way near West Oakland. These efforts would help to better understand emissions and exposure in West Oakland. | City of Oakland |
| 8 | Land Use | The City of Oakland amends existing City Ordinances and Administrative policies to list new truck yards as prohibited uses within West Oakland. | City of Oakland |
| 9 | Land Use | The City of Oakland develops a plan to limit the hours that trucks can operate in the community. | City of Oakland |
| 10 | Land Use | The City of Oakland creates a comprehensive area-wide urban canopy forest plan that identifies locations that trees can be added and maintained, such as parks and along Caltrans' rights-of-way, and develops a plan to protect existing trees that reduce exposure to air pollution emissions in West Oakland. This includes partnering with local nonprofit groups and encouraging trees on private property. | City of Oakland |
| 11 | Land Use | The City of Oakland works with local groups to train residents to maintain biofilters. | City of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| 12 | Land Use | The Air District and the Environmental Indicators Project intends to implement the biofilter plan currently under development between Interstate 880 and the Prescott neighborhood in West Oakland by 2020. | Air District |
| 13 | Land Use | The City of Oakland adopts development impact fees that generate funds for various environmental mitigations, including green infrastructure. | City of Oakland |
| 14 | Land Use | The Air District provides subsidized loans for local businesses to install energy storage systems (e.g. batteries, fuel cells) to replace stationary sources of pollution (e.g. back-up generators). | Air District |
| 15 | Land Use | The City of Oakland reserves land for electrical charging stations for buses, trucks, and automobiles. | City of Oakland |
| 16 | Land Use | The City of Oakland requires solid barriers be incorporated into site design, similar to a sound wall, between buildings and sources of air pollution (for example, a freeway). | City of Oakland |
| 17 | Land Use | The City of Oakland adopts an ordinance that requires on-site renewable energy generation of at least 5% of a project's energy use. | City of Oakland |
| 18 | Land Use | The Air District advocates for more electrical infrastructure and power storage, development of (1) fast-charging facility, (1) truck charging stations and better land use support for electric trucks by 2025. | PG&E |
| 19 | Land Use | The Port of Oakland adopts an Electrical Infrastructure Plan for the maritime waterfront areas of Oakland. This Plan seeks to remove barriers to adoption of zero-emission trucks, such as cost, land, and ownership of charging equipment. | Port of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| 20 | Land Use | The City of Oakland revises development requirements to require the implementation of as many transportation demand management (TDM) strategies as feasible by developers of new buildings. | City of Oakland |
| 21 | Land Use | The Air District works with the City and Port of Oakland and other agency and local partners to create a Sustainable Freight Advisory Committee to provide recommendations to each agency's governing board or council. The Committee's scope includes: air quality issues, enhanced/increased enforcement of truck parking and idling, improved referral and follow-up to nuisance and odor complaints related to goods movement, improvements to the Port appointment system, charging infrastructure and rates, developing land-use restrictions in industrial areas, and consideration of video surveillance to enforce truck parking, route, and idling restrictions. | Air District |
| 22 | Land Use | The City of Oakland adopts more stringent CEQA air quality construction and operations thresholds and mitigation requirements for West Oakland. | City of Oakland |
| 23 | Land Use | The City and Port of Oakland provides West Oakland community members public notice and at least 30 days of comment period on any relevant planning or land-use decisions not currently subject to such notice. | City of Oakland, Port of Oakland |
| 24 | Land Use | The Air District works with agency and local partners to improve referral and follow-up on nuisance and odor complaints by 2021. This work includes updates to complaint processes, enforcement procedures and | Air District |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | coordination with other public agencies regarding odors and open burning complaints. | |
| 25 | Land Use | To address potential changes in local pollution exposure, the City of Oakland works with local community groups to address gentrification and the pricing out of long-term residents caused by gentrification. This effort includes meetings with local community groups and incentives and loans targeted to existing businesses and residents. Funding for this effort is identified as needed. | City of Oakland |
| 26 | Trucks | The California Air Resources Board develops improvements to the existing truck and bus inspection and maintenance programs. Potential improvements include increasing the warranty requirements, adding a lower in-use emissions performance level, increasing inspections in West Oakland, using aggregated GPS and other telecommunication records to identify locations of idling trucks and buses, and developing with the Air District a system using on-board diagnostic and remote sensing devices to identify and fix faulty emissions abatement devices on trucks and buses. | CARB |
| 27 | Trucks | The California Air Resources Board adopts regulatory amendments to increase the number of zero emission trucks and buses operating in West Oakland. | CARB |
| 28 | Trucks | The California Air Resources Board adopts regulatory amendments requiring trucks and buses with "Clean Idle" stickers to idle no more than 5 minutes when in West Oakland. | CARB |
| 29 | Trucks | The City of Oakland requires all loading docks in warehouse facilities located within West Oakland and adjacent waterfront | City of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | area provide electrical connections for electric trucks and transportation refrigeration units. As part of the consideration of this measure, the City of Oakland conducts a study to identify small truck yards and other locations where transportation refrigeration units operate extensively. | |
| 30 | Trucks | The Port of Oakland, as part of the 2020 and Beyond Seaport Air Quality Plan, supports the transition to zero-emission drayage truck operations, including setting interim year targets out to 2035, coordinating an extensive zero-emission truck commercialization effort, working with the City of Oakland to amend local ordinances to increase the allowable weight limits for single-axle, zero-emission trucks on local streets located within the Port and the Oakland Army Base/Gateway areas and developing an investment plan for needed upgrades to the Port's electrical infrastructure. The Port of Oakland also works with the California Public Utilities Commission and the California Energy Commission to study the development of time-of-day electric rate structures favorable to truck operators. | Port of Oakland |
| 31 | Trucks | The City of Oakland, consistent with the West Oakland Truck Management Plan: 1) improves training for police officers and community resource officers who issue truck and trailer parking tickets; 2) changes the parking regulations so they are easier to enforce; 3) increases truck parking fines; 4) targets enforcement at specific times and locations; 5) offers incentives to truck drivers and businesses to | City of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | park at the waterfront; and 6) improves signage directing drivers to available truck parking. | |
| 32 | Trucks | The City of Oakland, consistent with the West Oakland Truck Management Plan: 1) improves signage regarding existing truck routes; 2) studies the location and movement of smaller truck fleets operating in West Oakland; and 3) adds to or changes truck routes, time of day restrictions and prohibited streets. | City of Oakland |
| 33 | Trucks | The City of Oakland, consistent with the West Oakland Truck Management Plan, implements, in consultation with West Oakland residents, traffic calming measures to keep truck traffic of residential streets. | City of Oakland |
| 34 | Trucks | The Air District works with CARB to streamline the process for providing financial incentives for fueling infrastructure, and for low and zero-emission equipment. The Air District increases outreach and assistance to individual owner-operators and small companies by providing 2 workshops in West Oakland by 2022. | Air District |
| 35 | Trucks | The City and Port of Oakland award long-term leases to vendors that will deliver trucker services (including mini-market and convenience stores, fast food and fast casual restaurants) and parking to keep trucks off West Oakland streets. | City of Oakland, Port of Oakland |
| 36 | Trucks | The Port of Oakland studies the effects on truck flow and congestion due to increasing visits from larger container ships, the feasibility of an off-terminal container yard that utilizes zero emission trucks to move containers to and from the marine terminals, and the potential efficiency gains from increasing the number of trucks | Port of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | hauling loaded containers on each leg of a roundtrip to the Port. | |
| 37 | Trucks | The Alameda County Transportation Commission works with West Oakland residents and businesses to develop mitigations to short- and long-term impacts caused by the construction of the 7th St Grade Separation East Project and the implementation of other elements of the GoPort Initiative. | ACTC |
| 38 | Other Mobile Sources | The City of Oakland collaborates with AC Transit, BART, Emery-Go-Round and the local community to implement the broad array of transit improvements identified in the West Oakland Specific Plan. | Multiple |
| 39 | Other Mobile Sources | The City of Oakland collaborates with MTC and ACTC to consider a program for extending car sharing to low-income individuals and groups in West Oakland. | City of Oakland, others |
| 40 | Other Mobile Sources | AC Transit implements the Grand Avenue transit improvements identified in its Bus Rapid Transit Plan, as well as mitigations if the improvements cause increases in truck and auto idling on Grand Avenue. | AC Transit |
| 41 | Other Mobile Sources | The Air District plans to offer up to $7 million per year to replace older autos through the Vehicle Buy Back program, and up to $4 million per year through the Clean Cars for All programs to replace older autos and provide an incentive for a hybrid electric, plug-in hybrid electric, battery electric vehicle, or to get a Clipper Card for public transit. | Air District |
| 42 | Other Mobile Sources | The Air District offers financial incentives to replace box and yard diesel trucks with zero emission trucks owned by West Oakland businesses every year. | Air District |
| 43 | Other Mobile Sources | The Air District plans to offer financial incentives to upgrade tugs and barges operating at the | Air District |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | Port of Oakland with cleaner engines every year. | |
| 44 | Other Mobile Sources | The Air District plans to offer financial incentives to upgrade line-haul, passenger, and switcher (yard) locomotives with cleaner engines every year. | Air District |
| 45 | Other Mobile Sources | The Air District plans to offer financial incentives to support the development of a hydrogen refueling station and the purchase of trucks and off-road equipment powered by fuel cells every year. | Air District |
| 46 | Other Mobile Sources | The Air District offers financial incentives to replace long-haul diesel trucks with zero emission trucks owned by West Oakland businesses every year. | Air District |
| 47 | Other Mobile Sources | The Air District will award up to $1 million in funding incentives to pay for the cost of purchasing cleaner equipment in West Oakland potentially including: electric lawn and garden equipment, battery electric Transportation Refrigeration Units, cargo-handing equipment by 2021. | Air District |
| 48 | Other Mobile Sources | The Bay Area Rapid Transit District to develop a bike station with controlled access at the West Oakland BART Station. | City of Oakland |
| 49 | Other Mobile Sources | The City of Oakland implements the broad array of bicycle and pedestrian improvements identified in the West Oakland Specific Plan. | City of Oakland |
| 50 | Other Mobile Sources | Through the Pilot Trip Reduction Program, the Air District offers incentives for the purchase of electric bicycles for bike share programs. | Air District |
| 51 | Other Mobile Sources | The Oakland Unified School District and the City of Oakland, as part of the Safe Routes to Schools Program in West Oakland, begin twice a day street closures next to public schools in West Oakland to keep cars and | Oakland Unified School District, City of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | trucks away from arriving and departing students. | |
| 52 | Other Mobile Sources | The City of Oakland increases the frequency of street sweeping in West Oakland to decrease road dust, beginning with streets adjacent to schools and designated truck routes. The California Department of Transportation increases the frequency of street sweeping along the I-880, I-980 and I-580 freeways. Consideration is given to technology and techniques that avoid re-suspending road dust. | City of Oakland |
| 53 | Other Mobile Sources | The California Air Resources Board modifies the At-Berth Air Toxics Control Measure such that beginning in 2021 100% of all container vessels control emissions while at berth at the Port of Oakland. | CARB |
| 54 | Other Mobile Sources | The California Air Resources Board amends the Harbor Craft Air Toxics Control Measure to achieve additional control of harbor craft emissions and require early compliance by Harbor Craft operating near West Oakland. | CARB |
| 55 | Other Mobile Sources | The California Air Resources Board adopts regulations to reduce idling emissions from all rail yard sources, with an emphasis on reducing emissions from locomotives not pre-empted under the federal Clean Air Act, and early compliance for equipment and locomotives operating in West Oakland. | CARB |
| 56 | Other Mobile Sources | The Port of Oakland implements a Clean Ship Program to increase the frequency of visits by ships with International Maritime Organization Tier 2 and Tier 3 engines. | Port of Oakland |
| 57 | Other Mobile Sources | The Port of Oakland implements a Clean Locomotive Program to increase the increase the number | Port of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | of US EPA Tier 4 compliant locomotives used by the UP, BNSF and OGRE railways to provide service in and out of the Port of Oakland; | |
| 58 | Other Mobile Sources | The Port of Oakland studies the feasibility of using electric switcher locomotives at the two Port railyards. | Port of Oakland |
| 59 | Other Mobile Sources | The Air District works with Schnizter Steel to study the feasibility of installing a shore-power or "bonnet" system to capture and abate vessel emissions at the West Oakland facility by 2021. | Air District |
| 60 | Stationary Sources | The Air District intends to seek authority in 2021 to reduce emissions and risk from magnet sources, such as the Port of Oakland, freight operations and warehouse distribution centers. | Air District |
| 61 | Stationary Sources | The Air District proposes amendments to existing regulations to further reduce emissions from metal recycling and foundry operations, such as changes to 1) Regulation 6, Rule 4: Metal Recycling and Shredding Operations, which requires metal recycling and shredding facilities to minimize fugitive PM emissions through the development and implementation of facility Emission Minimization Plans; and 2) Regulation 12, Rule 13: Foundry and Forging Operations, which requires metal foundries and forges to minimize fugitive emissions of PM and odorous substances through the development and implementation of facility Emission Minimization Plans by 2025. | Air District |
| 62 | Stationary Sources | Regulation 11, Rule 18: Reduce Risk from TACS at Existing Facilities (Reg. 11-18) requires selected Bay Area facilities to reduce risk or install best | Air District |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | available retrofit control technology for toxics on all significant sources of toxic emissions. Based on the results of the Technical Assessment, the Air District may require Schnitzer Steel to adopt a Risk Reduction Plan to meet these requirements during Phase 1 of Reg. 11-18 implementation, and may require East Bay Municipal Utility District Wastewater Treatment Plant to adopt a Risk Reduction Plan to meet these requirements during Phase 2 of Reg 11-18 implementation. | |
| 63 | Stationary Sources | The Air District intends to provide incentives to replace existing diesel stationary and standby engines (fire pumps, dryers, conveyor belts, cranes) with Tier 4 diesel or cleaner engines. Priority is given to upgrading Tier 0, 1 & 2 engines located closest to schools, senior citizen centers, child care facilities, and hospitals. | Air District |
| 64 | Stationary Sources | The Air District proposes new regulations to reduce emission sources from autobody and other coating operations, including the use of vanishing oils and rust inhibitors by 2025. | Air District |
| 65 | Stationary Sources | The Air District works with California Air Resources Board and other agency and community partners to identify incentives to improve the shortcut nitrogen removal processes at waste water treatment plants to reduce emissions by 2025. Shortcut nitrogen removal processes provide significant potential benefits in terms of energy, carbon, and chemical savings compared to conventional biological nitrogen removal. | Air District |
| 66 | Stationary Sources | The Air District proposes new regulations to reduce emissions from waste water treatment plants and anaerobic digestion | Air District |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | facilities, such as a regulation to reduce emissions of methane, reactive organic gases and oxides of nitrogen by 2019. | |
| 67 | Stationary Sources | The Air District proposes a regulation to reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020. | Air District |
| 68 | Stationary Sources | The Air District advocates for a plan that East Bay Clean Energy and PG&E are spearheading to replace the Dynergy Power Plant with a cleaner and more reliable source of energy by 2022. The proposed location for this initiative is the Oakland C, Oakland L, Maritime Port of Oakland, and Schnitzer Steel substation pocket, which is located within PG&E's Oakland distribution planning area. Eligible resource types include: (1) in-front-of-the-meter renewable generation; (2) in-front-of-the-meter energy storage, and (3) behind-the-meter energy storage. EBCE is seeking to procure the energy, resource adequacy (RA), and renewable energy credits (RECs) associated with these local resources, while PG&E will focus on meeting Oakland's transmission reliability needs. | East Bay Clean Energy, PG&E |
| 69 | Health Programs | The Air District intends to develop and fund a program to reduce exposure to air pollution at schools, day care facilities, hospitals, apartments and homes in West Oakland by 2021. This strategy includes policies or grants for building energy efficiency upgrades to reduce infiltration of pollutants and the installation of high-efficiency air filtration systems (rated MERV 13 or higher). | Air District |
| 70 | Health Programs | The City of Oakland works with local and agency partners to implement regional and local | City of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | adoption of the State Department of Public Health's Health In All Policies program. | |
| 71 | Health Programs | Consistent with the Oakland Healthy Development Guidelines, the City of Oakland implements a project-wide smoking ban in Oakland at new developments. | City of Oakland |
| 72 | Health Programs | Consistent with the State's Building Energy Efficiency Standards for air filtration in effect as of January 1, 2019, the City of Oakland requires newly constructed buildings of 4 or more units to include air filtration systems equal to or greater than MERV 13 (ASHRAE Standard 52.2), or a particle size efficiency rating equal to or greater than 50 percent in the 0.30-1.0 µm range and equal to or greater than 85 percent in the 1.0-3.0 µm range (AHRI Standard 680). | City of Oakland |
| 73 | Health Programs | The City of Oakland works with agency and community partners to undertake participatory budgeting with West Oakland community members to allocate local health improvement grants that reduce emissions or exposure to emissions. | City of Oakland |
| 74 | Health Programs | The Air District researches actions that are potentially exposure-reducing, such as 1) An engineering evaluation of exhaust stacks and/or vents to determine if relocation will reduce local exposure; 2) A study to determine if smart air filtration systems can reduce exposure by in-taking air during daily non-peak vehicle travel times, such as between midnight and four a.m.; 3) A study of the potential air quality benefits of a centralized package delivery site such as personal lockers by 2025. | Air District |
| 75 | Health Programs | The City of Oakland works with local businesses, partner agencies, and community | City of Oakland |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | members to develop a Green Business Strategic Plan to attract, retain, and support innovative green companies in West Oakland. This effort includes coordination with State and local agencies to develop a criteria for green business certification for new and existing businesses. | |
| 76 | Health Programs | The California Air Resources Board sets a limit on West Oakland's cumulative exposure to TACs. | CARB |
| 77 | Health Programs | The City of Oakland works with community partners to align West Oakland zoning with the Healthy Development Guidelines and apply the Guidelines to new building projects. | City of Oakland |
| 78 | Health Programs | Expansion of the Alameda County Public Health Asthma Management programs. | Alameda County Public Health Department |
| 79 | Health Programs | The City of Oakland works with Alameda County Public Health to improve access to medical services within West Oakland. This work expands existing programs such as the 1) Child Health and Disability Prevention Program free health check-ups for infants through teens; 2) Asthma Management at schools; 3) Building Blocks for Health Equity which works to correct inequity in health outcomes for children; 4) Urban Male Health Initiative which is charged with reducing the premature mortality of men and boys in Alameda County; and 5) the Alameda County Health Improvement Plan to develop and implement a five-year county plan to improve health and achieve health equity. | City of Oakland |
| 80 | Health Programs | The Alameda County Health Department works with agency and local partners to investigate the use of green building approaches in housing construction and renovation that | Alameda County Public Health Department |

| Action # | Section | Description | Authority |
|---|---|---|---|
| | | will reduce emissions and exposure to air pollution emissions. This work examines weatherization/energy efficiency (EE) and renewable energy services. This work draws from the Contra Costa County Health Department's pilot effort in cooperation with the Regional Asthma Management Program. | |

# CHAPTER 2

## ENVIRONMENTAL CHECKLIST FORM

Introduction
General Information
Environmental Factors Potentially Affected
Determination
Evaluation of Environmental Impacts
Environmental Checklist and Discussion
- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology / Soils
- Greenhouse Gas Emissions
- Hazards & Hazardous Materials
- Hydrology / Water Quality
- Land Use / Planning
- Mineral Resources
- Noise
- Population / Housing
- Public Services
- Recreation
- Transportation / Traffic
- Tribal Cultural Resources
- Utilities / Service Systems
- Wildfires
- Mandatory Findings of Significance

References

## INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed project.

## GENERAL INFORMATION

| | |
|---|---|
| Project Title: | West Oakland AB 617 Community Action Plan |
| Lead Agency Name: | Bay Area Air Quality Management District |
| Lead Agency Address: | 375 Beale Street, Suite 600<br>San Francisco, California 94105 |
| Contact Person: | Ada E. Márquez |
| Contact Phone Number: | 415-749-8673 |
| Project Location: | West Oakland |
| Project Sponsor's Name: | Bay Area Air Quality Management District |
| Project Sponsor's Address: | 375 Beale Street, Suite 600<br>San Francisco, California 94105 |
| General Plan Designation: | The City of Oakland's General Plan designations within the West Oakland Plan include Mixed Housing Type Residential, Urban Residential, Community Commercial, Institutional, Housing and Business Mix, Business Mix, Urban Park and Open Space, Gen Industrial/Transportation, Resource Conservation Area, and Regional Commercial. The proposed project is also within the West Oakland Planning Specific Plan. |
| Zoning: | The City of Oakland's Zoning Plan designation include Residential, Open Space, Central Business, Commercial, Industrial, and Special and Combining Zoning. |
| Description of Project: | See Chapter 1 for the Project Description |
| Surrounding Land Uses and Setting: | The San Francisco Bay, The Oakland-San Francisco Bay Bridge, The Port of Oakland, Interstate Highways80, 580, 880, and 980, and The Central Estuary District. |
| Other Public Agencies Whose Approval is Required: | California Air Resources Board |

| | |
|---|---|
| Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures for confidentiality, etc.? | No tribes have requested formal consultation under California Public Resources Code (PRC) §21080.3.1. |

## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The following environmental impact areas have been assessed to determine their potential to be affected by the proposed project. As indicated by the checklist on the following pages, environmental topics marked with an "✓" may be adversely affected by the proposed project. An explanation relative to the determination of impacts can be found following the checklist for each area.

| | | | | | |
|---|---|---|---|---|---|
| ☐ | Aesthetics | ☐ | Agriculture and Forestry Resources | ☑ | Air Quality |
| ☑ | Biological Resources | ☐ | Cultural Resources | ☑ | Energy |
| ☐ | Geology & Soils | ☑ | Greenhouse Gas Emissions | ☑ | Hazards & Hazardous Materials |
| ☐ | Hydrology & Water Quality | ☐ | Land Use & Planning | ☐ | Mineral Resources |
| ☐ | Noise | ☐ | Population & Housing | ☐ | Public Services |
| ☐ | Recreation | ☐ | Transportation | ☐ | Tribal Cultural Resources |
| ☑ | Utilities & Services Systems | ☐ | Wildfire | ☑ | Mandatory Findings of Significance |

## DETERMINATION

On the basis of this initial evaluation:

☐ I find the proposed project COULD NOT have a significant effect on the environment, and that a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☑ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

*Ada E. Márquez* May 13, 2019

Signature: Date:

Ada E. Márquez

May 13, 2019

Date:

## EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis.

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, Program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

## ENVIRONMENTAL CHECKLIST AND DISCUSSION

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| **I. AESTHETICS**. Except as provided in Public Resources Code §21099, would the project: | | | | |
| a) Have a substantial adverse effect on a scenic vista? | ☐ | ☐ | ☐ | ☑ |
| b) Substantially damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway? | ☐ | ☐ | ☐ | ☑ |
| c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality. | ☐ | ☐ | ☑ | ☐ |
| d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area? | ☐ | ☐ | ☑ | ☐ |

# Environmental Setting

West Oakland has a distinct visual character influenced by the new eastern segment of the Bay Bridge; the world's widest bridge; West Oakland's historic residential neighborhoods; the Port of Oakland, America's 5th largest port; other heavy industrial areas; and a major regional transportation hub including the MacArthur Maze. Both the former Oakland Army Base and the Port of Oakland are located, respectively in the west and south areas of the West Oakland community. West Oakland is also characterized by a significant amount of vacant and underutilized land distributed throughout the area. The visual character of large parts of West Oakland has been affected by social and economic conditions, including the decline in manufacturing and resulting vacant buildings; the loss of retail trade to the suburbs and resulting empty storefronts and underutilized commercial land; and urban problems such as blight and graffiti.

Major transportation corridors are located within or adjacent to West Oakland including Interstates 80, 880, 580, and 980. Interstates 580, 880, and 980 form the edges of the West Oakland community. The City of Oakland General Plan identified Interstates 580 and 880 entrances to the city as major gateways. Local transportation corridors located within West Oakland include West Grand Avenue, 7th Street, Mandela Parkway, San Pablo Avenue, Peralta Street, Martin Luther King Jr. Way, Market Street and Adeline Street. Segments of these corridors lack streetscape improvements that create a safe pedestrian environment, or safely balance multiple modes of travel, including public transit and bicycles.

The realignment of Interstate 880, the most expensive freeway construction project per mile in the world at the time, followed the 1989 Loma Prieta earthquake, and resultant collapse in West Oakland of I-880's Cypress Structure, where the upper deck onto the lower deck killing 42 people, most of the people who died in that earthquake.[1] That tragedy led to the creation of Mandela Parkway, a landscaped, treelined parkway that extends 18 blocks, from 8th Street to 32nd Street. The City has proposed and undertaken streetscape improvements projects for some of these streets including 7th Street, Martin Luther King Jr. Way, and Peralta Street.

The City of Oakland General Plan identifies the West Oakland BART Station as a visual landmark. Other readily identifiable structures in West Oakland include the elevated BART tracks, 16th Street Station, the U.S. Postal Service mail distribution center and garage, Jack London Gateway Center, and the California Hotel (City of Oakland, 2014).

## Regulatory Background

Visual resources are generally protected by the City and/or County General Plans through land use and zoning requirements. The City of Oakland has a Scenic Highways Element which does not specifically apply to the West Oakland District. However, other goals and policies from the City of Oakland's General Plan may apply within the West Oakland community.

## Significance Criteria

Project-related impacts on aesthetics and visual resources will be considered significant if any of the following conditions are met:

- The proposed project would have a substantial adverse effect on a scenic vista.
- The proposed project would substantially damage scenic resources, including but not limited to trees, rock outcropping, and historical buildings within a state scenic highway.

[1] For a discussion of the 1989 earthquake that collapsed the Interstate 880's Cypress Street Viaduct in West Oakland, see https://en.wikipedia.org/wiki/Cypress_Street_Viaduct .

- The proposed project would substantially degrade the existing visual character or quality of the site and its surrounds.
- The proposed project would add a visual element of urban character to an existing rural or open space area or add a modern element to a historic area.
- The proposed project would create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

# Discussion of Impacts

**1. a) No Impact.** West Oakland has scenic vistas of the San Francisco Bay as well as the new and old segments of the Willie L. Brown, Jr. Oakland-San Francisco Bay Bridge, whose Eastern terminus lands in West Oakland. A scenic vista is a location that offers a high quality and visually interesting view. There are no officially designated scenic vistas within the West Oakland area. The City of Oakland General Plan's Open Space, Conservation and Recreation Element calls for protection of views, particularly views of the East Bay hills from the flatlands; views of Downtown Oakland and Lake Merritt; views of the shoreline; and panoramic views from Skyline boulevard/Grizzly Peak Road, and other hillside locations.

While scenic vistas from the West Oakland community are limited by flat terrain and existing development, as compared to other parts of the City, the Oakland hills provide a prominent visual feature in the community. Portions of the East Bay hills are visible from various public vantage points within West Oakland. Some public vantage points have views of taller buildings in downtown and the cranes at the Port of Oakland. The East Bay hills have views over the community to San Francisco Bay. No designated scenic vistas in the West Oakland Community Action Plan would result in any potential significant impacts.

**1. b)** No **Impact**. Two highways within Alameda County have been designated as scenic highways. Interstate 580 has been designated as a scenic highway from the San Joaquin County line to State Route 205, which is over 40 miles from West Oakland. The MacArthur Freeway is a designated scenic highway from San Leandro City limit to State Route 24 in Oakland, which is over 13 miles from West Oakland. Interstate 680 is designated as a scenic highway from Mission Boulevard in Fremont to the Contra Costa County line, which is about 20 miles from West Oakland away at its closest point. Thus, any physical changes in the West Oakland area that occur as a result of the proposed project would not be visible from any scenic highways due to distance separation and intervening topography (e.g., hills). The Plan will not have a potentially significant impact on unique rock outcrops or plant life that could be considered a visual resource. Thus, modifications that occur as a result of the proposed project are not expected to damage or degrade existing scenic resources.

**1. c)** Less **than Significant.** Physical modifications at facilities associated with implementation of control strategies in the Community Action Plan would be limited to existing facilities, and primarily industrial facilities. For example, any additional equipment or measures would be constructed/implemented within the confines of the existing industrial facilities and adjacent to existing industrial structures. The implementation of a bonnet system to control ship emissions would require that the bonnet be placed on the stack of the ship making it visible to the areas within and surrounding the port. The port facilities are located in industrial areas which do not have scenic views or scenic resources and it would be separated from the residential areas of West Oakland by Interstate 880. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power on use of a bonnet system for ships. Additionally, new air pollution control equipment is not expected to block any scenic vista, degrade the visual character or quality of the area, or result in significant adverse aesthetic impacts. Thus, residential areas and the surrounding community will have less than significant adverse aesthetic impacts.

**1. d)** Less **than Significant**. The businesses within the Community Action Plan may need to install equipment to reduce criteria pollutant emissions from their facilities. West Oakland does have facilities that currently operate and have existing lighting for nighttime operations. For example, port facilities can operate continuously 24 hours per day, 7 days per week and are already lighted for nighttime operations. Similarly, most other types of industrial operations have continuous lighting. Therefore, implementation of the Community Action Plan strategies is not expected to require any additional lighting to be installed as a result of the installation of new or modified equipment. New light sources, if any, would be located in industrial areas and are not expected to be noticeable in residential areas. Most local land use agencies have ordinances that limit the intensity of lighting and its effects on adjacent property owners. Therefore, implementation of the Community Action Plan is not expected to have significant adverse aesthetic impacts to the surrounding community.

# Conclusion

Based upon the above evaluation from the City of Oakland's General Plan and West Oakland Specific Plan, significant adverse impacts to aesthetics or light and glare are not expected to occur due to the proposed project; therefore, they will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **II. AGRICULTURE and FOREST RESOURCES.** | | | | |
| In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.--Would the project: | | | | |
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | ☐ | ☐ | ☐ | ☑ |
| b) Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract? | ☐ | ☐ | ☐ | ☑ |
| c) Conflict with existing zoning for, or cause rezoning of, forest land as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | ☐ | ☐ | ☐ | ☑ |
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☑ |
| e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

The West Oakland community is a developed urban area with multiple zoning designations such as, residential, open space, business, commercial, and industrial. Approximately 59 percent of the land use is residential, 23 percent is utilized as industrial, commercial and auto-related/parking uses, while government/institutional and utilities uses occupy the remaining 18 percent of the land (City of Oakland, 2014). Farmland land or forest resources are not located within the West Oakland community.

# Regulatory Background

Farmland and forestland resources are generally protected by the California Resource Agency, the City and/or County General Plans through land use and zoning requirements.

# Significance Criteria

Project-related impacts on agriculture and forest resources will be considered significant if any of the following conditions are met:

- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined in Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code § 51104 (g)).
- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

# Discussion of Impacts

**1. a and b) No Impact.** Land designated by the California Resources Agency as Prime Farmland, Unique Farmland or Farmland of Statewide Importance are considered Farmland for CEQA purposes. The West Oakland community is an urbanized area and no designated Farmlands are within the community. The community and surrounding areas are designated as Urban and Built-Up Land by the California Department of Conservation. Furthermore, the area is not zoned for agricultural and no Williamson Act contracts are located within the West Oakland area.[2] Therefore, the project would not conflict with existing zoning for agricultural use or with Williamson Act contracts.

**1. c and d)** No **Impact.** The West Oakland community is an urbanized area with no forest land or timberland resources in the community. Therefore, the proposed project would not conflict with existing zoning for, or cause re-zoning of forest land, and would not result in the loss of forest land or conversion of forest land to non-forest use or impact timberland zoned as Timberland Production.

**1. e) No Impact.** Implementation of the Community Action Plan's strategies would not involve changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use; since, agricultural and forest land resources are not located within the West Oakland community.

# Conclusion

Based upon the above considerations, the proposed project will not have significant adverse impacts to agricultural and forest resources are not expected to occur due to the proposed project. Therefore, agriculture and forest resources will not be further evaluated in the Draft EIR.

[2] California Department of Conservation, Division of Land Resource Protection, Contra Costa County Williamson Act FY 2012/2013, available atftp://ftp.consrv.ca.gov/pub/dlrp/wa/

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **III. AIR QUALITY.** | | | | |
| When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project: | | | | |
| a) Conflict with or obstruct implementation of the applicable air quality plan? | ☐ | ☐ | ☐ | ☑ |
| b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a non-attainment area for an applicable federal or state ambient air quality standard? | ☑ | ☐ | ☐ | ☐ |
| c) Expose sensitive receptors to substantial pollutant concentrations? | ☑ | ☐ | ☐ | ☐ |
| d) Result in other emissions (such as those leading to odors adversely affecting substantial number of people?) | ☐ | ☐ | ☑ | ☐ |

# Environmental Setting

The Air District is responsible to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction, the San Francisco Bay Area The San Francisco Bay Area Air Basin (Bay Area) counties include all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, and the southern portion of Sonoma, and the southwestern portion of Solano County. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), particulate matter less than 10 microns in diameter ($PM_{10}$), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead.

The Bay Area is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which affect normal wind flow patterns. The Coast Range splits resulting in a western coast gap, Golden Gate, and an eastern coast gap, Carquinez Strait, which allow air to flow in and out of the Bay Area and the Central Valley.

Combined climatic and topographic factors result in increased potential for the accumulation of air pollutants in the inland valleys and reduced potential for buildup of air pollutants along the coast.

Air quality conditions in the San Francisco Bay Area have improved greatly since the Air District was created in 1955, and regional concentrations of criteria pollutants are now in compliance with or near compliance with most ambient air quality standards. However, the Bay Area is not fully in attainment for the National and State 8-hour ozone standards and the State one-hour ozone standard. Although monitoring data shows that the Bay Area meets national and state standards for $PM_{2.5}$, the Bay Area is still formally designated as non-attainment for several $PM_{2.5}$ standards. For the national standards, the non-attainment designation will continue to apply until the Air District submits, and the U.S. EPA approves a resignation request and a maintenance plan which is discussed in the Clean Air Plan (2017). NOx and other pollutants react to produce secondary $PM_{2.5}$ in the form of nitrates. NOx reductions will have the added benefit of reducing secondary $PM_{2.5}$ formation.

# Regulatory Background

## Criteria Pollutants

At the federal level, the Clean Air Act Amendments of 1990 give the U.S. Environmental Protection Agency additional authority to require states to reduce emissions of ozone precursors and particulate matter in non-attainment areas. The amendments set attainment deadlines based on the severity of problems. At the state level, CARB has traditionally established state ambient air quality standards, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emission inventories, collected air quality and meteorological data, and approved state implementation plans. At a local level, California's air districts, including the Bay Area Air Quality Management District, are responsible for overseeing stationary source emissions, approving permits, maintaining emission inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA.

The Air District is governed by a 24-member Board of Directors composed of publicly-elected officials apportioned according to the population of the represented counties. The Board has the authority to develop and enforce regulations for the control of air pollution within its jurisdiction. The Air District is responsible for implementing emissions standards and other requirements of federal and state laws. It is also responsible for developing air quality planning documents required by both federal and state laws.

Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) requires the adoption and implementation of community emissions reduction plans for targeted jurisdictions with disproportionate impacts from air pollution. Pursuant to AB 617, the Air District and the West Oakland Environmental Indicators Project jointly developed a community emissions reduction plan, referred to as the Community Action Plan, for West Oakland. The proposed plan includes strategies at the community level to maximize emission reductions and reduce residents' cumulative exposure to criteria air pollutants and toxic air contaminants. The West Oakland Community Action Plan is an integrated multi-pollutant community air quality plan to eliminate health risk disparities in West Oakland. This Community Action Plan also documents the Steering Committee's effort to study air pollution in West Oakland, and to identify and to prioritize Action Strategies that once implemented, will significantly reduce West Oakland's air pollution burden.

**Toxic Air Contaminants (TAC)**

The Air District regulates Toxic Air Contaminants (TACs) through federal, state, and local programs. At the federal level, TACs are regulated primarily under the authority of the Clean Air Act. Prior to the amendment of the Clean Air Act in 1990, source-specific National Emission Standards for Hazardous Air Pollutants (NESHAPs) were promulgated under Section 112 of the Clean Air Act for certain sources of radionuclides and Hazardous Air Pollutants.

Title III of the 1990 Clean Air Act amendments requires U.S. Environmental Protection Agency to promulgate NESHAPs on a specified schedule for certain categories of sources identified by U.S. Environmental Protection Agency as emitting one or more of the 189 listed Hazardous Air Pollutants. Emission standards for major sources must require the maximum achievable control technology (MACT). MACT is defined as the maximum degree of emission reduction achievable considering cost and non-air quality health and environmental impacts and energy requirements. All NESHAPs were to be promulgated by the year 2000. Specific incremental progress in establishing standards were to be made by the years 1992 (at least 40 source categories), 1994 (25 percent of the listed categories), 1997 (50 percent of remaining listed categories), and 2000 (remaining balance). The 1992 requirement was met; however, many of the four-year standards were not promulgated as scheduled. Promulgation of those standards has been rescheduled based on court ordered deadlines, or the aim to satisfy all Clean Air Act Section 112 requirements in a timely manner.

Many of the sources of TACs that have been identified under the Clean Air Act are also subject to the California TAC regulatory programs. CARB developed regulatory programs for the control of TACs, including: (1) California's TAC identification and control program, adopted in 1983 as Assembly Bill 1807 (AB 1807 (Tanner 1983)) (California Health and Safety Code §39662), a two-step program in which substances are identified as TACs, and airborne toxic control measures are adopted to control emissions from specific sources; and (2) The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588 (Connelly 1987)) (California Health and Safety Code §39656) established a state-wide program to inventory and assess the risks from facilities that emit TACs and to notify the public about significant health risks associated with those emissions.

In 2004, the Air District initiated the Community Air Risk Evaluation (CARE) program to identify population areas with relatively high concentrations of air pollution and most vulnerable to health impacts, which include toxic air contaminants (TACs) and fine particulate matter (PM). Maps of communities most impacted by air pollution, generated through the CARE program, have been integrated into many Air District programs. For example, the Air District uses information derived from the CARE program to develop and implement targeted risk reduction programs, including grant and incentive programs, community outreach efforts, collaboration with other governmental agencies, assist model ordinances, new regulations for stationary sources and indirect sources, and advocacy for additional legislation.

## Significance Criteria

The most recently available Air District draft CEQA guidelines established criteria pollutant thresholds for specific projects, general plans, and regional plans. The Air District's draft CEQA Guidelines (BAAQMD, 2017a) established criteria pollutant thresholds for air quality plans of "no net increase in emissions," which is appropriate for air quality plans because they include a mix of control measures with individual trade-offs. For example, one control measure may result in combustion to reduce reactive organic emissions, while increasing criteria pollutant emissions associated with combustion by a small amount. Those small increases in combustion emissions would be offset by decreases from other measures focused on reducing criteria pollutants. Because the proposed project is a Community Action Plan with the goal of reducing emissions, the criteria pollutant threshold for air quality plans of "no net increase in emissions" will apply to the proposed project.

## Discussion of Impacts

**3. a) No Impact.** The proposed Community Action Plan would not conflict with or obstruct implementation of the applicable air quality plan. The applicable air quality plan is the Air District's recently-adopted 2017 Clean Air Plan, *Spare the Air, Cool the Climate*. The Plan outlines a strategy for achieving the Bay Area's clean air goals by reducing emissions of ozone precursors, particulate matter, and other pollutants in the region. The Community Action Plan will not conflict with or obstruct implementation of the 2017 Clean Air Plan, rather it will help achieve the Plan's goals by helping to reduce diesel particulate matter (Diesel PM), fine particulate matter ($PM_{2.5}$), criteria pollutants, and TACs emissions in West Oakland, including emissions of ozone precursors (ROG and NOx) and particulate matter or precursors to particulates (NOx and $SO_2$); thus, improving public health and air quality in the region.

**3. b) and c**) Potentially **Significant Impact.** The primary purpose of developing the West Oakland Community Action Plan is to identify emission control strategies to reduce toxic air contaminants and criteria air pollutants primarily from sources within the community. However, some types of control strategies in the Community Action Plan could have the potential to increase emissions of one or more air pollutants while reducing the emissions of other air pollutant(s). These secondary or indirect air quality impacts could result from construction activities associated with the installation of air pollution control equipment (e.g., bonnet systems on ships), or the control equipment itself.

Some of the emission control strategies could include financial incentives to replace existing diesel stationary and standby engines with Tier 4 diesel or cleaner engines, to replace older automobiles, and provide grants for building energy efficiency upgrades. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives). Short-term and/or indirect impacts could potentially have cumulatively net increase of criteria pollutants and potentially temporarily expose sensitive receptors. The Draft EIR will evaluate the air quality impacts and disclose the benefits associated with the Community Action Plan.

**3. d) Less Than Significant.** No emissions are expected during either the construction or operational phases that are expected to generate odors. No significant odor impacts are expected to occur with the proposed project.

# Conclusion

Implementation of the Community Action Plan will reduce criteria pollutants and toxic air contaminants (TACs) emissions and reduce exposure to sensitive receptors from the facilities in West Oakland. The construction and operation of new air pollution control systems have the potential to increase emissions of other criteria pollutants and generate localized impacts. However, no significant impacts were identified on air quality plans or the generation of odors.
Therefore, potential adverse secondary air quality impacts from implementing certain control strategies will be evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **IV. BIOLOGICAL RESOURCES.** Would the project: | | | | |
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | ☐ | ☑ | | ☐ |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | ☐ | ☐ | ☐ | ☑ |
| c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means? | ☐ | ☐ | ☐ | ☑ |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? | ☐ | ☑ | | ☐ |
| e) Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | ☐ | ☑ | | ☐ |
| f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

Fronting San Francisco Bay on the West, the West Oakland community is urbanized with some open space, residences, businesses, and a variety of industries. The West Oakland Community Action Plan does include the Port of Oakland, which is bounded by the San Francisco Bay. According to the California Natural Diversity Database (CNDDB) managed by the California Department of Fish and Wildlife, the West Oakland quad area species include a variety of flora and fauna. Some species examples include Cooper's hawk, white-tailed kite, great egret, great blue heron, American peregrine falcon, loggerhead shrike, and several bat species. Lake Merritt National Wildlife Refuge, since 1869 North America's first wildlife refuge, and home to numerous native and migratory birds on the Pacific Flyway, sits 1 mile away. Adjacent to West Oakland, a 331.29 acre Estuarine and Marine Wetland habitat is classified as a E2USN.[3] The San Pablo Bay National Wildlife Refuge is approximately 32 miles away. However, within the West Oakland Community Action Plan, no adopted, wetlands, or other sensitive communities are identified by the CA Department of Fish and Wildlife or the City of Oakland's General and West Oakland Specific Plans.

# Regulatory Background

Biological resources are protected at the federal, state, and local level. Federal laws and regulations including by the U.S. Fish and Wildlife Service, under laws including the Federal Endangered Species Act (ESA), Migratory Bird Treaty Act, and Marine Mammal Protection Act; the National Oceanic and Atmospheric Administration (NOAA) Fisheries; and the– US Army Corps of Engineers, under laws including Clean Water Act, Section 404; and the US Environmental Protection Agency (EPA) under laws including the federal Clean Air Act and federal Clean Water Act; the State of California Department of Fish Wildlife under laws including the California Endangered Species Act (CESA), California Fish and Game Code (F &G), including Division 4 on Birds and Mammals Sections, the Native Plant Protection Act, and the Marine Life Protection Act.

The U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency regulate the discharge of dredge or fill material into waters of the United States, including wetlands. The City of Oakland and/or Alameda County General Plans through land use and zoning requirements include goals and policies to minimize or prohibit development in biologically sensitive areas.

# Significance Criteria

The proposed project's impacts on biological resources will be considered significant if:

[3] https://www.fws.gov/wetlands/Data/Mapper.html

- The project has a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- The project has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service.
- The project has a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- The project interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.
- The project conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The project conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

# Discussion of Impacts

**4. a) and d) Less than Significant.** Physical modifications associated with implementation of the AB 617 Community Plan would be limited to changes within an urbanized area. According to the Open Space, Conservation and Recreation Element of the City of Oakland General Plan, there are no candidate species, sensitive species, or special status species known to occur within the West Oakland area (City of Oakland, 2014). The proposed project may require the replacement or construction of new equipment in the West Oakland area, but those physical changes would occur in already urbanized and developed areas.

There are several special-status animals that may potentially use habitat in the project area, including the peregrine falcon, Cooper's hawk, red-shouldered hawk, red-tailed hawk, pallid bat, silver-haired bat, hoary bat, and big free-tailed bat. Tree removal, building demolition and other construction activities can cause disturbance, noise or loss of habitat for resident or migratory birds and mammals, including special-status species that may forage in the project area. The City of Oakland enforces Standard Conditions of Approval on all development within the City including Tree Removal During Breeding Season. Under Tree Removal During Breeding Season, a preconstruction construction survey is required by a qualified biologist during the breeding season of March 15 and August 15 if any tree removal activities are required. If the survey indicates the potential presence of nesting raptors or other birds, an appropriately sized buffer is placed around the nest in which no work will be allowed until the young have fledged. Implementation of the existing City requirements and compliance with federal and state requirements would minimize the potential impacts of any project activities on nesting birds and minimize the potential impacts to less than significant with mitigations.

**4. b) and c)** No **Impact.** The State of California recognizes some plant communities as sensitive natural communities if they are uncommon, regionally declining, or vulnerable. Among these communities are riparian habitat, coast live oak forest, freshwater seeps, freshwater marshes, and coastal salt marsh. According to the Open Space, Conservation and Recreation Element of the City of Oakland General Plan, no significant riparian habitat, wetlands, or other sensitive natural communities remain within the West Oakland area (City of Oakland, 2014). Physical modifications associated with implementation of the AB617 Community Plan would be limited to changes within an urbanized area. The proposed project may require the construction or replacement of new equipment in the West Oakland area, but those physical changes would occur in already urbanized and developed areas. Therefore, the proposed project would not be expected to impact riparian, wetlands, or other sensitive communities.

**4. e)** Less **than Significant.** Future demolition and construction activities may require the removal of trees that are protected by the City of Oakland Tree Protection Ordinance. The City of Oakland Tree Protection Ordinance (Oakland Municipal Code Chapter 12.36) applies to the removal of protected trees under certain circumstances. Factors to be considered in determining significance include the number, types, size, location and condition of the protected trees to be removed or affected by construction and the protected trees to remain, with special consideration given to native trees. Protected trees include the following: (1) California or coast live oak (*Querus agrifolia*); and (2) any other tree measuring nine inches in diameter (at breast height), except *Eucalyptus* and *Pinus radiate* (Monterey pine). Any project that would involve the removal of any tree protected by the Tree Protection Ordinance would be required to first obtain a permit from the City and comply with any conditions of the permit, including replacement plantings and protection of remaining trees during construction activities. Compliance with City's Tree Project Ordinance would minimize potential conflicts with local policies or ordinance protecting biological resources to less than significant. Further, the WOAK AB 617 Community Plan is expected to encourage the planting of additional trees to provide buffers between industrial and residential areas and improved air quality in the West Oakland Area providing a beneficial impact on biological resources.

**4. f) No Impact.** City of Oakland is not within a Habitat Conservation Plan, Natural Community Conservation Plan or other adopted habitat conservation plan Therefore, the proposed project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

# Conclusion

Based upon the above considerations, significant adverse impacts to biological resources are not expected to occur due to the proposed project.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **V. CULTURAL RESOURCES.** Would the project: | | | | |
| a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5? | ☐ | ☐ | ☑ | ☐ |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5? | ☐ | ☐ | ☑ | ☐ |
| c) Disturb any human remains, including those interred outside of formal cemeteries? | ☐ | ☐ | ☑ | ☐ |

# Environmental Setting

The Bay Area, including Oakland, has a rich cultural history with evidence of human activity in prehistoric times, i.e., prior to 5,000 B.C, likely due to resources provided by the rivers, marshes and ocean. There was a prehistoric Native American shellmound and Ohlone burial ground in and around the Bay Street Shopping Center at Shellmound Street, Emeryville, one mile from West Oakland. Dating from 800 B.C., this shellmound, the largest of over 425 shellmounds that surrounded San Francisco Bay, is now California Historical Landmark #335.[4]

The arrival of the Spanish in the San Francisco Bay Area in 1775 led to a rapid reduction in native California populations. Diseases, declining birth rates, and the effects of the mission system served to eradicate aboriginal life. Brought into the missions, the surviving Native Americans were transformed from hunters and gatherers to agricultural laborers. With abandonment of the mission system and the Mexican takeover in the 1840s, numerous ranchos were established. The lands that eventually became Oakland were part of a Spanish land grant given to Luis Maria Peralta in 1820.

Human and economic activity increased when the transcontinental railroad arrived in 1869 and Oakland became home to enormous Central Pacific railroad yards, providing a job base where numerous businesses were established, and residential areas were developed. In 1941, the U.S. Army took over the entire Outer Harbor and filled it in. The area quickly developed with World War II-related industry and temporary housing for defense workers. A postwar building boom completed the area's development with heavy industrial uses

[4] See http://en.wikipedia.org/wiki/Emeryville_Shellmound

(metals, ship yards, construction materials, freight), such that West Oakland was largely industrial. To staff these industries, labor recruiters brought large number of both white and black workers from the South. Oakland's African-American population more than quintupled during the war years and many new residents settled in the established community of West Oakland.

Available space in West Oakland was limited and there was little room for the construction of new houses. Residents objected to the intense industrial development and were beginning to move to new tracts and larger houses in the lower hills during the building boom that followed the 1906 San Francisco earthquake.

In the mid-1950s, the industrially zoned, largely minority community of West Oakland was cut in half by a major public works project, the Cypress Freeway. In the following decades, several housing projects were built in West Oakland including the Acorn and neighboring projects of Oak Center, Westwood Gardens in Prescott, and Chestnut Court in McClymonds. Between 1969 and 1972, a new Post Office and the West Oakland BART Station were developed. In 1989, the Loma Prieta earthquake damaged many of the area's historic buildings, brought down the Cypress Freeway, and allowed for changes in Oakland.

# Regulatory Background

The State CEQA Guidelines define a significant cultural resource as a "resource listed or eligible for listing on the California Register of Historical Resources" (California Public Resources Code §5024.1[5]). A project would have a significant impact if it would cause a substantial adverse change in the significance of a historical resource (State CEQA Guidelines (14 California Code of Regulations (CCR) Chapter 3) §15064.5(b))[6]. A substantial adverse change in the significance of a historical resource would result from an action that would demolish or adversely alter the physical characteristics of a historical resource that convey its historical significance and that qualify the resource for inclusion in the California Register of Historical Resources or a local register or survey that meets the requirements of Public Resources Code §§50020.1(k) and 5024.1(g). In addition, the Historic Preservation Element of the City of Oakland General Plan sets forth goals, objectives, policies, and actions for historic preservation in the City.

# Significance Criteria

The proposed project impacts to cultural resources will be considered significant if:

- The project results in a substantial adverse change in the significance of a historical resources as defined in CEQA Guidelines §15064.5. A substantial adverse change includes physical demolition, destruction, relocation, or alteration

[5] All state code sections are accessible at https://leginfo.legislature.ca.gov/faces/codes.xhtml
[6] All state regulations in the California Code of Regulations are accessible at https://govt.westlaw.com/calregs/Search/Index .

of a resource or its immediate surroundings such that the significance of the historical resources would be materially impaired.

- Cause a substantial adverse change in the significance of an archaeological resources pursuant to CEQA Guidelines §15064.5.
- Disturb any human remains, including those interred outsides of formal cemeteries.

# Discussion of Impacts

**5 a) Less than Significant.** In the City of Oakland, a historical resource under CEQA is defined as a resource that meets any of the following criteria:

A) A resources listed in, or determined to be eligible for listing in, the California Register of Historical Resources (California Register);

B) A resource included in Oakland's Local Register of Historical Resources (defined below), unless the preponderance of evidence demonstrates that it is not historically or culturally significant;

C) A resource identified as significant (e.g., status code 1-5) in a historical resource survey recorded on Department of Parks and Recreation Form 523, unless the preponderance of evidence demonstrates that it is not historically or culturally significant;

D) Any object, building, structure, site, area, place, record, or manuscript which the Oakland City Council determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, education, social, political, military, or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the California Register of Historical Resources (CEQA Guidelines §15064.5); or

E) A resource that is determined by the City council to be historically or culturally significant even though it does not meet the other four criteria.

There are approximately 1,421 Local Register properties within West Oakland. Of this total, the 32 designated historic properties and properties rated of the highest importance (National Register properties, landmarks, heritage properties, study list properties S-7 Preservation Combining Zone properties, and Potential Designated Historic Properties) within West Oakland are identified in Table 2-1. The great majority of the Local Register properties are located in the residential neighborhoods of West Oakland.

In addition, the City of Oakland recognizes three Areas of Primary Importance (API) that contain a total of approximately 831 contributing properties including 721 separate properties with the Oakland Point API, 84 contributing properties within the Oak Center API, and four contributing properties within the Southern Pacific Railroad Industrial API.

# TABLE 2-1

## Historic Properties within West Oakland[1]

| Address | Historic Name | Local Designation | OCHS Rating | Date Built |
|---|---|---|---|---|
| 2624 West Street | St. Augustine's Mission | Landmark | B+2+ | 1920 |
| 1716 7th Street | Brotherhood of Sleeping Car Porters Headquarters | Landmark-eligible | B*2+ | 1889-90 |
| 1611-17 & 1619 5th Street | Davidson-Patterson buildings | Study List | B*1+ | 1887-88 |
| 1522 8th Street | Wedgewood (Chas.) – Michel (August) house | Study List | C1+ | 1878-79 |
| 1561 8th Street | Lincoln (Harry) – Williams (Katherine) house | Study List | B-1+ | 1878-79 |
| 1267 14th Street | Nabisco plant | Study List | B+a3 | 1915-16 |
| 661 27th Street | Union French Bakery | Study List | C2+ | 1911-12 |
| 1909 Market Street | St. Andrew's Roman Catholic Church | Study List | B+3 | 1908-09 |
| 1717 Myrtle Street | Pearson (John Winfield & Allie M.) house | Study List | Cb+1+ | 1884-85 |
| 1600 7th Street | Flynn (Edward) Saloon – McAllister Plumbing | S-7 zoning | Ec2* | 1885-86 |
| 1620-24 7th Street | Site of the former Lincoln Theater | S-7 zoning | - | - |
| 1632-42 7th Street | Arcadia Hotel – Isaacs & Schwartz block | S-7 zoning | Db-2+ | 1906-07 |
| 3401-07 Adeline Street | Boman Building – North Oakland Reading Room | PDHP | A2+ | 1891 |
| 100-50 Linden Street | California Packing Corp. – Del Monte cannery | PDHP | A1+ | 1923 |
| 920 Peralta Street | St. Joseph's Institute – St. Patrick's Convent | PDHP | A1+ | 1912 |
| 1340 Mandela Parkway | Coca-Cola Company Bottling Plant | S-20 zoning | Cb+3 | 1939-40 |
| 1485-87 8th Street | Western Market – Father Divines' Peace Mission (Liberty Hall) | Landmark National Register | A1+ | 1877 |
| 3501 San Pablo Avenue | California Hotel | National Register | B+a3 | 1929-30 |
| 1601 Wood Street/1798 16th Street | Southern Pacific 16th Street Station | Landmark, National Register-eligible | - | - |
| 1450-54 8th Street | Sam (Jacob) – Dalton (Henry) house | Landmark | Cb-1+ | 1877-78 |
| 1782 8th Street | Berry (E.W.) – Shorey (Wm. & Julia) house | Landmark/Heritage | B-a1+ | 1872-73 |
| 1079-81 12th Street | Cordes (H.C.) – Hoover (Herbert) house | Landmark | B+2+ | 1892-93 |
| 766-78 14th Street | Metcalf (Victor H.) house | Landmark | Cb+3 | 1909 |
| 954 16th Street | Holland (Daniel) – Canning (James & Mary) house | Landmark | A1+ | 1878-79 |
| 970-72 16th Street | Gladding ( Charles) – Chickering (Wm.) house | Landmark | B-1+ | 1879-80 |

| Address | Historic Name | Local Designation | OCHS Rating | Date Built |
|---|---|---|---|---|
| 974 16th Street | Reed (George W.) – Henshaw (Edward) house | Landmark | B+1+ | 1879-80 |
| 1004-06 16th S Street | Quinn (Wm. H.) – Moran (James T.) house | Landmark | C1+ | 1872-73 |
| 1014 16th Street | Campbell (Robert A.) – Masino (A.) house | Landmark | A1+ | 1883-84 |
| 918 18th Street | Willcutt (Joseph) house | Landmark | B+1+ | 1889 |
| 730 29th Street | Oakland Laundry Co. | Landmark | B+3 | - |
| 1651 Adeline Street | DeFremery (Mary) – Grant (James) house | Landmark | A2+ | 1888-89 |
| 1529-31 Union Street | Davison (Seymour & Lucinda) house | Landmark | B+a2+ | 1884 |

Source: West Oakland Specific Plan – Draft EIR

[1] Local Register properties (or properties considered significant for purposes of environmental review under CEQA) within the Planning Area include those identified in this table, as well as S-20 Preservation Combining Zone properties, PDHPs with an existing rating of "B", and properties within an API.

The majority of Local Register properties within West Oakland are located within residential neighborhoods. Implementation of the control measures would not be expected to require the removal of any existing buildings or impact historic resources. In areas where there are sensitive historic resources, the City of Oakland requires pre-construction surveys and the use of qualified archaeological monitors during grading operations to identify historic resources. These standard requirements, along with the fact that the control strategies in the West Oakland Community Action Plan are not expected to impact or require removal of historic structures, would limit impacts on historic cultural resources to less than significant.

**5. b) and c) Less than Significant.** The West Oakland area is located on the margins of the San Francisco Bay shoreline and near locations of former intermittent and perennial watercourses, which were historically used by Native Americans. Thus, there is the potential for the presence of unrecorded cultural resources to be buried in West Oakland. Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing breweries or wineries, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives). Implementation of these types of control measures would not be expected to require extensive construction or grading that could impact archaeological resources. In areas where there are sensitive resources, the City of Oakland requires pre-construction surveys and the use of qualified archaeological monitors during grading operations to identify historic resources. These standard requirements, along with the fact that the control strategies are the West Oakland Community Action Plan are not expected to require extensive construction or grading activities, are expected to limit impacts to historic cultural resources to less than significant.

# Conclusion

Based upon the above considerations, significant adverse impacts to cultural resources are not expected to occur due to implementation of the Community Action Plan strategies and therefore, will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **VI. ENERGY.** | | | | |
| Would the project: | | | | |
| a) Result in potentially significant environmental impact due to wasteful, inefficient or unnecessary consumption of energy resources, during project construction or operations? | ☑ | ☐ | ☐ | ☐ |
| b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? | ☑ | ☐ | ☐ | ☐ |

# Environmental Setting

Pacific Gas and Electric Company (PG&E) supplies electricity to over five million customers in central and northern California, including Oakland. Alameda County used over 11,112 gigawatt/hours (millions of kilowatt/hours) in 2017[7]. Residential electricity use accounts for approximately 28 percent of the electrical use and non-residential use accounts for approximately 72 percent. PG&E's electricity is supplied by natural gas power plants, nuclear generation, large hydroelectric facilities, and renewable sources (e.g., wind, geothermal, boil mass and small hydroelectric power). The City of Oakland operates three 55 megawatt (MW) fossil fuel plants that supplement PG&E's electricity generation.

In 2017 in California, about 34 percent of electricity was generated by natural gas, 29 percent was generated by renewables, 15 percent was generated by hydroelectric facilities, 9 percent was generated by nuclear, and 4 percent was generated by coal.[8]

In 2017, Alameda County used over 379 million therms of natural gas.[9] Residential use accounts for approximately 57 percent of natural gas consumption, and non-residential use accounts for approximately 43 percent of natural gas use in Alameda County.

[7] California Energy Commission, Electricity Consumption by County. Available at https://ecdms.energy.ca.gov/elecbycounty.aspx
[8] California Energy Commission, Total System Electric Generation. Available at: https://www.energy.ca.gov/almanac/electricity_data/total_system_power.html
[9] California Energy Commission, Gas Consumption by County. Available at: http://www.ecdms.energy.ca.gov/gasbycounty.aspx

# Regulatory Background

Energy efficiency requirements are primarily regulated at the state level. Title 24, California's Energy Efficiency Standards for Residential and Non-residential Buildings, details requirements to achieve minimum energy efficiency standards. The standards apply to new construction of both residential and non-residential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. Compliance with these standards is verified and enforced through the local building permit process.

The City of Oakland has developed the Oakland Sustainability Community Development Initiative which includes programs that encourage a variety of sustainability programs that range from the development of green building practices to the replacement of heavy-duty diesel trucks.

The City of Oakland adopted a Civic Green Building Ordinance in May 2005, requiring City owned and occupied buildings to meet specific green building standards set by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system. In October 2010, the City adopted mandatory green building standards for private development projects. The intent of the mandatory green building standards is to integrate environmentally sustainable strategies in building construction and landscapes in Oakland (City of Oakland, 2014).

The Oakland Energy and Climate Action Plan was adopted by the City Council on December 4, 2012. The purpose of the Plan is to identify and prioritize actions that Oakland can take to reduce energy consumption and greenhouse gas emissions. The Plan recommends greenhouse gas reduction actions and establishes a framework for coordinating implementation, as well as monitoring and reporting progress. Implementation of renewable energy and energy efficiency measures include measures to reduce vehicle miles traveled annually by 20 percent, electricity consumption by 32 percent, and natural gas consumption by 14 percent (City of Oakland, 2014).

# Significance Criteria

The impacts to energy resources will be considered significant if any of the following criteria are met:

- The project conflicts with adopted energy conservation plans or standards.

- The project results in substantial depletion of existing energy resource supplies.

- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.

- The project uses non-renewable resources in a wasteful and/or inefficient manner.

# Discussion of Impacts

**6. a and b) Potentially Significant:** Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power for ships. Implementation of these types of control measures would not be expected to use energy in a wasteful, inefficient or unnecessary manner, or conflict with an energy conservation plan. However, control measures that encourage zero emission mobile sources would increase electricity use, potentially requiring additional electricity or energy infrastructure. As such, the potential increase in energy consumption associated with the Community Action Plan will be evaluated in the EIR.

# Conclusion

Implementation of the Community Action Plan could increase use of electricity associated with zero emission mobile sources and providing shore power to ships. Therefore, the potential adverse impacts associated with increased energy requirements will be evaluated in the Draft EIR.

| | | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| **VII.** | **GEOLOGY AND SOILS.** Would the project: | | | | |
| a) | Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: | | | | |
| i) | Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. | ☐ | ☐ | ☑ | ☐ |
| ii) | Strong seismic ground shaking? | ☐ | ☐ | ☑ | ☐ |
| iii) | Seismic-related ground failure, including liquefaction? | ☐ | ☐ | ☑ | ☐ |
| iv) | Landslides? | ☐ | ☐ | ☑ | ☐ |
| b) | Result in substantial soil erosion or the loss of topsoil? | ☐ | ☐ | ☑ | ☐ |
| c) | Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse? | ☐ | ☐ | ☑ | ☐ |
| d) | Be located on expansive soil, as defined in Table 18-1-B of the California Building Code, creating substantial direct or indirect risks to life or property? | ☐ | ☐ | ☑ | ☐ |
| e) | Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater? | ☐ | ☐ | ☐ | ☑ |

| | | | | | |
|---|---|---|---|---|---|
| f) | Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. | ☐ | ☐ | ☑ | ☐ |

# Environmental Setting

California has 11 natural geologic regions, known as geomorphic provinces, which are defined by the presence of similar physical characteristics, such as relief, landforms, and geology. Most of the Bay Area is located within the natural region of California known as the Coast Ranges geomorphic province, with the eastern portions of Contra Costa and Alameda Counties extending into the neighboring Great Valley geomorphic province, located east of the Coast Ranges. The Coast Range extends about 400 miles from Oregon south into Southern California and is characterized by a series of northwest trending ridges and valleys that roughly parallel the San Andreas fault zone. The San Francisco Bay is a broad, shallow regional structural depression created from an east-west expansion between the San Andreas and the Hayward fault systems.

Much of the Coast Range province is composed of marine sedimentary and volcanic rocks located east of the San Andreas Fault. The regional west of the San Andreas Fault is underlain by a mass of basement rock that is composed of mainly marine sandstone and various metamorphic rocks. Marginal lands surrounding San Francisco Bay consist generally of alluvial plains of low relief that slope gently towards the bay from bordering uplands and foothills (ABAG, 2017). Unconsolidated alluvial deposits, artificial fill, and estuarine deposits, (including Bay Mud) underlie the low-lying region along the margins of the Carquinez Straight and Suisun Bay. The organic, soft, clay-rich sediments along the San Francisco and San Pablo Bays are referred to locally as Bay Mud and can present a variety of engineering challenges due to inherent low strength, compressibility and saturated conditions. Landslides in the region occur in weak, easily weathered bedrock on relatively steep slopes.

West Oakland is located on the San Francisco Bay, which is a seismically active region, situated on a tectonic plate boundary marked by the San Andreas Fault System. Under the Alquist-Priolo Earthquake Fault Zoning Act, Earthquake Fault Zones were established by the California Division of Mines and Geology along "active" faults, or faults along which surface rupture occurred in Holocene time (the last 11,000 years). The San Andreas and the Hayward faults are the two faults considered to have the highest probabilities of causing a significant seismic event in the Bay Area. These two faults are classified as strike-slip faults that have experienced movement within the last 150 years. The Hayward fault is the closest fault to West Oakland, located approximately 3.5 miles to the east along the southwestern base on the East Bay hill, paralleling Highway 13. Other principal faults capable of producing significant ground shaking in the Bay Area are included in Table 2-2, and include the Rodgers Creek-Healdsburg, Concord-Green Valley, Marsh Creek-Greenville, San Gregorio-Hosgri, West Napa and Calaveras faults (ABAG, 2017). A major seismic event on any of these active faults could cause significant ground shaking and potential surface fault rupture.

Ground movement intensity during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geological material. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill. Earthquake ground shaking may have secondary effects on certain foundation materials, including liquefaction, seismically induced settlement, and lateral spreading.

**TABLE 2-2**

**Active Faults in the Bay Area**

| Fault | Recency of Movement | Maximum Moment Magnitude Earthquake |
|---|---|---|
| San Andreas | 1989 | 7.9 |
| Hayward | 1868 | 7.1 |
| Rodgers Creek-Healdsburg | 1969 | 7.0 |
| Concord-Green Valley | 1955 | 6.9 |
| Marsh Creek-Greenville | 1980 | 6.9 |
| San Gregorio-Hosgri | Late Quaternary | 7.3 |
| West Napa | 2000 | 6.5 |
| Maacama | Holocene | 7.1 |
| Calaveras | 1990 | 6.8 |
| Mount Diablo Thrust | Quaternary | 6.7 |

(Source: ABAG, 2017)

# Regulatory Background

Construction is regulated by, among other things, the City of Oakland building codes that provide requirements for construction, grading, excavations, use of fill, and foundation work including type of materials, design, procedures, etc. which are intended to limit the probability of occurrence and the severity of consequences from geological hazards. Necessary permits, plan checks, and inspections are generally required.

The City or County General Plan includes the Seismic Safety Element. The Element serves primarily to identify seismic hazards and their location in order that they may be considered in the planning of future development. The California Building Code is the principle mechanism for protection against and relief from the danger of earthquakes and related events.

In addition, the Seismic Hazards Mapping Act (Public Resources Code §§2690 – 2699.6) was passed by the California legislature in 1990 following the Loma Prieta earthquake. The Act required that the California Division of Mines and Geology (DMG) develop maps that identify the areas of the state that require site specific investigation for earthquake-triggered landslides and/or potential liquefaction prior to permitting most urban developments. The Act directs cities, counties, and state agencies to use the maps in their land use planning and permitting processes.

Local governments are responsible for implementing the requirements of the Seismic Hazards Mapping Act. The maps and guidelines are tools for local governments to use in establishing their land use management policies and in developing ordinances and reviewing procedures that will reduce losses from ground failure during future earthquakes.

# Significance Criteria

The proposed project impacts on the geological environment will be considered significant if:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

# Discussion of Impacts

**7. a, c and d)** Less than Significant**.** The West Oakland Community Action Plan could require changes at certain industrial facilities. These facilities may need to install additional air pollution control equipment, modify their facilities, built new infrastructure, or install filtration equipment.

New development potentially resulting in earthquake hazards is expected to be limited to the construction of air pollution control equipment or measures at industrial facilities. New construction (including modifications to existing structures) requires compliance with the California Building Code. The California Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The California Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the California Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site. Compliance with the

California Building Code would minimize the impacts associated with existing geological hazards. Therefore, no significant impacts would be expected.

**7. b) Less than Significant.** Construction associated with strategies in the Plan would be limited to urban areas, and primarily industrial facilities. All construction would take place at already existing facilities that have been previously graded. Thus, the proposed project is not expected to result in substantial soil erosion or the loss of topsoil as construction activities are expected to be limited to existing operating facilities that have been graded and developed, so that no major grading would be required.

**7. e) No Impact.** Septic tanks or other similar alternative wastewater disposal systems are typically associated with small residential projects in remote areas. The West Oakland Community Action Plan would affect an existing urban area that has existing wastewater treatment systems and does not rely on septic tanks or similar alternative wastewater disposal systems. Based on these considerations, septic tanks or other alternative wastewater disposal systems are not expected to be impacted by the proposed project.

**7. f) Less than Significant.** As discussed in 5 b and 5 c above, the West Oakland area is located on the margins of the San Francisco Bay shoreline. Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives). Implementation of these types of control measures would not be expected to require extensive construction or grading that could impact paleontological resources. In areas where there are sensitive resources, the City of Oakland requires pre-construction surveys and the use of qualified archaeological and paleontological monitors during grading operations to identify historic resources. These standard requirements, along with the fact that the control strategies in the West Oakland Community Action Plan are not expected to require extensive construction or grading activities, are expected to limit impacts on paleontological resources to less than significant.

# Conclusion

Based upon the above considerations, significant adverse impacts to geology and soils are not expected to occur due to implementation of the West Oakland Community Action Plan strategies and therefore, will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **VIII. GREENHOUSE GAS EMISSIONS.** | | | | |
| Would the project: | | | | |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | ☑ | ☐ | ☐ | ☐ |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | ☑ | ☐ | ☐ | ☐ |

# Environmental Setting

Global climate change refers to changes in average climatic conditions on the earth as a whole, including temperature, wind patterns, precipitation and storms. Global climate change is caused primarily by an increase in levels of greenhouse gases (GHGs) in the atmosphere. The major greenhouse gases are the so-called "Kyoto Six" gases – carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), sulfur hexafluoride ($SF_6$), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs) – as well as black carbon.[10] These greenhouse gases absorb longwave radiant energy (heat) reflected by the earth, which warms the atmosphere in a phenomenon known as the "greenhouse effect." The potential effects of global climate change include rising surface temperatures, loss in snow pack, sea level rise, ocean acidification, more extreme heat days per year, and more drought years.

Increases in the combustion of fossil fuels (e.g., gasoline, diesel, coal, etc.) since the beginning of the industrial revolution have resulted in a significant increase in atmospheric levels of greenhouse gases. $CO_2$ levels have increased from long-term historical levels of around 280 ppm before the mid-18$^{th}$ century to over 400 ppm today. This increase in greenhouse gases has already caused noticeable changes in the climate. The average global temperature has risen by approximately 1.4°F (0.8°C) over the past one hundred years, and 16 of the 17 hottest years in recorded history have occurred since 2001, according to the National Oceanic and Atmospheric Administration.

[10] Technically, black carbon is not a gas but is made up of solid particulates or aerosols. It is included in the discussion of greenhouse gas emissions because, like true greenhouse gases, it is an important contributor to global climate change.

Total global greenhouse gas emissions contributing to climate change are in the tens of billions of metric tons of $CO_2e$ per year. The State of California alone produces about two percent of the entire world's GHG emissions with major emitting sources including fossil fuel consumption from transportation (37 percent), electricity production (20 percent), industry (24 percent), agricultural and forestry (8 percent), residential activities (6 percent), and commercial activities (5 percent) (ABAG, 2017). The Bay Area's contribution to the global total is approximately 85 million tons per year. Transportation sources generate approximately 40 percent of the total, with the remaining 60 percent coming from stationary and area sources (BAAQMD, 2017b).

# Regulatory Background

California has committed to reducing its greenhouse gas emissions to 1990 levels by 2020, to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050. This commitment was enacted in AB 32, the Global Warming Solutions Act of 2006, which adopted the 2020 target; in 2016's SB 32 (Pavley), which adopted the 2030 target; and in Executive Order S-3-05, which adopted the 2050 target. The Air District has adopted the same 80 percent reduction target for 2050 for the Bay Area's greenhouse gas emissions, in Board of Directors Resolution 2013-11.

To achieve these emission reduction goals, the California Legislature has directed the California Air Resources Board (CARB) to develop a Scoping Plan setting forth regulatory measures that CARB will implement, along with other measures, to reduce the state's greenhouse gas emissions. One of the principal regulatory measures is CARB's Cap and Trade program, which requires industrial greenhouse gas sources to obtain "allowances" equal to their greenhouse gas emissions. The amount of available allowances is subject to a "cap" on total emissions statewide, which CARB will reduce each year. Regulated facilities will either have to reduce their emissions or purchase allowances on the open market, which will give them a financial incentive to reduce emissions and will ensure that total annual emissions from the industrial sector will not exceed the declining statewide cap.

California has also adopted the "Renewable Portfolio Standard" for electric power generation, which requires that at least 33 percent of the state's electric power must come from renewable sources by 2020, and at least 50 percent must come from renewables by 2030. To complement these efforts on electricity generation, the state has also committed to increasing the energy efficiency of existing buildings by 50 percent by 2050 in order to reduce energy demand.

California has adopted regulatory measures aimed at reducing greenhouse gas emissions from mobile sources. These measures include standards for motor vehicle emissions and the state's Low Carbon Fuel Standard, which set limits on the carbon intensity of transportation fuels. California has also adopted SB 375, the Sustainable Communities and Climate Protection Act of 2008, which requires regional transportation and land use planning agencies to develop coordinated plans, called "Sustainable Communities Strategies," to reduce greenhouse gas emissions from the transportation sector by promoting denser development and alternatives to driving. The current Sustainable Communities Strategy for the Bay Area is *Plan Bay Area 2040*, which was adopted by the Metropolitan Transportation Commission and the Association of Bay Area Governments in July of 2017.

The Air District has committed to reducing the Bay Area's regional greenhouse gas emissions to 80 percent below 1990 levels by 2050, as noted above. The Air District has also committed to a broad suite of specific measures to address greenhouse gases in the 2017 Clean Air Plan, *Spare the Air, Cool the Climate*. That document lays out the Air District's vision for what the Bay Area may look like in a post-carbon year 2050 and describes policies and actions that the region needs to take in the near- to mid-term to achieve these goals.

In 2009, the Oakland City Council directed staff to develop an Energy and Climate Action Plan using preliminary planning GHG target equivalent to 36 percent below 2005 GHG emissions by 2020 and 80 percent below 2005 levels by 2050, with annual benchmarks for meeting the target. Based on Oakland's 2005 baseline GHG inventory, a total of approximately three million metric tons of GHG emissions and current forecasts of business-as-usual emissions growth, reducing GHG emissions by the equivalent of 36 percent below 2005 levels by 2020 will require taking actions that would result in 1.1 million metric tons of GHG emissions. On December 2, 2012, Oakland adopted the Energy and Climate Action Plan which evaluates and prioritizes opportunities to reduce energy consumption and GHG emissions in its own government operations and throughout the community

# Significance Criteria

The most recently available Air District draft CEQA guidelines established GHG thresholds for specific projects, general plans, and regional plans. An air quality rule does not fall neatly into any of these categories. Air quality rules are typically regional in nature, as opposed to general plans, community plans and regional plans. In addition, air quality rules are usually specific to particular source types and particular pollutants.

The Air District draft CEQA Guidelines (BAAQMD, 2017a) established a GHG threshold for air quality plans of "no net increase in emissions," which is appropriate for air quality plans because they include a mix of control measures with individual trade-offs. For example, one control measure may result in combustion of methane to reduce greenhouse gas emissions, while increasing criteria pollutant emissions by a small amount. Those increases from the methane measure would be offset by decreases from other measures focused on reducing criteria pollutants. In a particular rule development effort, there may not be opportunities to make these trade-offs. Because the proposed project is a Community Action Plan with the goal of reducing emissions, the GHG threshold for air quality plans of "no net increase in emissions" will apply to the proposed project.

# Discussion of Impacts

Global climate change refers to changes in average climatic conditions on earth as a whole, including temperature, wind patterns, precipitation and storms. Global warming, a related concept, is the observed increase in average temperature of the earth's surface and atmosphere. One identified cause of global warming is an increase of greenhouse gases (GHGs) in the atmosphere. The six major GHGs identified by the Kyoto Protocol are carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), sulfur hexafluoride ($SF_6$), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). The GHGs absorb longwave radiant energy reflected by the earth, which warms the atmosphere. GHGs also radiate longwave radiation both upward to space and back down toward the surface of the earth. The downward part of this longwave radiation absorbed by the atmosphere is known as the "greenhouse effect." Some studies indicate that the potential effects of global climate change may include rising surface temperatures, loss in snow pack, sea level rise, more extreme heat days per year, and more drought years.

**8. a and b) Potentially Significant.** Some control measures could potentially require modifications to refineries or other facilities and would require the generation of additional electricity to operate mobile sources which could generate additional GHG emissions. However, the implementation of these types of control measures would not be expected to generate a substantial increase in GHG emissions.

Implementation of the Community Action Plan could increase use of electricity associated zero emission mobile sources and providing shore power to ships. Therefore, the potential cumulative GHG emission impacts associated with increased energy requirements and generation of additional electricity will be evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **IX. HAZARDS & HAZARDOUS MATERIALS.** Would the project: | | | | |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | ☑ | ☐ | ☐ | ☐ |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | ☑ | ☐ | ☐ | ☐ |
| c) Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | ☑ | ☐ | ☐ | ☐ |
| d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | ☐ | ☐ | ☑ | ☐ |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area? | ☐ | ☐ | ☐ | ☑ |
| f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☑ | ☐ |
| g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

West Oakland was one of the first industrial locations in the San Francisco Bay Area, later became a center for defense related industries, and continues to be a major transportation hub and industrial zone. Over the years, many transportation and industrial uses have relocated and closed, and some industrial properties have been abandoned and left contaminated (City of Oakland, 2014).

West Oakland today contains a mix of industrial, commercial, transportation, and residential uses. Industrial uses are often located adjacent to or near residential and other sensitive land uses, such as schools and parks. Many ongoing industrial operations use, store or transport hazards materials, and contaminated sites and groundwater remain in the area, posing a potential hazard to human health and the environment (City of Oakland, 2014).

In California, regulatory databases listing hazardous materials sites provided by federal, state and local agencies are consolidated in the "Cortese List" pursuant to Government Code Section 65962.5. In addition, the Alameda County Department of Environmental Health maintains a list of sites for which it is the administrative agency responsible for coordination and enforcement of local, state, and federal hazardous materials management and environmental protection programs, as recognized by the California Department of Toxics Substances Control.

A review of the Cortese List indicates that there is a total of 123 reported environmental cases within West Oakland. The majority of reported environmental cases are attributed to leaking underground storage tanks, most of which contain (or used to contain) motor oil, gasoline or other similar petroleum products. Nearly 65 percent of the cases have been closed by the respective oversight agencies. Of those cases that remain open, remediation efforts are still needed before new development can occur. Within those closed case sites, the level of prior clean-up efforts may vary and may be appropriate only for commercial or industrial uses, may have deed restrictions preventing sensitive land uses, or may stipulate additional agency oversight may be required is development is being considered (City of Oakland, 2014).

In addition to contaminated sites, a number of facilities within West Oakland process flammable materials and acutely toxic substances. Accidents involving these substances can result in worker or public exposure to fire, heat, blast from an explosion, or airborne exposure to hazardous substances. The potential hazards associated with handling such materials are a function of the materials being processed, processing systems, and procedures used to operate and maintain the facilities where they exist. The hazards that are likely to exist are identified by the physical and chemical properties of the materials being handled and their process conditions, including toxic gas clouds; torch fires (gas and liquefied gas releases), flash fires (liquefied gas releases), pool fires, and vapor cloud explosions (gas and liquefied gas releases), thermal radiation (heat generated by fire), and explosion/overpressure.

There are approximately six large quantity hazardous waste generators, 73 small quantity generators, 90 storage tanks, 87 dry cleaners, and 72 auto related industries (City of Oakland, 2014). For all affected facilities, risks to the public are reduced if there is a buffer zone between industrial processes and residences or other sensitive land uses, or the prevailing wind blows away from residential areas and other sensitive land uses. The risks posed by operations at each facility are unique and determined by a variety of factors. Because the use and handling of hazardous materials at permitted sites are subject to strict regulation, the potential for a release of hazardous materials from these sites is considered low

# Regulatory Background

There are many federal and state rules and regulations that facilities handling hazardous materials must comply with which serve to minimize the potential impacts associated with hazards at these facilities.

Under the Occupational Safety and Health Administration (OSHA) regulations [29 Code of Federal Regulations (CFR) Part 1910][11], facilities which use, store, manufacture, handle, process, or move highly hazardous materials must prepare a fire prevention plan. In addition, 29 CFR § 1910.119, Process Safety Management (PSM) of Highly Hazardous Chemicals, and Title 8 of the California Code of Regulations (CCR), General Industry Safety Order §5189, Process Safety Management of Acutely Hazardous Materials, specifies required prevention program elements to protect workers at facilities that handle toxic, flammable, reactive, or explosive materials.

Section 112 (r) of the federal Clean Air Act [42 U.S.C. 7401 et seq.[12]] as amended by the Amendments of 1990, and Article 2, Chapter 6.95 of the California Health and Safety Code require facilities that handle listed regulated substances to develop Risk Management Programs (RMPs) and hazardous materials management plans to prevent accidental releases of these substances. U.S. Environmental Protection Agency regulations on chemical accident prevention are set forth in 40 CFR Part 68. In California, the California Accidental Release Prevention (CalARP) Program regulations (CCR Title 19, Division 2, Chapter 4.5) were issued by the Governor's Office of Emergency Services (OES). RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program.

Affected facilities that store materials are required to have Spill Prevention Control and Countermeasure (SPCC) Plan per the requirements of Title 40, Code of Federal Regulations, Part 112. The SPCC is designed to prevent spills from on-site facilities and includes requirements for secondary containment, provides emergency response procedures, establishes training requirements, and so forth.

[11] All federal regulations are accessible at https://codes.findlaw.com/cfr/#dirsearch2 .
[12] All federal statutes are accessible at https://codes.findlaw.com/us/ . "Et seq." means also including the sections that follow the cited section(s).

The Hazardous Materials Transportation (HMT) Act, as amended and codified, 49 U.S.C. §§ 5101 et seq., is the federal law that regulates transportation of hazardous materials. The primary regulatory authorities are the U.S. Department of Transportation, the Federal Highway Administration, and the Federal Railroad Administration. The HMT Act requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practical moment (49 CFR Subchapter C, §171.15(a)). The California Department of Transportation (Caltrans) sets standards for trucks in California. These state regulations are enforced by the California Highway Patrol, among others.

The California Department of Toxic Substances Control (DTSC) is authorized by the U.S. Environmental Protection Agency (US EPA) to enforce and implement federal hazardous materials laws and regulations in California. California regulations pertaining to hazardous materials are equal to or exceed the federal regulation requirements. The DTSC is authorized by the US EPA to regulate the management of hazardous substances including the remediation of sites contaminated by hazardous substances. State hazardous materials regulations are contained in Title 22, Division 4.5 of the California Code of Regulations, Environmental Health Standards for the Management of Hazardous Waste. DTSC generally acts as the lead agency for soil and groundwater cleanup projects that affect public health and establishes cleanup levels for subsurface contamination that are equal to, or more restrictive than, federal levels. DTSC has also developed land disposal restrictions and treatment standards for hazardous waste disposal in California. DTSC has also developed brownfield programs to promote and expedite the cleanup of brownfields.

California Health and Safety Code Section 25500 et seq., codifying Assembly Bill 2185 (Maxine Waters 1985), requires local agencies to regulate the storage and handling of hazardous materials and requires development of a business plan to mitigate the release of hazardous materials. Businesses that handle any of the specified hazardous materials must submit to government agencies (i.e., fire departments), an inventory of the hazardous materials, an emergency response plan, and an employee training program. The information in the business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation.

# Significance Criteria

The proposed project impacts associated with hazards will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school

# Discussion of Impacts

**9. a, b, and c) Potentially Significant.** Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities and adding filtration systems to existing buildings. Implementation of these types of control measures would not be expected to result in the use of hazardous materials or create hazardous conditions.

Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power or use a bonnet system for ships. These types of control measures could require modifications to refineries or other facilities to produce alternative fuels and would require the generation of additional electricity to operate mobile sources which could create new hazards at refineries and electrical-generating facilities. In addition, emission controls on ships could include the use of selective catalytic reduction (SCR) units to minimize nitrogen oxide emissions. SCR systems require the use of ammonia, a hazardous material. A total of eleven schools are located within the West Oakland Community Action Plan. As such, the potential hazards associated with implementation of these control strategies in the Community Action Plan will be evaluated in the EIR.

**9. d) Less than Significant.** Government Code §65962.5 requires creation of lists of facilities that may be subject to Resource Conservation and Recovery Act (RCRA) permits or site cleanup activities. As discussed above, a number of sites within West Oakland are included on the hazardous materials sites list pursuant to Government Code §65962.5. Implementation of control strategies could require development or modifications to sites included on hazardous materials list. The facilities that may be affected by the proposed control strategies would be required to continue to manage any and all hazardous materials in accordance with federal, state, and local regulations. Implementing the control strategies would not be expected to interfere with site cleanup activities or create additional site contamination. As a result, the proposed project is not expected to affect any facilities included on a list of hazardous material sites and, therefore, would not create a significant hazard to the public or environment.

**9. e) No Impact.** West Oakland is not located within an airport land use plan area or within two miles of a public airport, public use airport, or near a private airstrip. The closest airport is Oakland International Airport which is over 6 miles southeast of West Oakland. The proposed project is not expected to result in a safety hazard for people residing or working within two miles of a public airport or air strip. Therefore, the Community Action Plan would have no impact on safety hazards for people residing or working in the project area.

**9. f) Less than Significant.** The Oakland Office of Emergency Services has identified a network of evacuation routes and potential emergency shelters. The emergency evaluation routes within West Oakland are 7th Street, 14th Street, 12th Street, 27th Street, 35th Street, Adeline Street, Market Street, Martin Luther King Jr. Boulevard, San Pablo Avenue, and West Grand Avenue (City of Oakland, 2014).

Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power for ships. Implementation of these types of control measures would not be expected to interfere with an adopted emergency response plan or emergency evacuation plan. Any need for traffic lane reductions or street closure due to construction would be short-term, temporary and localized. Individual future projects would be required to obtain an encroachment permit from the City for any proposed changes to, or construction use, of street rights-of-way, which would include review and notification to the Oakland Fire Department. Standard notification is required to ensure that the Oakland Fire Department is notified and award of construction traffic that could block any City Streets. Therefore, implementation of the Community Action Plan would neither be expected to impair implementation of, nor to interfere with any adopted emergency response plan or emergency evacuation plan.

**9. g) No Impact.** The California Department of Forestry and Fire Protection (CalFIRE) maps areas of significant fire hazard based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones, determine the requirements for special building codes designed to reduce the potential impacts of wildland fires on urban structures. West Oakland is located within a non-Very High Fire Hazard Severity Zone, as the area is urbanized and not located directly adjacent to wildland areas. The area is outside Oakland's Wildfire Prevention Assessment District boundary, which indicates that it is not subject to significant wildfire hazard. Implementation of the Community Action Plan would be expected to have no impact related to wildland fires.

# Conclusion

Implementation of the Community Action Plan could result in new hazards associated modifications to refineries and energy-generating facilities, as well as the increased use of hazardous materials associated with air pollution control equipment. As such, the potential hazards associated with implementation of these control strategies in the Community Action Plan will be evaluated in the EIR.

Based upon the above considerations, adverse hazard impacts, associated with hazardous materials sites, compiled pursuant to Government Code Section 65962.5, airport land use plans, safety at public and private airports, emergency response plans, emergency evacuation plans, and wildland fires, are not expected to be significant due to implementation of the Community Action Plan strategies.

| | | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|

## X. HYDROLOGY AND WATER QUALITY.

Would the project:

| | | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|---|
| a) | Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? | ☐ | ☐ | ☑ | ☐ |
| b) | Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? | ☐ | ☐ | ☐ | ☑ |
| c) | Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would: | | | | |
| i) | result in substantial erosion or siltation onsite or offsite; | ☐ | ☐ | ☑ | ☐ |
| ii) | substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; | ☐ | ☐ | ☑ | ☐ |
| iii) | create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; | ☐ | ☐ | ☑ | ☐ |
| iv) | impede or redirect flood flows? | ☐ | ☐ | ☑ | ☐ |
| d) | In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? | ☐ | ☐ | ☑ | ☐ |
| e) | Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

The City of Oakland is responsible for the construction and maintenance of the local storm drainage system, while the Alameda County Flood Control and Water Control District constructs, operates, and maintains major trunk lines and flood control facilities in Oakland.

The City of Oakland is within the Alameda County Flood Control and Water Control District Zone 12 (which also includes Emeryville), the largest of the District's zones. Zone 12 has approximately 50 miles of closed conduit, approximately 10 miles of earthen and concrete channels, as well as the existing natural waterways which transfer stormwater to the San Francisco Bay (City of Oakland, 2014).

West Oakland is part of a drainage basin that flows to a pump station located at the intersection of Ettie and 34th Streets. While the piping network is a City facility, the pump station itself is owned and operated by Alameda County Flood Control and Water Control District. The pump station was installed by the City of Oakland in 1954 and was taken over by that District in 1997. It includes six working pumps capable of pumping just over 500,000 gallons per minute (gpm). There has never been flooding in the area as a result of the pump failing (City of Oakland, 2014).

Stormwater runoff within West Oakland is conveyed by gravity through storm drain pipes to the Alameda County Flood Control and Water Control District Ettie Street Pump Station, located at the northern end of Ettie Street near I-580, where the stormwater is lifted and discharged to the Bay.

The City of Oakland Storm Drainage Master Plan estimates that 30 percent of the existing storm drainage conduits and all of the storm drainage structures within West Oakland need rehabilitation. The Master Plan also indicates that system capacity upgrades are also needed throughout West Oakland, especially within the commercial and industrial area near West Grand/Mandela and 3rd Street (City of Oakland, 2014).

See Section XIX – Utilities and Service Systems, for a description of existing water and wastewater treatment facilities.

# Regulatory Background

The Federal Clean Water Act of 1972 primarily establishes regulations for pollutant discharges into surface waters in order to protect and maintain the quality and integrity of the nation's waters. This Act requires industries that discharge wastewater to municipal sewer systems to meet pretreatment standards. The regulations authorize the U.S. Environmental Protection Agency to set the pretreatment standards. The regulations also allow the local treatment plants and others to set more stringent wastewater discharge requirements, if necessary, to meet local conditions.

The 1987 amendments to the Clean Water Act enabled the U.S. Environmental Protection Agency to regulate, under the National Pollutant Discharge Elimination System (NPDES) program, discharges from industries and large municipal sewer systems. The U.S. Environmental Protection Agency set initial permit application requirements in 1990. The State of California, through the State Water Resources Control Board, has authority to issue NPDES permits, which meet U.S. Environmental Protection Agency requirements, to specified industrial and other entities.

The Porter-Cologne Water Quality Act, California Water Code Division 7 and related sections, is California's primary water quality control law. It implements the state's responsibilities under the Federal Clean Water Act but also establishes state wastewater discharge requirements. The Regional Water Quality Control Board administers the state requirements as specified under the Porter-Cologne Water Quality Act, which include storm water discharge permits. The water quality in the Bay Area is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board.

In response to the Federal Clean Water Act, the State Water Resources Control Board prepared two state-wide plans in 1991 and 1995 that address storm water runoff: the California Inland Surface Waters Plan and the California Enclosed Bays and Estuaries Plan, which have been updated in 2005 as the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. Enclosed bays are indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. San Francisco Bay, and its constituent parts, including Carquinez Strait and Suisun Bay, fall under this category.

The San Francisco Bay Basin Plan identifies the: (1) beneficial water uses that need to be protected; (2) the water quality objectives needed to protect the designated beneficial water uses; and (3) strategies and time schedules for achieving the water quality objectives.

# Significance Criteria

**Water Demand:**

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 263,000 gallons per day of potable water.

**Water Quality:**

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.

- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

**Water Demand:**

The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use a substantial amount of potable water.

The project increases demand for water by more than 300,000 gallons per day.

# Discussion of Impacts

### 10. a) Water Quality Standards and Waste Discharge Requirements

**Less than Significant.** Of the strategies that the District would implement as part of the Community Action Plan, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power or bonnet systems for ships. Implementation of strategies such as replacing diesel engines, adding filtration systems to existing buildings, the use of zero emission sources, producing alternative fuels and generating additional electricity would not be expected to result in water use or wastewater discharge. The control strategies would not be expected to require the use of additional water, result in the discharge of wastewater, or result in impacts to water quality, since the control strategies do not involve the use of water.

Construction activities associated with land disturbance of more than one acre would requirement compliances with the Construction General Permit for Discharges of Storm Water Associated with Construction Activity Water Quality (Order No. 99-08-DWQ, NPDES No. CAS000002).

Should any wastewater be generated, compliance with existing General Plan policies, Municipal Code regulations, and federal, state and local regulations would reduce impacts related to wastewater discharge to less than significant.

### 10. b) Ground Water Supplies

**No Impact.** West Oakland is underlain by the East Bay Plain groundwater basin. The San Francisco Regional Water Quality Control Board has identified groundwater supplies in this basin for municipal, industrial, and agricultural water supply. Impacts to the aquifer would occur if actions in accordance with the Community Action Plan would result in reduced recharge to the aquifer or increased extraction for the aquifer. However, the East

Bay Municipal Utility District, the major water purveyor for Oakland, relies on surface water supplies. The groundwater basin is not currently being used for municipal water supply (City of Oakland, 2014).

Of the strategies that the Air District would implement as part of the Community Action Plan, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power or bonnet systems for ships. Implementation of strategies such as replacing diesel engines, adding filtration systems to existing buildings, the use of zero emission sources, producing alternative fuels and generating additional electricity would not be expected to require the use of additional water or groundwater. As a result, implementation of the Community Action Plan would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Impacts to groundwater would be less than significant.

### 10. c) Surface Water

**Less Than Significant.** As discussed above, the control strategies that the District would implement are not expected to require extensive construction or grading, that would result in alteration of the existing drainage pattern of the area or increase the rate or amount of surface water runoff. The West Oakland area is urbanized and developed so the project is not expected to add impervious surfaces that would alter surface water runoff. Further, there are no natural streams or rivers in the West Oakland area, so the project would not alter the course of a stream or river. Therefore, the impact of the Community Action Plan on surface water discharge is expected to be less than significant.

### 10. d) Flooding, seiche, tsunami

**Less than Significant.** No portion of West Oakland is located within a 100-year or 500-year flood hazard area, as mapped on the National Flood Insurance Program Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency. All of West Oakland is designated Zone X, which means that it is an area determined to be an area of minimal flood hazard, outside the 0.2 percent annual chance floodplain (City of Oakland, 2014). For this reason, implementation of the Community Action Plan would not result in substantial flooding on- or off-site; would not expose people or structures to a substantial risk of loss, injury, or death involving flooding; would not impede or redirect flood flows or place structures within a 100-year flood hazard area.

A seiche is a tidal change in an enclosed or semi-enclosed water body caused by sustained high winds or an earthquake. There is no data on the local occurrence or impact of seiches, as none has been recorded in the Bay Area (City of Oakland, 2012). No enclosed or semi-enclosed water body, if any, in West Oakland is located close enough to the San Francisco Bay to be affected by a seiche (City of Oakland, 2014).

Tsunamis are seismically induced sea waves that, upon entering shallow near-shore waters, may reach heights capable of causing widespread damage to coastal areas. The western portion of West Oakland, generally west of Mandela Parkway, is subject to tsunami inundation (City of Oakland, 2014).

The National Weather Service operates the Alaska Tsunami Warning Center in Palmer, Alaska which serves as the regional tsunami warning center for Alaska, British Columbia, Washington, Oregon, and California. In the event that an earthquake occurred that would be capable of producing a tsunami that could affect West Oakland, the City of Oakland would receive the warning through the State Warning System. In addition, the Oakland Office of Emergency Services operates a network of outdoor warning sirens to alert the public in case of an emergency. There are sirens installed at three locations in West Oakland: the Goss Avenue/Pine Avenue intersection, Poplar Recreation Area, and Lafayette Square.

The Alaska Tsunami Warning Center, State Warning System and Oakland emergency alert system, including the outdoor warning sirens in West Oakland, would provide early notification of an advancing tsunami allowing evacuation of people. Given the rare occurrence of tsunamis, the distance of West Oakland to the Bay shoreline, and the emergency alert system enabling evacuation of people, implementation of the Community Action Plan would not place additional structures in areas that are expected to be impacted by tsunami inundation.

**10. e) Water Quality Control Plan or Sustainable Groundwater Management Plan**

**No Impact.** As discussed above, the East Bay Municipal Utility District, the major water purveyor for Oakland, relies on surface water supplies. The groundwater basin is not currently being used for municipal water supply (City of Oakland, 2014). Further, implementation of the Community Action Plan is not expected to require additional water supplies. Therefore, the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

# Conclusion

Based upon the above considerations, no significant adverse hydrology and water quality impacts are expected to occur due to implementation of the Community Action Plan strategies.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XI. LAND USE AND PLANNING.** Would the project: | | | | |
| a) Physically divide an established community? | ☐ | ☐ | ☐ | ☑ |
| b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | ☐ | ☐ | ☐ | ☑ |

## Environmental Setting

The land uses in the West Oakland area vary greatly and are described below.

- Land uses to the north include the Emeryville portion of the East Bay Bridge Shopping Center, which contains regional commercial, community commercial, and medium-density residential uses. Other residential, light industrial, office, commercial, and public uses are located further to the north in Emeryville, including at the Bay Street Shopping Center.

- Interstate 580 is located along the northern boundary of West Oakland. North of Interstate 580 is the Longfellow residential neighborhood, near MacArthur Boulevard and 40th Street in North Oakland.

- To the northeast is the MacArthur BART Station, within the median of State Route 24. This area includes the MacArthur Transit Village, which provides 624 high-density, multifamily housing units, retail space, and a BART parking garage.

- Interstate 980 is located along the eastern boundary of West Oakland. East of Interstate 980 are the Pill Hill and Uptown neighborhoods, Downtown Oakland, City Center, Old Oakland, and the 19th Street and 12th Street BART stations.

- To the southeast is the waterfront Jack London district with Jack London Square, Amtrak's Oakland Jack London Square Railroad Station, and the Oakland Ferry Terminal.

- The Port of Oakland lies southwest of West Oakland. Interstate 880, the Union Pacific Railroad, and the Burlington Northern and Santa Fe (BNSF) Railroad are located along the southern and western boundary of West Oakland. The Union Pacific Intermodal Yard lies south of Interstate 880, within the Port. Port shipping terminals line the Oakland Estuary/Inner Harbor Channel further south and the Outer Harbor Channel to the west. The BNSF Intermodal Yard and Middle Harbor Park are to the southwest.

- Interstate 880 is located near the western boundary of the Planning Area. The Union Pacific Railroad and the BNSF Railroad, and the Knight Rail Yard are located underneath and immediately west of Interstate 880. The former Oakland Army Base (OARB), and former OARB Redevelopment Area, lies west of Interstate 880. The Oakland Base Reuse Authority currently leases space for various transportation, industrial and commercial uses until the former Army Base is redeveloped for permanent non-military uses.

- Land uses in West Oakland include the East Bay Municipal Utility District Main Wastewater Treatment Plant (MWWTP); the Interstates 80, 580, and 880 Interchange, known as the MacArthur Maze; and the Emeryville Crescent State Marine Reserve on the shore of San Francisco Bay. The newly constructed eastern single deck section of the Willie L. Brown Jr. San Francisco-Oakland Bay Bridge is the world's widest bridge. (Guinness World Records, 2014). The eastern terminus of that bridge, the bridge toll plaza, and the new maintenance yard lie further to the south, all within West Oakland. (City of Oakland, 2014).

## Regulatory Background

Land uses are protected and regulated by the City of Oakland General Plan through land use and zoning requirements. The City of Oakland General Plan is comprised of the following 10 elements: Land Use and Transportation Element; Bicycle Master Plan; Pedestrian Master Plan; Estuary Policy Plan; Open Space, Conservation, and Recreation Element; Historic Preservation Element; Housing Element; Noise Element; Safety Element; and Scenic Highways Element.

## Significance Criteria

Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by the City of Oakland General Plan and the City of Oakland Specific Plan.

## Discussion of Impacts

**11. a) No Impact.** West Oakland is currently subject to existing conditions that disrupt and divide the community. These conditions include the location of heavy industrial and transportation uses immediately adjacent to residential uses, and the separation of West Oakland from downtown Oakland, the waterfront at Jack London Square, Middle Harbor Park, and the rest of the City by freeways that surround the community.

Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power for ships. Implementation of these types of control measures would not be to physically divide the community, beyond the divisions that currently exist, as any new facilities would be expected to occur within the confines of the existing facilities. Therefore, the proposed project would not disrupt or divide the physical arrangement of the West Oakland community or any surrounding community.

**11. b) No Impact.** Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power for ships. Implementation of these types of control measures would not be expected to require any changes to land use or result in development that could conflict with a land use plan, policy, or regulation. Therefore, no significant land use impacts would be expected from implementation of the Community Action Plan.

## Conclusion

Based upon the above considerations, no significant adverse land use impacts are expected to occur due to implementation of the Community Action Plan strategies and therefore, will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XII. MINERAL RESOURCES.** Would the project: | | | | |
| a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | ☐ | ☐ | ☐ | ☑ |
| b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

According to the California Department of Conservation Division of Mines and Geology's Aggregate Resources Map, West Oakland is not currently considered an Aggregate Resource sector. The Leona Quarry was the last mine in Oakland to be identified as a regionally significant source of aggregate resources. Areas with this designation are judged to be of prime importance in meeting future mineral needs in the region, and land use decisions must consider the importance of these resources to the region as a whole. The Leona Quarry has been closed for many years and there is no other land in Oakland with such a designation (City of Oakland, 2014).

# Regulatory Background

Mineral resources are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements, as well as to some extent by federal and state laws.

# Significance Criteria

The proposed project impacts on mineral resources will be considered significant if:

- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

# Discussion of Impacts

**12. a) and b) No Impact.** No known mineral resources are located within West Oakland and the area is not designated as a locally important mineral resource recovery site under the City of Oakland General Plan Land Use and Transportation Element or Open Space, Conservation and Recreation Element. Therefore, no impacts on mineral resources are expected due to implementation of the West Oakland Community Action Plan.

# Conclusion

Based upon the above considerations, no mineral resource impacts are expected to occur due to implementation of the Community Action Plan strategies, and therefore, will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XIII. NOISE.** Would the project result in: | | | | |
| a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | ☐ | ☐ | ☑ | ☐ |
| b) Generation of excessive groundborne vibration or groundborne noise levels? | ☐ | ☐ | ☑ | ☐ |
| c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

Transportation sources such as automobiles, trucks, and trains are the principal sources of noise in West Oakland. The primary noise sources are traffic on Interstates 580, 880, and 980, and on local arterial streets including Mandela Parkway, 14$^{th}$ Street, West Grand Avenue, 7$^{th}$ Street Adeline Street, Peralta Street, Hollis Street, San Pablo Avenue, Market Street, 27$^{th}$ Street, and Martin Luther King Jr. Way. The elevated BART line is a major noise source affecting the southern portion of West Oakland.

The Union Pacific Railroad and BNSF Railroad and their associated railyards and Port of Oakland intermodal facilities that border West Oakland on the south and west are major noise sources affecting those immediate areas.

Industrial and commercial equipment and operations also contribute to the ambient noise environment in West Oakland. Other sources of noise include traffic helicopters in the morning reporting on freeway traffic, ships passing by on their way to or from the Port of Oakland, the 5$^{th}$ biggest container port in the US and the 3$^{rd}$ biggest on the West Coast, and police helicopters at night.

Typical examples of transient noise sources in urban areas include car horns, car alarms, loud vehicles or motorcycles, emergency sirens, loud music, mechanical equipment, lawn mowers, trucks, and people talking. Many of these transient sources are common in urban areas. Although some of these transient sources may be annoying, they do not contribute substantially to the overall ambient noise level in any particular area (City of Oakland, 2014).

There have been number of efforts to mitigate traffic noise impacts in West Oakland, in particular noise from trucks associated with the Port of Oakland. While signs direct trucks to prescribed truck routes, trucks often deviate from these routes and trucks have been detected in mixed industrial/residential areas of West Oakland. Sound walls have been constructed along portions of Interstate 880 adjacent to the Prescott and South Prescott neighborhoods (City of Oakland, 2014).

A number of noise studies have been performed to measure noise levels in the West Oakland area. In general, the noise levels measured for the 2003 West Oakland Redevelopment Plan EIR are comparable to other, more recent noise measurements taken within West Oakland and at other BART station locations with similar locations and exposure circumstances. The conclusions that can be reached from all of these noise studies indicate that:

- Noise levels are generally highest along the elevated sections of the Interstate 580 and 880 freeways, with community noise exposure levels (CNELs) estimated at 68 to 71 decibels at 400 feet from both freeway centerlines; freeway noise levels are lower in areas protected by sound walls (less than 60 decibels at 400 feet from the Interstate 880 freeway centerline).

- Noise levels reach in excess of 67 decibels during the day in the southeastern portion of the West Oakland BART station south parking lot. Noise levels at the northern edge of the BART station on 7$^{th}$ Street reach in excess of 68 decibels during the day.

- Along major arterial streets such as Mandela Parkway, San Pablo Avenue, 7$^{th}$ Street, and West Grand Avenue daytime noise levels are mostly between 66 to 68 decibels and CNEL levels were mostly between 68 and 72 decibels at 50 feet from roadway centerlines.

- In areas away from arterials, freeways, and BART (where there are no adjacent major noise sources), noise levels are generally less than 65 decibels CNEL.

When measured noise levels are compared to City noise and land use compatibility guidelines, they indicate that the existing noise environments near the elevated segments of Interstates 580 and 880 (unprotected by sound walls) and near the elevated BART tracks and West Oakland BART station are generally incompatible with residential and other noise-sensitive land uses. Noise levels along many major arterial streets generally meet the threshold for conditionally acceptable noise levels for residential uses (City of Oakland, 2014).

## Regulatory Background

Noise issues related to construction and operation activities are addressed in the City of Oakland General Plan including the Land Use and Transportation Element and Noise Element. The Noise Element identifies noise and land use compatibility standards for various land uses, derived from the California Department of Health Services noise compatibility guidelines. The following are the maximum interior noise levels generally considered acceptable for various common land uses:

- 45 decibels: residential, hotels, motels, transient lodging, institutional (churches, hospitals, classrooms, libraries), movie theaters.
- 50 decibels: professional offices, research and development, auditoria, meeting halls.
- 55 decibels: retail, banks, restaurants, sports clubs.
- 65 decibels: manufacturing, warehousing (City of Oakland, 2014).

The City of Oakland has a noise ordinance that prohibits persistent, excessive and annoying noise between 9:00 p.m. and 7:00 a.m. Oakland Municipal Code §§ 8.18.010–8.18.020.[13]

City of Oakland Planning Code § 17.120.050 also regulates noise in the City of Oakland with several maximum allowable receiving noise level standards variously applying 24 hours a day.[14]

## Significance Criteria

The proposed project impacts on noise will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise ordinance is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels at the site boundary.

[13] See Oakland Noise Ordinance, Oakland Municipal Code §§ 8.18.010–8.18.020, at: https://library.municode.com/ca/oakland/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.18NU_8.18.010EXANNOPR .
[14] See Oakland Noise Performance Standards, Oakland Planning Code § 17.120.050, at http://oakland-ca.elaws.us/code/plco_title17_ch17.120_sec17.120.050.

- The proposed project is in the vicinity of a private airstrip or airport land use plan and exposes people residing or working in the project area to excessive noise levels.
- Construction results in the generation of excessive groundborne vibration or groundborne noise levels

# Discussion of Impacts

**Noise Descriptors**

Noise is a by-product of urbanization and there are numerous noise sources and receptors in an urban community. Noise is generally defined as unwanted sound. The range of sound pressure perceived as sound is extremely large. The decibel is the preferred unit for measuring sound since it accounts for these variations using a relative scale adjusted to the human range for hearing (referred to as the A-weighted decibel or dBA). The A-weighted decibel is a method of sound measurement that assigns weighted values to selected frequency bands in an attempt to reflect how the human ear responds to sound. The range of human hearing is from 0 decibels (the threshold of hearing) to about 140 decibels which is the threshold for pain.

In addition to the actual instantaneous measurements of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. To analyze the overall noise levels in an area, noise events are combined for an instantaneous value or averaged over a specific time period. The time-weighted measurement is referred to as equivalent sound level and represented by energy equivalent sound level (Leq). The percentage of time that a given sound level is exceeded also can be designated as $L_{10}$, $L_{50}$, $L_{90}$, etc. The subscript notes the percentage of time that the noise level was exceeded during the measurement period. Namely, an $L_{10}$ indicates the sound level is exceeded 10 percent of the time and is generally taken to be indicative of the highest noise levels experienced at the site. The $L_{90}$ is that level exceeded 90 percent of the time and this level is often called the base level of noise at a location. The $L_{50}$ sound (that level exceeded 50 percent of the time) is frequently used in noise standards and ordinances.

Environmental noise is measured on a logarithmic scale in decibels (dB). Decibels measure the relative magnitude of pressure fluctuations in a sound medium under the influence of a vibratory source. An increase of 10 decibels represents a 10-fold increase in acoustic energy, which is perceived by people as approximately a doubling of loudness over a wide range of amplitudes. Since decibels are logarithmic units, sound pressure levels are not added arithmetically. When two sounds of equal sound pressure level are added, the result is a sound pressure level that is three dB higher. For example, 60 dB plus 60 dB equals 63 dB. However, where noise levels differ, there may be little change in comparison to the louder noise source; for example, when 70 dB and 60 dB sources are added, the resulting noise level equals 70.4 dB. In general, a three to five decibels change in community noise levels starts to become noticeable, while one to two decibels changes are generally not perceived.

Because the human hearing system is not equally sensitive to sound at all frequencies, the A-weighted filter system is used to express measured sound levels, in units of decibels, based on the sensitivity of the human ear. The decibels scale emphasizes mid- to high-range frequencies and de-emphasizes the low frequencies to which human hearing is less sensitive. Because A-weighted sound levels are adjusted to the sensitivity of the human ear, they are commonly used to quantify noise events and environmental noise. However, community response also depends on the existing ambient sound level, magnitude of sound with respect to the background noise level, duration of the sound, repetitiveness, number of events, and time of day.

**13. a) Less Than Significant.**

**Construction Noise Impacts**

Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing breweries or wineries, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power for ships. Implementation of these types of control measures may require construction activities at existing facilities. Table 2-3 presents typical noise levels associated with construction equipment.

**TABLE 2-3**

**Construction Equipment Noise Levels**

| Equipment | Typical Noise Level 50 ft from Source (dBA) |
|---|---|
| Air Compressor | 81 |
| Backhoe | 80 |
| Ballast Equalizer | 82 |
| Ballast Tamper | 83 |
| Compactor | 82 |
| Concrete Mixer | 85 |
| Concrete Pump | 82 |
| Concrete Vibrator | 76 |
| Crane, Derrick | 88 |
| Crane, Mobile | 83 |
| Dozer | 85 |
| Generator | 81 |
| Grader | 85 |
| Impact Wrench | 85 |
| Jack Hammer | 88 |
| Loader | 85 |

| | |
|---|---|
| Paver | 89 |
| Pile-driver (Impact) | 101 |
| Pile-driver (Sonic) | 96 |
| Pneumatic Tool | 85 |
| Pump | 76 |
| Rail Saw | 90 |
| Rock Drill | 98 |
| Roller | 74 |
| Saw | 76 |
| Scarifier | 83 |
| Scraper | 89 |
| Shovel | 82 |
| Spike Driver | 77 |
| Tie Cutter | 84 |
| Tie Handler | 80 |
| Tie Inserter | 85 |
| Truck | 88 |

Source: U.S. FTA, 2018.

Specific projects have not been identified so that the actual construction equipment that would be used is unknown. However, noise associated with construction activities would diminish rapidly with distance from a constructive site, generally at a rate of six decibels per doubling of distance. For example, a noise level of 86 decibels measures at 50 feet from the noise source would decrease to 80 decibels at 100 feet, and 74 decibels at 200 feet.

The City of Oakland limits construction activities to between 7:00 am and 7:00 pm Monday through Friday, except that pile driving and other extreme noise generating activities greater than 90 decibels are limited to between 8:00 am and 4:00 pm Monday through Friday. Compliance with the City's noise requirements would limit noise activities to daytime hours during weekdays and avoid construction during the more sensitive nighttime hours. Further construction activities are expected to be limited to industrial areas and would be temporary. Therefore, noise impacts associated with construction activities are expected to be less than significant.

**Operational Noise Impacts**

Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power for ships. Implementation of strategies such as replacing diesel engines, adding filtration systems to existing buildings and use of zero emission sources would not be expected to result in operational noise increases as no new noise sources would be required.

Producing alternative fuels and additional electricity could result in additional noise sources at refineries and electricity producing facilities. Also, the use of a bonnet system on ships could require the operation of additional control equipment. While these activities could result in an increase in noise sources, they are located in industrial areas where allowable noise levels generally are higher. Residential and sensitive land uses are typically located a sufficient distance from these industrial areas that significant noise impacts would not be expected to occur. The Port is in West Oakland and served by Interstate 880, which is a dominate noise source in West Oakland.

In addition, the City of Oakland requires that noise levels from any activity, property or mechanical equipment comply with performance standards of Section 17.120 of the Oakland Planning Code and Section 8.18 of the Oakland Municipal Code.[15] Under these Code provisions, the maximum allowable receiving noise recognizes varying degrees of sensitivity associated with different land uses. Section 17.120 sets forth different and more stringent maximum allowable noise levels for residential and civic uses (such as parks/open space areas than for commercial or industrial uses deemed to have lower noise sensitivity. Compliance with the City's noise standards would limit noise impacts to less than significant.

**13. b) Less Than Significant.** The proposed project is not expected to generate or expose people to excessive groundborne vibration or groundborne noise. The use of large construction equipment that would generate substantial noise or vibration (e.g., backhoes, graders, jackhammers, etc.) would be limited because the sites are already graded and developed. Further, construction activities are temporary and would occur during the daylight hours, in compliance with local noise standards and ordinances. Therefore, the proposed project is not expected to generate excessive groundborne vibration or noise.

**13. c) No Impact.** West Oakland is not located within an airport land use plan area or within two miles of a public airport, public use airport, or near a private airstrip. The closest airport, Oakland International Airport, is over 6 miles southeast of West Oakland. The proposed project would not expose people residing or working in the project area to excessive noise levels associated with airports.

# Conclusions

Based upon the above considerations, no significant noise impacts are expected to occur due to implementation of the Community Action Plan strategies and therefore, will not be further evaluated in the Draft EIR.

[15] For links to these code sections, see the immediately prior two footnotes just above.

| | Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XIV. POPULATION AND HOUSING.** Would the project: | | | | |
| a) Induce substantial unplanned population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)? | ☐ | ☐ | ☐ | ☑ |
| b) Displace a substantial number of existing people or housing units, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

The population of West Oakland grew from approximately 23,400 to 25,250 people between 1990 and 2011, an increase of 15 percent, which is faster than the overall growth rate for the City of Oakland of 11 percent. West Oakland has been a primarily African American community since the mid-20th Century. While African Americans are still the largest racial group, in recent decades the area has become more diverse with a growth in the Hispanic community. The number of households in West Oakland decreased from 8,683 to 8,431 between 1990 and 2011, in part due to the demolition and reconstruction of the Chestnut/Linden and Westwood Gardens public housing projects. The average household size in West Oakland increase between 1990 and 2011 from 2.67 to 2.90 persons per household and the percentage of households with children rose from 40 to 60 percent. In 2011, West Oakland had an estimated 10,444 housing units, of which 8,431 were occupied, leaving a 19.3 percent vacancy rate, while the vacancy rate in Oakland was 6.3 percent, substantially less than West Oakland (City of Oakland, 2014).

# Regulatory Background

Population and housing growth and resources are generally protected and regulated by the City of Oakland General Plan, which includes a Housing Element adopted in December 2010. The Housing Element includes an assessment of housing needs; a statement of the community's goals, objectives, and policies related to housing; and a five-year schedule for actions to implement the goals and objectives. Population and housing may also be influenced by the Alameda County General Plan, though to a lesser extent than by the directly governing Oakland General Plan.

# Significance Criteria

The proposed project impacts on population and housing will be considered significant if:

- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.
- The project displaces substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element

# Discussion of Impacts

**14. a) No Impact.** According to the Association of Bay Area Governments (ABAG), population in the Bay Area is currently about 7.6 million people and is expected to grow to about 9.6 million people by 2040 (ABAG, 2017). The proposed project is not anticipated to generate any significant effects, either directly or indirectly, on the Bay Area's population or population distribution. Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing breweries or wineries, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power or a bonnet system for ships.

The proposed project will require construction activities and temporary construction workers to modify existing operations and/or install air pollution control equipment at existing industrial facilities. In addition, it is not expected that the affected facilities would need to hire additional personnel to operate new air pollution control equipment at existing facilities or add filtration systems to existing buildings. It is expected that the existing labor pool would accommodate the labor requirements for the temporary construction workers, as the existing labor pool is over seven million people. As such, adopting the Community Action Plan is not expected to induce substantial population growth.

**14. b). No Impact.** Construction associated with the proposed project is expected to be limited to constructing new air pollution control equipment or facility modifications at existing facilities. All construction would take place at existing facilities. The implementation of the Community Action Plan is not expected to result in the creation of any industry/business that would affect population growth, directly or indirectly induce the construction of single- or multiple-family units or require the displacement of people or housing elsewhere in the Bay Area. Based upon these considerations, significant population and housing impacts are not expected from the implementation of the proposed project.

# Conclusion

Based upon the above considerations, no significant population and housing impacts are expected to occur due to implementation of the Community Action Plan strategies and therefore, will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XV. PUBLIC SERVICES.** Would the project: | | | | |
| a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services: | ☐ | ☐ | ☐ | ☑ |
| Fire protection? | | | | |
| Police protection? | ☐ | ☐ | ☐ | ☑ |
| Schools? | ☐ | ☐ | ☐ | ☑ |
| Parks? | ☐ | ☐ | ☐ | ☑ |
| Other public facilities? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

## Fire Protection

The Oakland Fire Department provides fire protection (prevention and suppression), and local emergency response (rescue, hazardous materials response, and first responder emergency medical services) services to West Oakland. The Alameda County Medical Services District contracts with American Medical Response Ambulance Company and Oakland Fire Department to respond to medical emergencies. In addition to firefighting and emergency medical response capabilities, the Oakland Fire Department also has a Hazardous Materials Unit that operates from Station 3 in West Oakland and responds citywide to emergencies involving hazardous materials. The Oakland Fire Department is a part of the State of California Master Mutual Aid Agreement where Oakland Fire Department provides mutual aid to other cities and communities throughout the state, and vice versa.

The Oakland Fire Department operates 25 fire stations. There are two fire stations within West Oakland.[16] Fire Station 3, located at 1445 14th Street at Mandela Parkway. Station 3 is staffed daily by eight firefighters, two of which are paramedics and the remaining

[16] City of Oakland https://www.oaklandca.gov/topics/fire-stations

emergency response technicians (EMT). Station 3 has an engine and truck for fire suppression, and houses Oakland Fire Department's primary hazardous materials incident response team. Fire Station 5 is located at 934 34th Street at San Pablo Avenue. Station 5 is staffed daily by four fire fighters (one paramedic and three EMTs) and has one engine. In addition, Station 1 and Station 15 are located just outside West Oakland at 1605 Martin Luther King Way, and at 455 27th Street, respectively. Station 1 is staffed daily with nine firefighters (two paramedics and seven EMTs) and has one engine and one truck. The Oakland Fire Department's response time goal is seven minutes, 90 percent of the time. The Oakland Fire Department's average citywide response time is seven minutes, 86 percent of the time (City of Oakland, 2014).

## Police Protection

The Oakland Police Department provides police services throughout the city. The Port of Oakland obtains City services, including police protection, through annual payments to the City. The Port also provides private security at its truck parking facility.

The Oakland Police Department is headquartered at 455 7th Street in Downtown Oakland. The Oakland Police Department also operates from the Eastmont Substation at 73rd and Bancroft Avenues.

The Oakland Police Department has approximately 660 sworn police officers, approximately 297 support staff, and 10 reserve officers. The Oakland Police Department has geographically divided the City into three command areas, 57 community policing beats and 35 patrol beats. The beats located within West Oakland are 02X, 02Y, 05X, 05Y, 06X and 07X. Neighborhood service coordinators are civilian employees who serve as a liaison between the community and the Police Department, and work with residents, businesses, schools, and other institutions to set priorities and develop strategies to improve public safety and reduce crime. Each neighborhood service coordinator handles multiple patrol beats (City of Oakland, 2014).

Police response times to calls for police services are recorded for the city as a whole; the Oakland Police Department does not track response times for individual service areas. In 2011, citywide average response times for Priority 1, 2, and 3 calls were 10.4 minutes, 22.8 minutes, and 23.5 minutes, respectively. These response times did not meet City goals (City of Oakland, 2014).

West Oakland has historically had high crime rates, both violent crimes against persons and property crimes. West Oakland had a much higher murder rate, almost four times higher than the city's and 16 times higher than the state in 2010. Rates of robbery and aggravated assault, the most common violent crimes, were twice as high in West Oakland in 2010 than in the City of Oakland, and between six and eight times higher than the state. For property crimes (burglary, larceny, vehicle theft, and arson), West Oakland had a rate in 2010 more than 20 percent higher than the city's and 1.5 times higher than the state (City of Oakland, 2014).

## Schools

The Oakland Unified School District operates the public-school system in the City of Oakland. The Oakland Unified School District administers 77 elementary schools, 19 middle schools, one junior high school, 31 high schools, and two K-12 schools. It is also responsible for three alternative schools, two special education schools, three continuation schools, three community day schools, and one opportunity schools. The District's overall enrollment peaked in 1999 at 55,000, dropped to 39,000 by 2007, and is continuing to decline. Declining enrollment is projected to continue (City of Oakland 2014).

The Oakland Unified School District divides the city into three regional zones to manage resources. West Oakland is located within Region 1. There are 22 elementary schools, seven middle schools and one K-8 school within Region 1. Oakland Unified School District has four elementary schools, two middle schools and one high school in West Oakland including the following:

- McClymonds High School at 2607 Myrtle Street has approximately 383 students in the 2018-2019 school year[17]. McClymonds is a highly valued resource in West Oakland since it is the only full-sized public high school in Region 1.

- Ralph Bunche Middle School at 1240 18th Street has approximately 124 students in the 2018-2019 school year.

- Lowell Middle School at 991 14th Street has approximately 199 students in the 2018-2019 school year and houses the West Oakland Middle School and Kipp Bridge Academy, a charter school.

- Hoover Elementary School at 890 Brockhurst Street has approximately 269 students in the 2018-2019 school year.

- Lafayette Elementary School at 1700 Market Street has approximately 83 students in the 2018-2019 school year.

- Martin Luther King, Jr. Elementary School at 960 10th Street has approximately 314 students in the 2018-2019 school year.

- Prescott Elementary School at 920 Campbell Street, now known as Preparatory Literary Academy of Cultural Excellence (PLACE) @ Prescott, has 151 students during the 2018-2019 school year.

Oakland Unified School District charter schools in West Oakland include: Oakland Charter High School (Grades 9-12) located at 345 12th Street (235 students in 2018-2019), KIPP

[17] California Department of Education, Dataquest system; Available at https://dq.cde.ca.gov/dataquest/page2.asp?level=School&subject=Enrollment&submit1=Submit

Bridge Charter Academy, a charter school (Grades 5-8) located at 991 14th Street (528 students in 2018-2019), Oakland School of the Arts (Grades 6-8) located at 530 18th Street (749 students in 2018-2019), and the American Indian Public Charter School II (Grades 6-8) located at 171 12th Street (161 students in 2018-2019).

**Parks**

The City of Oakland General Plan establishes a parkland standard of four acres per 1,000 residents (for parks that meet the active recreational needs of the community as opposed to passive recreational open space). Oakland provides 1.33 acres of local serving park acreage per 1,000 residents, which falls short of the General Plan parkland standard.

According to the City of Oakland General Plan Open Space, Conservation and Recreation (OSCAR) Element[18], West Oakland has 56.70 acres of parkland, including schoolyards and athletic fields, which equates to 2.43 acres of parkland per 1,000 residents, or 60 percent of the General Plan parkland standard. Despite this deficiency, West Oakland has more parkland than any other flatland neighborhood in Oakland.

# Regulatory Background

The Oakland City General Plan establishes goals and policies to assure adequate public services are maintained within the local jurisdiction.

# Significance Criteria

Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

# Discussion of Impacts

**15. a) No Impact.** Implementation of the Community Action Plan would not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives. The facilities affected by the proposed project are existing facilities for which public services are already required and no increase in the need for such services is expected. Further, a number of industrial facilities have existing security and fire-fighting capabilities, e.g., port facilities, and are able to respond to fire and security issues independent of public police and fire services. There will be no increase in population as a result of the implementation of the Community Action Plan and, therefore, no need for physically altered government facilities.

[18] The City of Oakland General Plan Open Space, Conservation and Recreation (OSCAR) Element is accessible at: http://www2.oaklandnet.com/government/o/PBN/OurServices/GeneralPlan/DOWD009017 .

As noted in the "Population and Housing" discussion above, the proposed project is not expected to induce population growth because the existing local labor pool (e.g., workforce) is sufficient to accommodate the expected temporary construction work force. No increase in permanent workers is expected to be required to operate the equipment that may be installed at affected facilities. Therefore, there will be no increase in local population and thus no impacts are expected to local schools or parks.

# Conclusion

Based upon the above considerations, no significant population and housing impacts are expected to occur due to implementation of the Community Action Plan strategies and therefore, will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XVI. RECREATION.** Would the project: | | | | |
| a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | ☐ | ☐ | ☐ | ☑ |
| b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment? | ☐ | ☐ | ☐ | ☑ |

## Environmental Setting

Parks and recreation services within the City of Oakland are provided by the City of Oakland Department of Parks, Recreation & Youth Development, and the East Bay Regional Park District (EBRPD). Oakland Parks and Recreation manages the City's parks and recreation centers. The EBRPD, although responsible primarily for acquiring and developing regional parks, open spaces, and regional trails throughout the East Bay, also provides open space and recreational facilities within Oakland's city limits.

Oakland Parks and Recreation parks in West Oakland include Brush Street, Bertha Port, Crescent, Cypress Freeway Memorial, DeFremery, Durant, Fitzgerald, Grove Shafter, Lowell, Marston Campbell, McClymonds, Poplar, Raimondi, South Prescott, Saint Andrews Plaza, Union Plaza, Wade Johnson, Willow Street, Wood Street Pocket Park, and 25th Street. Other nearby parks outside the area also serve West Oakland residents, including Middle Harbor Park and Portview Park in the Port of Oakland.

Oakland Parks and Recreation also operates several community recreation centers that offer sports, arts and crafts, culture arts and dance, computer labs, drama, mentoring, general learning, and afterschool activities. Recreation centers in West Oakland include DeFremery Recreation Center, West Oakland Senior Center, and Willie Keyes Community Center.

The City of Oakland General Plan establishes a parkland standard of four acres per 1,000 residents (for parks that meet the active recreational needs of the community as opposed to passive recreational open space). Oakland provides 1.33 acres of local serving park acreage per 1,000 residents, which falls short of the General Plan parkland standard.

According to the City of Oakland General Plan Open Space, Conservation and Recreation (OSCAR) Element, West Oakland has 56.70 acres of parkland, including schoolyards and athletic fields, which equates to 2.43 acres of parkland per 1,000 residents, or 60 percent of the General Plan parkland standard. Despite this deficiency, West Oakland has more parkland than any other flatland neighborhood in Oakland (City of Oakland, 2014).

The creation of the new Gateway Park is proposed at the foot of the east span of the San Francisco-Oakland Bay Bridge (Bay Bridge) in West Oakland. The project would provide safe access to the bicycle/pedestrian path on the east span of the Bay Bridge, as well as access to existing and planned segments of the regional San Francisco Bay Trail. The new park would include recreation opportunities and features to showcase the natural, maritime, industrial, and transportation history of the East Bay. The project would also provide safe, multimodal access to the shoreline and could be a unique waterfront amenity. Furthermore, it would be designed to meet mitigation commitments for the Bay Bridge East Span Seismic Safety Project, reuse of the Oakland Army Base, and demolition and reconstruction of I-880. Outside the park boundaries, the project could also include installing landscaping near I-880.[19]

Due to funding constraints and the varying timelines for the availability of different sections of land, Gateway Park likely will be developed in phases. Portions will open to the public as they are completed, with remaining segments constructed as funding allows and as land becomes available. The project could include private sector and philanthropic participation.[20]

# Regulatory Background

Recreational areas are protected and regulated by the City of Oakland's Open Space, Conservation and Recreation Element of the General Plan and through land use and zoning requirements. Some parks and recreation areas are designated and protected by state and federal regulations.

# Significance Criteria

The proposed project impacts on recreation will be considered significant if:

- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
- The project adversely affects existing recreational opportunities.

(1) [19]State Clearinghouse (https://ceqanet.opr.ca.gov/2013112003/2)

(2) [20] Metropolitan Transportation Commission (https://mtc.ca.gov/our-work/plans-projects/recreation-open-space/gateway-park)

# Discussion of Impacts

**16. a and b) No Impact.** As discussed under "Land Use" above, there are no provisions in the Community Action Plan that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments; no land use or planning requirements will be altered by the control strategies that the District would implement. Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing breweries or wineries, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power for ships. Implementation of these types of control measures would occur within existing developed facilities and would not impact recreational facilities. Further, no increase in permanent workers is expected at the affected facilities; thus, there would be no increase in population that would result in more frequent use of recreational facilities.

# Conclusion

Based upon the above considerations, no significant impacts on recreation facilities are expected to occur due to implementation of the Community Action Plan strategies and therefore, will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XVII. TRANSPORTATION.** Would the project: | | | | |
| a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? | ☐ | ☐ | ☑ | ☐ |
| b) Would the project conflict or be inconsistent with CEQA Guidelines § 15064.3 subdivision(b)? | ☐ | ☐ | ☑ | ☐ |
| c) Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)? | ☐ | ☐ | ☐ | ☑ |
| d) Result in inadequate emergency access? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

West Oakland is a major regional transportation hub for the greater Bay Area. Regional vehicular access to and within West Oakland is provided by a freeway system that includes Interstate 80, Interstate 580, Interstate 880, Interstate 980, and State Route 24. These freeways, all five of which run through West Oakland, and other key roadways in West Oakland are described below and summarized in the West Oakland Specific Plan (City of Oakland, 2014). The Port of Oakland, which is in West Oakland, is the nation's 5th and the West Coast's 3rd biggest container port.

**Interstate 80** is a major transcontinental freeway spanning between California and New Jersey. In the Bay Area, it serves San Francisco and East Bay destinations in Alameda, Contra Costa and Solano counties. Interstate 80 is connected to West Oakland by freeway ramps that terminate at the West Grand Avenue/Interstate 880 Frontage Road intersection. Interstate 80 carries approximately 242,000 vehicles daily to San Francisco.

**Interstate 580** is a major east-west freeway connecting the Bay Area and the Central Valley. From West Oakland, the freeway extends northwest to U.S. 101 to San Rafael in Marin County via a joint segment with Interstate 80 between Emeryville and Richmond. It also extends southeast to Interstate 5 in San Joaquin County south of Tracy through Bay Area cities such as San Leandro, Pleasanton, and Livermore. Access to/from the West Oakland is provided via the West Grand

Avenue/Interstate 80 ramps, West Street/San Pablo Avenue ramps, and Interstate 980. Interstate 580 carries approximately 118,000 vehicles daily in the vicinity of West Oakland.

**Interstate 880** serves west Alameda County and Santa Clara County connecting Interstate 80 in Oakland to Interstate 280 in San Jose through cities such as Hayward, Fremont, and Milpitas. In San Jose, it continues as State Route 17 south of the Interstate 280 junction. Access to/from West Oakland is provided by ramps at 5$^{th}$, 6$^{th}$, and 7$^{th}$ Streets. Interstate 880 connects to west Interstate 80 at the Bay Bridge Toll Plaza. Interchange ramps connect Interstate 880 to Union, Adeline, and Market Streets. A connection to Interstate 80 east is provided at the north end of Frontage Road. Interstate 880 carries approximately 123,000 vehicles daily west of the 7$^{th}$ Street junction.

**Interstate 980** runs between Interstate 580 and Interstate 880 to the immediate east of West Oakland. North of Interstate 580, it continues as State Route 24 to Contra Costa County via the Caldecott Tunnel. Interstate 980 carries approximately 113,000 vehicles daily just south of Interstate 580.

**State Route 24** is an eight-lane freeway that connects the East Bay area with central and east Contra Costa County. State Route 24 extends from Interstate 980 to Interstate 680 through the Caldecott tunnel and carries approximately 150,000 vehicles daily just west of the Caldecott Tunnel.

**7$^{th}$ Street** is a four-lane east-west roadway between Parkview Park to the west and Fallon Street in downtown Oakland to the east. East of Fallon Street, it continues as 8$^{th}$ Street. 7$^{th}$ Street operates in a one-way eastbound direction east of Martin Luther King Jr. Way and serves local and cross-town traffic for West Oakland traffic. It also provides freeway access to Interstate 880 south.

**West Grand Avenue** provides access to Interstate 80 to/from the West Oakland area. It spans between the Interstate 80 Junction/Maritime Street and Broadway in downtown Oakland, where it continues as Grand Avenue eastward. West Grand Avenue has two travel lanes in each direction with the exception of the segment between Mandela Parkway and market Street, which has three lanes per direction.

**Frontage Road** extends between West Grand Avenue and 7$^{th}$ Street along Interstate 880 and serves as the western boundary of West Oakland. The four-lane, north-south roadway provides access from West Oakland to/from Interstate 80 and Interstate 880.

**Mandela Parkway** spans between 3$^{rd}$ Street and Hollis Street providing access to Emeryville to the north. It has two travel lanes in each direction between 7$^{th}$ Street and Hollis Street and one lane per direction south of 7$^{th}$ Street. Between 8$^{th}$ and 32$^{nd}$ Streets, a landscaped linear park serves as a wide median island along Mandela Parkway.

**Adeline Avenue** extends from Shattuck Avenue in Berkeley south through the middle of West Oakland to continue as Middle Harbor road south of 3rd Street. In West Oakland, Adeline Avenue has two travel lanes in each direction.

**Market Street** is a north-south roadway that spans between Alcatraz Avenue in Berkeley and just south of 1st Street in the Port of Oakland. Landscaped median is provided south of 19th Street and painted median is provided along most of the roadway north of Mead Avenue (City of Oakland, 2014).

A Level of Service analysis completed at major intersections in West Oakland indicated under weekday morning and evening peak hours, all intersections currently operate at acceptable levels of service during peak hours (level of service D or better) (City of Oakland, 2014).

Transit service is provided by the Alameda-Contra Costa Transit district (AC Transit) and BART. AC Transit provides an extensive network of fixed route bus services in Alameda and Contra Costa counties. It also offers Transbay service to destinations in San Francisco, San Mateo and north Santa Clara counties. AC Transit service is comprised of 10 transit routes throughout West Oakland.

# Regulatory Background

Transportation planning is usually conducted at the state and county level. California Department of Transportation Caltrans (District 4) has jurisdiction over and constructs and maintains state highways. Caltrans District 4 serves Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, San Francisco, Santa Clara, Solano, and Sonoma counties.

The Metropolitan Transportation Commission (MTC) is the state designated metropolitan planning organization for the nine-county San Francisco Bay Area; it has authority for regional planning, distributing and administering federal and state funds for all modes of transportation, and assuring that projects are consistent with the Regional Transportation Plan.

MTC updated its Regional Transportation Plan in 2017. The Plan Bay Area 2040 forecasts transportation needs through 2040, while providing more housing and transportation choices and reducing pollution caused by transportation.

The Alameda County Transportation Commission (Alameda CTC) coordinates transportation planning efforts through Alameda County and allocates local, regional, state and federal funding for projects Alameda CTC develops a Countywide Transportation Plan, a long-range policy document that guides transportation funding decisions. The Alameda CTC also acts as the Congestion Management Agency for Alameda County which is mandated to develop a Congestion Management Program. The City of Oakland is the primary local agency for transportation in the West Oakland area. The Oakland

General Plan outlines the goals for future sustainable growth and the City of Oakland Municipal codes enforce the rules and regulations.

The Port of Oakland is governed by a Board of 7 Port Commissioners under the City of Oakland Charter.

# Significance Criteria

The proposed project impacts on transportation and traffic will be considered significant if:

- The project would conflict with a program, plan, ordinance, or policy addressing the circulation system
- The project conflicts with project conflict or be inconsistent with CEQA Guidelines § 15064.3 subdivision(b).
- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased due to geometric design features or incompatible uses.
- The project would result in inadequate emergency access.

# Discussion of Impacts

**17. a and b) Less Than Significant.** Of the strategies that the District would implement as part of the Community Action Plan, a number of them would apply to existing sources and could include replacing diesel engines, move truck related businesses to other locations, enforce truck routes, create transit, bike, pedestrian improvements, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), and provide shore power or bonnet systems for ships at or near the Port of Oakland. Implementation of strategies such as replacing diesel engines, adding filtration systems to existing buildings, the use of zero emission sources, producing alternative fuels and generating additional electricity would not be expected to result in a substantial increase in traffic. Additional trucks would be required to deliver new equipment, e.g., new diesel engines or new air pollution control equipment. This would be a one-time delivery of equipment with no increase in peak hour truck traffic. Temporary construction workers would be required to install new equipment (e.g., air pollution control equipment, filtration systems, bonnet system, etc.). However, construction activities are not expected to be extensive or require a substantial increase in workers or related traffic. Further, construction workers would be temporary, and the traffic would cease once construction activities are complete.

Following construction activities, the control strategies would not be expected to generate a substantial increase in traffic, either workers or trucks. As discussed in XIV - Population and Housing, it is not expected that the affected facilities would need to hire additional personnel to operate new air pollution control equipment at existing facilities or add filtration systems to existing buildings, so no increase in permanent worker traffic would be expected. On an operational basis, trucks may be required to deliver supplies on an occasional basis. For example, the use of a Selective Catalytic Reduction unit to control NOx emission as part as the bonnet system for control of ship emissions would require delivery of ammonia or urea on a regular basis. The frequency of truck trips would depend on the SCR system installed and the size of the ammonia storage equipment but would be expected to require 1-2 trucks per week. An increase of a few trucks per week would not result in any substantial increase in traffic in the Oakland area, and would not result in a conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

**17. c and d) No Impact.** The proposed project would not increase traffic hazards or create incompatible uses. The proposed project does not involve construction of any roadways or other transportation design features, so no changes to current roadway designs that would increase traffic hazards are expected. Since changes to the roadway system are not expected, no impacts on emergency access would be expected. Emergency access at industrial facilities affected by the proposed project is not expected to be impacted, as no modifications that effect traffic or access are expected to be required. The proposed project is not expected to increase vehicle trips or to alter the existing long-term circulation patterns, thus creating traffic hazards or impacting emergency access.

# Conclusion

Based upon the above considerations, transportation impacts may potentially occur due to the implementation of the Community Action Plan strategies, and will be further evaluated in the Draft EIR

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XVIII. TRIBAL CULTURAL RESOURCES.** | | | | |
| a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: | | | | |
| i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resourced Code section 5020.1(k), or | ☐ | ☐ | ☑ | ☐ |
| ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe? | ☐ | ☐ | ☑ | ☐ |

# Environmental Setting

The Carquinez Strait represents the entry point for the Sacramento and San Joaquin Rivers into the San Francisco Bay. Dense concentrations of Native American archaeological sites occur along the historic margins of San Francisco and San Pablo Bays. In addition, archaeological sites have also been identified in the following environmental settings in all Bay Area counties: near water sources, such as vernal pools and springs; along ridgetops and on midslope terraces; and at the base of hills and on alluvial flats. Native American archaeological sites have also been identified in the inland valleys of all Bay Area counties. Remains associated with a Native American archaeological site may include chert or obsidian flakes, projective points, mortars and pestles, and dark friable soil contain shell and bone dietary debris, heat-affected rock, or human burials (ABAG, 2017).

As discussed in Cultural Resources above, the Bay Area, including Oakland, has a rich cultural history with evidence of human activity in prehistoric times, i.e., prior to 5,000

B.C, likely due to natural resources provided by the rivers, marshes and ocean. West Oakland lies within the region occupied at the time of historic contact by the Ohlone or Costanoan group of Native Americans. Coastanon designates a family of eight languages spoken by tribal groups occupying the area from the Pacific Coast to the Diablo Range, and from San Francisco to Point Sur. Modern descendants of the Costanoan prefer to be known as Ohlone. It has been suggested that the ancestors of the Ohlone arrived in the San Francisco Bay area about 800 A.D.

There was a prehistoric Native American shell mound and Ohlone burial ground in and around the Bay Street Shopping Center at Shellmound Street, Emeryville, one mile from West Oakland. Dating from 800 B.C., this shellmound, the largest of over 425 shellmounds that surrounded San Francisco Bay, is now a California Historical Landmark, #335.[21]

The arrival of the Spanish in the San Francisco Bay Area in 1775 led to a rapid reduction in native California populations. Diseases, declining birth rates, and the effects of the mission system served to eradicate aboriginal life. Brought into the missions, the surviving Native Americans were transformed from hunters and gatherers to agricultural laborers. With abandonment of the mission system and the Mexican takeover in the 1840s, numerous ranchos were established. Today descendants of the Ohlone lie throughout the Bay Area and some are active in reviving and preserving elements of their traditional culture such as dance, basketry, and song (City of Oakland, 2014).

## Regulatory Background

The State CEQA Guidelines were amended effective January 1, 2015 to include evaluation of impacts on tribal cultural resources. Tribal cultural resources include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe (Public Resources Code §21074).

## Significance Criteria

The proposed project impacts to tribal resources will be considered significant if:

- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of tribal cultural significance to a community or ethnic or social group or a California Native American tribe.
- Unique objects with cultural value to a California Native American tribe are present that could be disturbed by construction of the proposed project.

## Discussion of Impacts

The State CEQA Guidelines were amended to include evaluation of impacts on tribal cultural resources. Tribal cultural resources include sites, features, places, cultural

[21] See https://en.wikipedia.org/wiki/Emeryville_Shellmound .

landscapes, sacred places, and objects with cultural value to a California Native American tribe (Public Resources Code § 21074). Assembly Bill (AB) 52, Native Americans: CEQA (Gatto 2014) specifies that a project that may cause a substantial adverse change to a tribal cultural resource may have a significant effect on the environment. AB 52 requires tribes interested in development projects within a traditionally and culturally affiliated geographic area to notify a lead agency of such interest and to request notification of future projects subject to CEQA prior to determining if a negative declaration, mitigated negative declaration, or environmental impact report is required for a project. The lead agency is then required to notify the tribe within 14 days of deeming a development application subject to CEQA complete to notify the requesting tribe as an invitation to consult on the project. AB 52 identifies examples of mitigation measures that will avoid or minimize impacts to a tribal cultural resource and applies to projects that have a notice of preparation or a notice of intent to adopt a negative declaration/mitigated negative declaration .

**18. a) Less than Significant.** As discussed under Cultural Resources above, the West Oakland area is located on the San Francisco Bay shoreline and near locations of former intermittent and perennial watercourses, that were historically used by Native Americans. Thus, there is the potential for the presence of unrecorded tribal cultural resources to be buried in West Oakland. Of the strategies that the District would implement, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives). Implementation of these types of control measures would not be expected to require extensive construction or grading that could impact archaeological resources. In areas where there are sensitive resources, the City of Oakland requires pre-construction surveys and the use of qualified archaeological and tribal monitors during grading operations to identify historic resources. These standard requirements, along with the fact that the control strategies in the West Oakland Community Action Plan are not expected to require extensive construction or grading activities, are expected to limit impacts on historic cultural resources to less than significant.

# Conclusion

Based upon the above considerations, no significant impacts on tribal cultural resources are expected to occur due to implementation of the Community Action Plan strategies and therefore, will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less-than-Significant Impact | No Impact |
|---|---|---|---|---|
| **XIX. UTILITIES AND SERVICE SYSTEMS.** Would the project: | | | | |
| a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects? | ☐ | ☐ | ☐ | ☑ |
| b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? | ☐ | ☐ | ☑ | ☐ |
| c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | ☐ | ☐ | ☐ | ☑ |
| d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? | ☑ | ☐ | ☐ | ☐ |
| e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste? | ☑ | ☐ | ☐ | ☐ |

# Environmental Setting

## Water Demand

The East Bay Municipal Utility District serves all of Oakland (including West Oakland) with potable water and with recycled water. East Bay Municipal Utility District uses its Water Supply Management Program 2040 (WSMP 2040) to assess water supply and demand over a 30-year planning period. The following water supply information was derived primarily from the East Bay Municipal Utility District Water Supply Management Program 2040.

The East Bay Municipal Utility District (EBMUD) obtains approximately 90 percent of its water supply from the Mokelumne River watershed, and transports it through pipe aqueducts primarily to temporary storage reservoirs in the East Bay Hills. The East Bay Municipal Utility District generally has water rights and facilities to divert up to a daily maximum of 325 million gallons per day (mgd) from the Mokelumne River. However, this allocation may be constrained by the rights of other users of Mokelumne River water, East Bay Municipal Utility District's ability to store water, and the amount of Mokelumne River runoff. The remaining 10 percent of East Bay Municipal Utility District's water supply originates as runoff from protected watershed lands in the East Bay Hills, and is approximately 15 to 25 mgd during normal years, but is reduced to near zero during drought conditions (City of Oakland, 2014).

Briones, San Pablo and Upper San Leandro reservoirs supply water to East Bay Municipal Utility District throughout the year; Chabot and Lafayette reservoirs serve mostly as emergency sources of supply. Seismic upgrades have been performed throughout East Bay Municipal Utility District's system, most notably at the Claremont Water Tunnel through which nearly all EBMUD's potable water travels from the east to west of the Hills, and at San Pablo Dam, the largest and most vital of that District's local water storage reservoirs.

According to the Water Supply Management Program 2040, the 2010 average daily water demand within the East Bay Municipal Utility District service area was estimated to be 251 mgd. Adjusting that number to account for conservation and recycled water program savings results in an adjusted 2010 demand estimate of approximately 216 mgd (City of Oakland, 2014).

The Water Supply Management Program 2040 includes projections of potable water demands through 2040. These future year water demands were calculated using existing and future demands for various land use categories and future changes in land use as described in the respective general plans of communities within the East Bay Municipal Utility District service area. Based on information for residential and non-residential land use categories, East Bay Municipal Utility District forecasts that unadjusted water demands would be 304 mgd by 2030, but with conservation measures and recycled water use the adjusted water demand would be approximately 229 mgd. By 2040, unadjusted water demand is projected to be 312 mgd and adjusted demand would be 230 mgd (City of Oakland, 2014).

Recycled water has been used by East Bay Municipal Utility District since the 1960s. This water is drawn from wastewater treatment plants or untreated water reservoirs and used for landscape irrigation, and industrial and commercial applications. East Bay Municipal Utility District projects use of 14 mgd of recycled water by 2020 and 20 mgd by 2040. The potential supply of East Bay Municipal Utility District recycled water from its Main Wastewater Treatment Plant in Oakland far exceeds this projected demand. Recycled water therefore provides a stable source of non-potable water not subject to rationing for landscape irrigation and other potential uses.

## Wastewater Service

Wastewater collection service within West Oakland is provided by the City of Oakland's sewage collection system of sewer mains fed by private sewer laterals. The City of Oakland's wastewater collection mains connect to the East Bay Municipal Utility District's wastewater treatment system, through EBMUD's interceptors which transport sewage to EBMUD's Main Wastewater Treatment Plant (MWWTP), located at 2020 Wake Avenue in West Oakland under and immediately southwest of the I-80/I-880/I-580 interchange, better known as the MacArthur Maze. (City of Oakland, 2014).

The City of Oakland owns, operates, and maintains a local sanitary sewer collection system covering approximately 48 square miles, and includes over 930 miles of sanitary sewer lines, 31,000 structures and seven pump stations, serving a population of about 400,000 people throughout the City. Many of the lines pre-date 1938 (City of Oakland, 2014).

The average annual daily flow into the Main Wastewater Treatment Plant is approximately 80 million gallons per day (mgd). The MWWTP has an average dry weather flow design capacity of 120 mgd. During peak wet weather events, the Main Wastewater Treatment Plant has a primary treatment capacity of up to 320 mgd and a secondary treatment capacity of 168 mgd. Maximum flow can exceed capacity during storms due to infiltration of stormwater into sanitary sewage pipes. The MWWTP can provide capacity for a short-term maximum of 415 mgd through operation of an on-site wet weather storage basin, as well as two wet weather primary treatment facilities in Oakland (the San Antonio Creek wet weather treatment facility and the Oakland wet weather treatment facility). East Bay Municipal Utility District also operates a water recycling facility at the Main Wastewater Treatment Plant that treats wastewater for non-potable uses. There are no current plans to expand wastewater treatment capacity (City of Oakland, 2014).

Treated effluent is discharged from the Main Wastewater Treatment Plant to San Francisco Bay just south of the Bay Bridge approximately one mile from the West Oakland shoreline via a 102-inch diameter deep water outfall pipeline. East Bay Municipal Utility District discharges in compliance with conditions of its permits granted by the San Francisco Bay Regional Water Quality Control Board under the federal National Pollutant Discharge Elimination System (NPDES) program (City of Oakland, 2014).

## Stormwater Drainage

See Section X – Hydrology and Water Quality, as well as the Wastewater Service section just above, for descriptions of the storm water in the West Oakland area.

**Solid Waste**

Solid waste and yard trimmings within Oakland are collected by Waste Management of Alameda County. These materials are taken to the Davis Street Resource Recovery Complex and Transfer Station in San Leandro. The Davis Street Transfer Station, which has a maximum allowable capacity of 5,600 tons of waste per day, received an average of 3,028 tons per day in 2003. This facility can process up to 320 tons per day of concrete, asphalt, dirt, bricks, wood and metal (City of Oakland, 2014).

In 2009, Oakland disposed of approximately 306,839 tons of solid waste, 264,636 tons of which went to the Altamont Landfill. Most of the remaining solid waste is sent to one of four landfills: Forward Landfill in San Joaquin County; the Keller Canyon Landfill in Contra Costa County, Potrero Hills Landfill in Solano County, and the Vasco Road Landfill in Alameda County (City of Oakland, 2014).

The Altamont Landfill has a permitted maximum daily disposal of 11,500 tons per day. The landfill comprises approximately 2,170 acres (480 acres permitted landfill area) and has a permitted maximum disposal capacity of 11,150 tons per day[22]. The Altamont Landfill is projected to have sufficient capacity to operate until at least 2031, and potential to operate through 2071, depending on waste flows and waste reduction measures (City of Oakland, 2014).

# Regulatory Background

The Oakland City General Plan establishes goals and policies to assure adequate utilities and service systems are maintained within the local jurisdiction.

# Significance Criteria

The proposed project impacts on utilities/service systems will be considered significant if:

- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- An increase in demand for utilities impacts the current capacities of the electric utilities.
- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use a substantial amount of potable water.
- The project increases demand for water by more than 263,000 gallons per day.
- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

# Discussion of Impacts

[22] Calrecycle https://www2.calrecycle.ca.gov/swfacilities/Directory/01-AA-0009/

**19. a) No Impact.** As discussed in Section X – Hydrology and Water Quality above, the control strategies that the District would implement as part of the Community Action Plan would not be expected to require the use of additional water, result in the discharge of wastewater, or result in impacts to water quality.

As discussed in Energy above, the potential increase in energy consumption associated with the Community Action Plan will be evaluated in the EIR.

**19. b) Less than Significant.** Of the strategies that the District would implement as part of the Community Action Plan, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives), provide shore power or bonnet systems for ships, and biofilters. Implementation of these strategies would not be expected to require the use of additional water. One of the strategies that the District would implement as part of the Community Action Plan would be the installation of vegetative borders to act as biofilters between Interstate 880 and the Prescott neighborhood in West Oakland. Installation of vegetation would likely require the use of additional water to allow for the growth of health landscape vegetation, especially when vegetation is first planted. However, the use of native vegetation would assure that vegetation that is planted would use minimal water. Nonetheless, the increase in water would be expected to be 50-150 gallons per week, which is well below the CEQA significance threshold for water use. Therefore, the project is not expected to result in significant impacts to water supplies.

**19. c) No Impact.** As discussed in X – Hydrology and Water above, the control strategies that the District would implement as part of the Community Action Plan would not be expected to require the use of additional water or result in the discharge of wastewater. No significant impacts on wastewater treatment facilities are expected and the proposed project would not require construction of additional wastewater treatment facilities.

**19. d and e) Potentially Significant.** Of the strategies that the District would implement as part of the Community Action Plan, a number of them could result in the generation of solid waste. Replacing diesel engines with new engines and encourage the use of zero emissions mobile sources (trucks, buses, and locomotives) could generate additional waste as old equipment would be taken out of service. Some of the equipment would likely be used in other portions of the state or in other states or countries, but equipment would likely be disposed of as waste. Because of metal content of vehicles and other mobile sources, they may also be recycled. Other control strategies that may generate waste would include emission control systems that use filtration (filtration systems on buildings) or other types of control equipment that use catalysts (e.g., SCR catalysts). Because of the limited landfill space and the potential increase in solid waste disposal, the impacts on solid waste disposal will be addressed in the EIR.

# Conclusion

Implementation of the Community Action Plan is expected to reduce diesel particulate matter, fine particulate matter, and toxic air contaminants, and criteria pollutant emissions from facilities in West Oakland. However, implementation of several of the control strategies could result in an increase in solid waste. Therefore, potential adverse secondary impacts associated with solid waste, which could result from implementing certain control strategies, will be evaluated in the Draft EIR. As discussed in Section VI -- Energy above, the potential increase in energy consumption associated with the Community Action Plan will be evaluated in the EIR. No significant impacts were identified on water conveyance facilities, wastewater treatment facilities, or storm water drainage facility and these topics will not be addressed further in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XX. WILDFIRE.** If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: | | | | |
| a) Substantially impair an adopted emergency response plan or emergency evaluation plan? | ☐ | ☐ | ☐ | ☑ |
| b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread or a wildfire? | ☐ | ☐ | ☐ | ☑ |
| c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? | ☐ | ☐ | ☐ | ☑ |
| d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? | ☐ | ☐ | ☐ | ☑ |

# Environmental Setting

Wildland fires in Oakland are a concern in the Oakland Hills where wildlands abut residential development and steep terrain slows emergency vehicle access. The City has delineated a Wildfire Prevention Assessment District in the Oakland General Plan Safety Element. West Oakland is not located within an area at risk of wildland fires as no wildlands are located within the area, and it is not within the City's Wildfire Prevention Assessment District.

The California Department of Forestry and Fire Protection (CalFire) maps areas to identify significant fire hazard based on fuels, terrain, weather, and other relevant factors. These zones, referred to as a Fire Hazard Severity Zones, then determine the requirements for special building codes designed to reduce the ignition potential of buildings. West Oakland is not located within a Very High Fire Hazard Severity Zone.

# Regulatory Background

The State of California has passed numerous laws to address wildlife and structural fires. Wildfire-prevention laws regulate activities in areas deemed by the state to be hazardous fire areas; the maintenance of buildings and other structures in areas covered by forest, brush, or other flammable materials; and the setting and burning of fires on open land.

Title 24 of the California Code of Regulations (CCR)[23] is the California Building Standards Code. Title 24 sets forth the fire, life-safety and other building-related regulations applicable to any structure fit for occupancy statewide for which a building permit is sought. CCR, Title 24, Part 9 is the California Fire Code that addresses automatic sprinkler systems, fire-alarm systems, access by fire-fighting equipment, fire hydrants, explosion-hazards safety, hazardous materials storage and use, protection for first responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings.

The City of Oakland Safety Element of the General Plans establishes goals and policies to assure adequate fire services are maintained within the City. The Oakland Fire Department is the agency with primary responsibility for preventing and suppressing fires in Oakland (City of Oakland, 2012). The City has also established building and fire prevention codes which place regulations on the separation of buildings, ventilation criteria, roof materials, landscaping, building access, and the installation of automatic fire-extinguishing systems in public buildings.

# Significance Criteria

The impacts to wildfires will be considered significant if:

The project results in new structures located within or adjacent to lands classified as very high fire hazard severity zones

The project adversely effects emergency response or emergency evacuation plans.

# Discussion of Impacts

**20. a), b), c), and d) No Impact.** The California Department of Forestry and Fire Protection (CalFIRE) maps areas of significant fire hazard based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones, determine the requirements for special building codes designed to reduce the potential

[23] All state regulations in the CCR are accessible at https://govt.westlaw.com/calregs/Search/Index .

impacts of wildland fires on urban structures. West Oakland is located within an existing urbanized area that is surrounded by development. No wildlands are located in the immediate or surrounding area and the site is not within or near lands classified as very high fire hazard severity zones. The area is outside Oakland's Wildfire Prevention Assessment District boundary, which indicates that it is likely not subject to significant wildfire hazard. For these reasons, implementation of the Community Action Plan would not expose people or structures to wild fires, would not impair and adopted emergency response plan or emergency evacuation plan for wild fires, would not expose people to pollutants from a wildfire or the uncontrolled spread of a wildfire and would not expose people or structures to flooding or landslides as a result of post-fire slope or drainage changes. Therefore, no potential significant adverse impacts resulting from wildfires are expected from the proposed project.

# Conclusion

Based upon the above considerations, no significant impacts due to wildfires are expected to occur due to implementation of the Community Action Plan strategies and therefore, will not be further evaluated in the Draft EIR.

| | Potentially Significant Impact | Less Than Significant Impact With Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|---|---|---|---|
| **XXI. MANDATORY FINDINGS OF SIGNIFICANCE.** | | | | |
| a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? | ☐ | ☑ | ☐ | ☐ |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects) | ☐ | ☑ | ☐ | ☐ |
| c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☑ | ☐ | ☐ |

## 21. MANDATORY FINDINGS OF SIGNIFICANCE

**21. a) Less than Significant With Mitigations.** Physical modifications associated with implementation of the West Oakland AB 617 Community Action Plan would be limited to changes within an urbanized area that lacks habitat. According to the Open Space, Conservation and Recreation (OSCAR) Element of the City of Oakland General Plan, there are no candidate species, sensitive species, or special status species known to occur within the West Oakland area. The proposed project may require the construction of new equipment or development in the West Oakland area, but those physical changes would occur in already urbanized and developed areas, and therefore no significant impacts on biological resources would be expected.

There are a number of historic properties in the West Oakland area, with 32 designated historic properties and properties rated of the highest importance. The majority of Local Register properties within West Oakland are located within residential neighborhoods. Of the strategies that the District would implement under the Community Action Plan, a number of them would apply to existing sources and could include replacing diesel engines, controlling emissions from existing facilities, and adding filtration systems to existing buildings. Other strategies would encourage the use of alternative fuels and zero emissions mobile sources (trucks, buses, locomotives). Implementation of these types of control measures would not be expected to require the removal of any existing buildings or impact historic resources. In areas where there are sensitive historic resources, the City of Oakland requires pre-construction surveys and the use of qualified archaeological monitors during grading operations to identify historic resources. These standard requirements, along with the fact that the control strategies in the West Oakland Community Action Plan are not expected to impact or require removal of any historic structures, means that the Plan's impacts on historic cultural resources will be less than significant.

**21. b) and c) Less Than Significant With Mitigations.** Implementation of the Community Action Plan is expected to reduce diesel particulate matter, fine particulate matter, and toxic air contaminants, and criteria pollutant emissions from facilities in West Oakland. However, construction and operation of new air pollution control systems have the potential to increase emissions of other criteria pollutants and GHGs, generate localized impacts, increase energy use, increase hazards, and solid waste impacts. CEQA Guidelines indicate that cumulative impacts of a project shall be discussed when the project's incremental effect is cumulatively considerable, as defined in CEQA Guidelines §15065(a)(3). Cumulatively considerable impacts are defined as impacts that exceed project-specific significance thresholds. Therefore, the potential for cumulative air quality and GHG impacts will be evaluated in the Draft EIR.

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# ATTACHMENT

## PUBLIC COMMENTS RECEIVED ON NOPIS

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**DEPARTMENT OF TRANSPORTATION**
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P.O. BOX 23660
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*Making Conservation*
*a California Way of Life!*

June 10, 2019

SCH: 2019059062
04-ALA-2019-00428
GTS ID 15560

Ada Marquez, Principle Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

**AB 617 West Oakland Community Action Plan – Notice of Preparation (NOP)**

Dear Ada Marquez:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above-referenced project. In tandem with the Metropolitan Transportation Commission's (MTC) Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), Caltrans mission signals a modernization of our approach to evaluating and mitigating impacts to the State Transportation Network (STN). Caltrans' *Strategic Management Plan 2015-2020* aims to reduce Vehicle Miles Travelled (VMT) by tripling bicycle and doubling both pedestrian and transit travel by 2020. Our comments are based on the NOP.

***Project Understanding***
The AB 617 Plan identifies 80 potential control measures and strategies to reduce air pollution from a variety of stationary and mobile sources located in West Oakland, including the Port of Oakland. The purpose of the NOP is to seek comments about the scope and content of the environmental impact report that will be prepared for the Plan. Is Caltrans expected to be one of the governmental agencies with some responsibility in implementing the community action plan? We are not listed in the list of agencies referred to in the Initial Study. Some of the action items referred to (Action 18) infers that we will be in some way.

***Land Use***
The air district will study the potential air pollution and health outcomes of allowing truck traffic on I-580 and designating a truck lane on I-880. It states that allowing truck traffic on I-580 would require legislative approval and re-engineering. What project is this in reference to? There are currently no proposals by Caltrans to allow trucks on portions of I-580 where they are currently prohibited. There are no designated "truck lanes" on interstates. Is this in reference to the freight corridor project at the Macarthur Maze? If so, the air district should consult with Caltrans for clarity on the project description.

The proposal states that an urban canopy forest would identify locations that trees can be added and maintained - such as in Caltrans right-of-way. However, Caltrans is not listed as an agency that would be in charge of this and only the City of Oakland is listed. Caltrans should be consulted.

Within the West Oakland action area, Caltrans owns and operates detention basins for runoff from the San Francisco Oakland Bay Bridge that may need to be referred to here if any of the proposed action items in this document could potentially impact the basins or their ability to function as designed.

***Lead Agency***
As the Lead Agency, Bay Area Air Quality Management District is responsible for all project mitigation, including any needed improvements to the STN. The project's financing, scheduling, implementation responsibilities and monitoring should be fully discussed for all proposed mitigation measures, prior to the submittal of an encroachment permit. Potential mitigation measures that include the requirements of other agencies—such as Caltrans—are fully enforceable through permit conditions, agreements, or other legally-binding instruments under the control of the Lead Agency.

***Encroachment Permit***
Please be advised that any work or traffic control that encroaches onto the State ROW requires an encroachment permit that is issued by Caltrans. To obtain an encroachment permit, a completed encroachment permit application, environmental documentation, and six (6) sets of plans clearly indicating the State ROW, and six (6) copies of signed and stamped traffic control plans must be submitted to: Office of Encroachment Permits, California DOT, District 4, P.O. Box 23660, Oakland, CA 94623-0660. To download the permit application and obtain more information, visit http://www.dot.ca.gov/hq/traffops/developserv/permits/.

Should you have any questions regarding this letter, please contact Michael McHenry at (510) 286-5562 or Michael.mchenry@dot.ca.gov.

Sincerely,

WAHIDA RASHID
Acting District Branch Chief
Local Development - Intergovernmental Review

c. State Clearinghouse

CITY OF OAKLAND

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**Sent via e-mail and US Mail**

June 13, 2019

Ada E. Marquez
Principal Environmental Planner, BAAQMD
375 Beale Street, Suite 600
San Francisco, CA 94105
amarquez@baaqmd.gov

**Subject:** Comments regarding the scope of the environmental impact report that will be prepared for the AB 617 West Oakland Community Action Plan

Dear Ms. Marquez,

Thank you for the opportunity to review and comment on the scope of the environmental impact report (EIR) that will be prepared for the AB 617 West Oakland Community Action Plan (Plan). As stated in the Notice of Preparation issued by the Bay Area Air Quality Management District (BAAQMD or Air District), BAAQMD is the lead agency undertaking both the Plan and the preparation of a program-level EIR for that Plan. The City of Oakland (City) is a not responsible agency but none-the-less respectfully submits the following comments on the scope of the EIR.

**Project Description**

The City supports the goal of the West Oakland Community Action Plan as stated on page 8 of the CEQA Initial Study Project Description, which is "to reduce emissions from air pollution sources within and adjacent to West Oakland...". As you know, the City actively works to reduce air pollution and has numerous policies, plans and requirements for reducing emissions including very high standards for clean construction equipment used to build projects within Oakland[1], operational requirements for projects located at the Gateway Development Area[2] of the former Oakland Army Base, and high standards for reducing greenhouse gases in our Energy and Climate Action Plan[3].

Page 9 of the Project Description states that the Plan will include strategies to achieve the goal of reducing emissions and that such strategies will include land use strategies, as well as strategies for stationary and mobile sources of pollution. Section 1.5.4 of the Project Description, page 9, states that the "land use strategies are aimed at modifying land uses to limit exposure to emissions." The Oakland City Council[4] has the ultimate authority over land use policies within the City of Oakland and while City staff supports the goals of the Plan, the City Council will direct the City's actions related to land-use strategies to address any issues contained in the Plan.

---

[1] See Air Quality Conditions of Approval (adopted by the City Council November 3, 2008, revised Nov. 5, 2018).
[2] See Air Quality Plan for Operations of the PODS Facility and the Air Quality Plan for Operations of the ConGlobal Facility.
[3] See Energy and Climate Action Plan, December 4, 2012.
[4] Or the Planning Commission, Director of Planning and Building, or designee.

**Scope of the draft EIR**

Section 1.6.4 of the Project Description titled "Actions by Other Agencies" states that the Plan

> "includes strategies proposed to be implemented primarily or exclusively by other agencies such as the City of Oakland and the California Air Resources Board. A large portion of the strategies would be implemented by agencies other than the Air District."
>
> "Further, the Air District's approval of the strategies will not authorize or commit those agencies to any action. Accordingly, Chapter 2 of the CEQA Checklist does not address implementation actions by other agencies".

The City agrees that the scope of the environmental analysis of the Plan should focus only on the strategies that will be implemented by the Air District. However, the Project Description is unclear in this regard because Sections 1.5.2, 1.5.3, 1.5.4 and 1.5.5 of Project Description summarize strategies that would be implemented primarily or exclusively by other agencies. Similarly, Attachment A of the Project Description contains all the Draft Strategies/Actions, not solely those that will be analyzed in the CEQA Checklist and in the EIR. The City requests that the Project Description and Attachment A be modified to clearly describe the Project that is being analyzed in the CEQA documents.

Additionally, the fifth paragraph in Section 1.6.1 of the Project Description states that Action 18[5] (studying allowing truck traffic on I-580 and designating a truck lane on I-880) which is an action/strategy attributed to the Air District for implementation, will not be analyzed in the EIR. We do not agree with that conclusion. Analysis of the outcomes of this action/strategy will be needed in order to evaluate the action's/strategy's efficacy. Therefore, we believe it should be analyzed in both the transportation and air quality sections in the EIR.

Thank you for the opportunity to comment on the scope of the EIR. If you have any questions, please contact Patricia McGowan at (510)238-3588 or pmcgowan@oaklandca.gov.

Sincerely,

Ed Manasse, Interim Deputy Director
Environmental Review Officer

cc: William Gilchrist
Betsy Lake
Jordan Flanders
John Monetta
Patricia McGowan
Richard Sinkoff, Port of Oakland
Henry Hilken, BAAQMD

---

[5] Note that Action 18 appears to reference Action 3 of Attachment A, which reads "The Air District will study the potential air pollution and health outcomes of allowing truck traffic on I-580 and designation of a truck lane on I-880. Allowing truck traffic on I-580 would require legislative approval, re-engineering and re-construction."

STATE OF CALIFORNIA GAVIN NEWSOM, *Governor*

**CALIFORNIA STATE LANDS COMMISSION**
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*Established in 1938*

June 14, 2019

File Ref: SCH #2019059062

Ada E. Márquez
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

*VIA REGULAR & ELECTRONIC MAIL (amarquez@baaqmd.gov)*

**Subject: Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the AB 617 West Oakland Community Action Plan, Alameda County**

Dear Ms. Márquez:

The California State Lands Commission staff has reviewed the NOP for an EIR for the AB 617 West Oakland Community Action Plan (Plan). The Bay Area Air Quality Management District (Air District), as the lead agency pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), is preparing the Draft EIR for the Plan under the requirements of Assembly Bill (AB) 617 (C. Garcia 2017). The Commission is a trustee agency for projects that could directly or indirectly affect sovereign land and their accompanying Public Trust resources or uses. Additionally, if the project involves work on sovereign land, the Commission will act as a responsible agency. Commission staff requests that Air District consult with us on preparation of the Draft EIR as required by CEQA section 21153, subdivision (a), and the State CEQA Guidelines section 15086, subdivisions (a)(1) and (a)(2).

## Commission Jurisdiction, Public Trust Lands, and Regulatory Authority

The Commission has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The Commission also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6009, subd. (c); 6009.1; 6301; 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust Doctrine.

A portion of the Plan encompasses the Port of Oakland, consisting of sovereign tide and submerged lands legislatively granted to the City. Beginning in 1852 and through a series of legislative grants from the state, the City was granted, in trust, certain sovereign tide and submerged lands located within its boundaries. Through the City's Charter, portions of these

Public Trust lands are within the Port of Oakland and are managed by the City acting by and through its Board of Port Commissioners.

**Plan Description**

The Air District proposes to implement the West Oakland Community Action Plan in response to the adoption of Assembly Bill 617. The Air District intends to work cooperatively with pollution-laden communities in West Oakland to implement identified action strategies that will maximize emission reductions and reduce disproportionate health risks from toxic air contaminates and particulate matter. The Air District aims to meet its objectives and needs as follows:

- Research, explore, and when possible adopt mandatory regulations that require stationary facilities to decrease any harmful emissions they produce.
- Use the Air District's grants and incentives programs to carry out projects that support the Plan's objectives to reduce air pollution and protect the public's health.
- Promote and advocate for policy development, best practices, community outreach, and legislation that is committed to healthy air quality and public health.

**General Comments**

The Commission staff would like to express enthusiastic support and a mutual commitment to the efforts put forth in the West Oakland Community Action Plan, recognizing that many of the goals the Plan has set forth closely align with the objectives the Commission established in its 2019 Environmental Justice Policy https://www.slc.ca.gov/wp-content/uploads/2018/11/EJPolicy.pdf (page 4). Commission staff encourages the actions within the Plan that will:

- "Work to reduce and mitigate adverse impacts on vulnerable communities including climate change; sea-level rise; displacement; poor air, water, and soil quality; lost economic opportunities; and inadequate access to open space and Public Trust lands and resources."
- "Support efforts by ports and others to minimize and reduce environmental and health impacts and maximize environmental and economic benefits to vulnerable communities from industrial activities within the port."
- "Leverage partnerships with public agencies, non-governmental organizations, ports, and Native Nations to advance environmental justice and achieve better outcomes for impacted communities."

**Environmental Review**

Commission staff requests that the Air District consider the following comments when preparing the Draft EIR, to ensure that impacts to State sovereign land are adequately analyzed for the Plan.

Environmental Justice

1. Environmental Justice: Commission staff recommends adding "Environmental Justice" to the Environmental Factors Potentially Affected Checklist (Initial Study page 36). This

dedicated section with environmental justice analysis (even if there are only positive outcomes from this Plan) would be beneficial for the local disadvantaged communities to understand how this Plan is going to distribute benefits and burdens. The Commission staff recommends including the following in the environmental justice analysis in the Draft EIR:

   a. What disadvantaged communities were reached out to in the Plan area?
   b. When were the outreach efforts initiated? When were the meetings held? How were the locals invited to those discussions?
   c. What were the outcomes that were carried into the Plan because of the outreach to the local communities?

2. Tools for Analyzing Environmental Impacts: The Commission staff recommends the environmental justice analysis section be based on the most updated tools such (but not limited to) CalEnviroScreen at https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30.
3. Consult with Local Disadvantaged and Marginalized Communities: Please make sure the local disadvantaged communities are consulted with throughout the process of carrying out this Plan, so the root causes of environmental injustices are addressed throughout this Plan to facilitate a meaningful outcome for the local communities. Recommended actions to be taken to achieve this goal are as follows:
   a. It is crucial that the local disadvantaged communities are consulted with as the Plan is being designed. Commission staff highly recommends reaching out to the surrounding communities through local community organizations. Such organizations will be most familiar with what the communities' needs are, what concerns exist, and what solutions would remove the root causes of inequities in the communities. One of the local groups with members and partners in the area is the California Environmental Justice Alliance at https://caleja.org/about-us/members/.
   b. Please incorporate the local disadvantaged communities' feedback into the Plan's design to meaningfully balance out benefits and burdens of the Plan.
   c. If benefits need to be distributed to the local disadvantaged (planting trees for example), then the local community organizations should be the primary point of contact forthe community and not the Port in order to maximize the benefits that community can receive from this Plan.
4. Climate Change: Commission staff recommends the Draft EIR analyze climate change and sea level rise impacts to the Plan since it is an important component of environmental justice.

Public Use of the Resources

5. Public Trust: Since portion of the Plan includes the Port of Oakland, please include an analysis in the Draft EIR that explains how the Port of Oakland would be responsible for managing its public trust lands and resources consistent with the proposed Plan. https://www.slc.ca.gov/Meeting_Summaries/2008_Documents/10-16-08/Complete_Items/R60.pdf.

6. Recreation: The analysis on the Initial Study page 107 says "no impact" to both of those questions in the Recreation Section. However, there can be possible impacts even if the end goal is a net positive outcome for the disadvantaged communities. Please explain how recreation along the waterfront near residential areas could be impacted or enhanced through this Plan. Can more trails or parks be added to the bayfront side of the Plan that can be available to the local communities?
7. Transportation: The analysis on the Initial Study page 110 should explain how transportation to the local waterfront sites be enhanced for these disadvantaged communities through this process to bring more benefits to the already disadvantaged communities.

Tribal Cultural Resources

8. The Commission staff recommends the following analysis be included on Initial Study page 115:
   a. Please analyze this section by consulting with the local Tribes in the area, and document that analysis and outcomes in the EIR.
   b. Please document concerns and solutions outlined in the "Beyond Recognition" documentary (http://www.beyondrecognitionfilm.com/) to make sure the proposed Plan is not violating recommendations and suggestions in this documentary.

Thank you for the opportunity to comment on the NOP for the Plan. As a trustee and responsible agency, Commission staff requests that you consult with us on this Plan and keep us advised of changes to the Plan Description and all other important developments. Please send additional information on the Plan to the Commission staff listed below as the EIR is being prepared.

Please refer questions concerning environmental review to Laura Miller, Management Services Technician, at (916) 574-1911 or laura.miller@slc.ca.gov. For questions concerning Commission jurisdiction and granted lands, please contact Reid Boggiano, Public Land Management Specialist, at (916) 574-0450 or reid.boggiano@slc.ca.gov.

Sincerely,

Eric Gillies

Eric Gillies, Acting Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
R. Boggiano, Commission
L. Miller, Commission

EAST BAY
MUNICIPAL UTILITY DISTRICT

ALEXANDER R. COATE
GENERAL MANAGER

June 14, 2019

Ms. Ada E. Marquez
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Re: Notice of Preparation for the Assembly Bill 617 West Oakland Community Action Plan – Draft Environmental Impact Report

Dear Ms. Marquez:

The East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation (NOP) for the West Oakland Community Action Plan (CAP) Draft Environmental Impact Report (EIR). The CAP project area (Project Area) is located in the West Oakland neighborhood of Oakland, California, as defined by the California Air Resources Board (CARB) in compliance with Assembly Bill (AB) 617.

EBMUD provides critical water and wastewater services to protect public health and the health of the San Francisco Bay. EBMUD's water service area includes 1.4 million customers in Alameda and Contra Costa Counties and its wastewater service area includes 685,000 customers. Both service areas include the Project Area. EBMUD operates one of its maintenance centers and its Main Wastewater Treatment Plant (MWWTP), including portions of its interceptor system, within the Project Area. Air emissions from the MWWTP are regulated by the Bay Area Air Quality Management District (Air District).

**BACKGROUND**

CARB developed a Community Air Protection Program to implement AB 617. West Oakland is one of ten communities selected by CARB to participate in the program and the West Oakland Steering Committee (WOSC) was formed by the Air District to implement it. EBMUD is a member of the WOSC and appreciates the opportunity to work collaboratively with the Air District and the WOSC on this important initiative.

The excellent data set for air pollutants in the Project Area developed by the West Oakland Environmental Indicators Project have allowed the WOSC to focus on the development of emission reduction programs. Per the Community Air Protection Program, these emissions reduction programs *"must include new actions (e.g., regulations, enforcement, incentives, enforceable agreements) that go beyond existing efforts to further reduce air pollutant disparities."*

375 ELEVENTH STREET . OAKLAND . CA 94607-4240 . (510) 287-0101

EBMUD has reviewed the Initial Study for the CAP and respectfully submits the following comments.

## COMMENTS

Comment 1: The EIR for the CAP should clearly state that the EIR is for Draft Strategies listed in the CAP that are under the Air District's authority.

Since the CAP includes numerous Draft Strategies that are under the authority of other agencies, such as the City of Oakland, CARB, the Port of Oakland, Alameda County Public Health Department and others, it is EBMUD's understanding and expectation that, in the event those agencies consider taking action to implement those Draft Strategies, separate environmental reviews would be undertaken by the agencies directly responsible for implementing those Draft Strategies. EBMUD will provide any comments on such measures as part of those implementing agencies' environmental review. EBMUD recommends that the EIR that will be prepared by the Air District inform the public that the scope of its environmental analysis is limited to only those Draft Strategies which the Air Board has the authority to implement.

Comment 2: More detailed information is needed on some of the Draft Strategies to evaluate potential environmental impacts.

The following comments relate to Draft Strategies under the purview of the Air Board where more detailed information is recommended:

- *Draft Strategy #24: The Air District works with agency and local partners to improve referral and follow-up on nuisance and odor complaints by 2021. This work includes updates to complaint processes, enforcement procedures and coordination with other public agencies regarding odors and open burning complaints.*

  Comment: More information is needed on the scope of the Air Board's current processes and possible improvements to determine if the improvements developed under this Draft Strategy may result in unintended environmental impacts from changes in treatment processes that may be necessary to implement the recommended improvements.

  In addition, EBMUD has a longstanding, robust process that allows members of the community to speak directly with the wastewater shift supervisor regarding odor issues. The wastewater shift supervisor investigates the report to determine if the odor is from the MWWTP, and if it is, he/she assesses if it is possible to reduce or eliminate the odor via increased chemical dosing or other means, thereby providing timely mitigation for the community.

- *Draft Strategy #66: The Air District proposes new regulations to reduce emissions from waste water treatment plants and anaerobic digestion facilities, such as a regulation to reduce emissions of methane, reactive organic gases and oxides of nitrogen by 2019.*

  Comment: It is unclear how this strategy will affect the work EBMUD is currently engaged in with Air District staff and other regional wastewater treatment plant partners to evaluate emissions reductions associated with the anaerobic digestion processes. EBMUD appreciates this partnership opportunity and looks forward to implementing programs to support essential operations and comply with practical and feasible regulations that protect public health and the environment. However, without more information about the proposed Air District regulations referenced in this draft control strategy, it is not possible to provide input on their potential environmental impacts.

- *Draft Strategy #67: The Air District proposes a regulation to reduce emissions of reactive organic gases and other toxic compounds from organic liquid storage tanks by 2020.*

  Please clarify what is meant by "organic liquid storage tanks." EBMUD is not able to evaluate the potential environmental impact without more specificity on the meaning of "organic liquid storage tanks."

The following comments relate to Draft Strategies under the purview of agencies other than the Air Board where more detailed information is recommended:

- *Draft Strategy 7 (City of Oakland): The City of Oakland revises business licensing procedures to require current and proposed businesses to disclose truck visits per day and works with Caltrans to determine the number of trucks that park in the Caltrans right-of-way near West Oakland. These efforts would help to better understand emissions and exposure in West Oakland.*

  Comment: Please provide clarity regarding the types of trucks that are included under this Draft Strategy. EBMUD has facilities located in the Project Area as well as a fleet of trucks that is used in the course of repairing and replacing critical water and wastewater infrastructure in the Project Area. It is not clear if this strategy would apply to EBMUD and its fleet of vehicles.

- *Draft Strategy 8 (City of Oakland): The City of Oakland amends existing City Ordinances and Administrative policies to list new truck yards as prohibited uses within West Oakland.*

  Comment: Please provide clarity regarding "truck yards." It is not clear if facilities such as EBMUD's that have offices and support facilities as well as a fleet of trucks used to conduct business are considered truck yards.

- *Draft Strategy 9 (City of Oakland): The City of Oakland develops a plan to limit the hours that trucks can operate in the community.*

  Comment: Please provide clarity regarding the types of trucks whose visits would be included under this Draft Strategy. It is not clear if the Draft Strategy would apply to EBMUD's fleet of trucks that are used for construction and to respond to emergency repairs in the Project Area.

- *Draft Strategy 76 (CARB): The California Air Resources Board sets a limit on West Oakland's cumulative exposure to TACs.*

  Comment: EBMUD generates some emissions during the course of providing water and wastewater services. These are related to operations that are critical to EBMUD's ability to provide reliable water and wastewater services to the people in the Project Area, such as individual wastewater treatment processes, or trucks responding to locations in the Project Area to repair a broken water main or to proactively replace aging pipelines. EBMUD strives to implement programs that extend beyond regulatory compliance stipulations and actively collaborates with regulatory agencies, local agencies, NGOs, and the public to understand their needs and balance those needs with its operations. EBMUD aims to provide essential services 24 hours a day, 7 days a week while protecting public health and the environment. EBMUD requests that, before adopting a cumulative exposure limit, CARB work with EBMUD to better understand water and wastewater operations to ensure that the proposed new limit will not impede EBMUD's critical services.

<u>Comment 3: EBMUD requests that the analysis described in the Utilities and Service Systems section under item "19.a" be revised from "No Impact" to "Potentially Significant," and that the EIR include analysis of the potential impact of the CAP's Draft Strategies on wastewater utilities.</u>

The analysis under XIX Utilities and Service Systems states that *"the control strategies that the District would implement as part of the Community Action Plan would not be expected to…result in the discharge of wastewater, or result in impacts to water quality.*" This conclusion misses the primary focus of item 19(a), which is whether the project would lead to construction of new utility facilities, including wastewater treatment facilities. In fact, Draft Control Strategy #65 which would *"identify incentives to improve the shortcut nitrogen removal processes at waste water treatment plants to reduce emissions by 2025"* could lead to the need for new facilities at the MWWTP. EBMUD does not currently have any nitrogen removal process in its wastewater treatment system and implementing "shortcut nitrogen removal processes" would require the addition of substantial new equipment and facilities, resulting in potential impacts during construction and future operations. There are also other strategies that, when they are better defined, may require new, expanded, or reconstructed wastewater treatment processes. Potential environmental impacts associated with the construction of new wastewater treatment facilities necessary to meet new regulatory requirements should be analyzed in the EIR.

In addition, EBMUD is actively engaged in a regional strategy and partnership with the San Francisco Regional Water Quality Control Board (SFRWQCB) to study and evaluate nutrients in wastewater effluent and their overall impacts to the San Francisco Bay. The results of these long-term science-based studies will result in recommendations for nutrient treatment upgrades, if needed, at regional wastewater treatment plants. EBMUD recommends the SFRWQCB process conclude before the Air District makes recommendations and sets requirements for the same process.

**CONCLUSION**

EBMUD appreciates the opportunity to coordinate with the Air District on this project and requests that the Air District continue to include EBMUD in the WOSC as it refines the CAP, develops the EIR, and implements the final CAP. EBMUD looks forward to continuing to collaborate with the Air District to ensure the success of this project.

If you have questions or would like additional information regarding the comments provided in this letter, please contact Matt Hoeft at (510) 287-0214 or Matt.Hoeft@ebmud.com.

Sincerely,

Alexander R. Coate
General Manager

ARC:EW

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PORT OF OAKLAND

June 14, 2019

Ada E. Márquez
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
amarquez@BAAQMD.gov

*via email*

**Subject: Port of Oakland Comments on Notice of Preparation of a Draft Environmental Impact Report for the AB 617 West Oakland Community Action Plan**

Dear Ms. Márquez:

The Port of Oakland ("Port") appreciates the opportunity to provide comments on the Bay Area Air Quality Management District's ("BAAQMD") May 13, 2019, Notice of Preparation ("NOP") of a Draft Environmental Impact Report ("DEIR") for the AB 617 West Oakland Community Action Plan ("WOCAP"). An Initial Study ("IS") accompanied the NOP. The IS consists of a Project Description and Environmental Checklist Form. The IS identifies the environmental factors potentially affected by the WOCAP. The resource areas the BAAQMD identified to be further analyzed in the DEIR are 1) Air Quality, 2) Biological Resources, 3) Energy, 4) Greenhouse Gas Emissions, 5) Hazards & Hazardous Materials, and 6) Utilities & Service Systems.

Port staff have served on the AB 617 Steering Committee since the July 27, 2018 kick-off meeting at City Hall, where Board of Port Commissioners ("Port Board") President Cestra Butner provided opening statements and Port Environmental Supervisor Diane Heinze described the Port's Draft Seaport Air Quality 2020 and Beyond Plan. The result of the AB 617 Steering Committee process is the WOCAP, currently being created by BAAQMD and the West Oakland Environmental Indicators Project ("WOEIP"). The Port understands that the strategies that will be included in the WOCAP are intended to reduce emissions and improve air quality in West Oakland. The Port understands that the DEIR is scheduled to be published for public comment around July 19, 2019, approximately the same time as the Draft WOCAP is published. The simultaneous release of the DEIR and the Draft WOCAP limits the ability of the Port and other stakeholders to provide meaningful comments on both the scope of the DEIR and the WOCAP, since the WOCAP is not yet available.

**<u>About the Port</u>**

The Port of Oakland is currently the eighth busiest container port in the United States based on annual container volume. The Port handled approximately 2.5 million twenty-foot equivalent units ("TEUs") of cargo in calendar year 2018 with four active marine terminals. All ship-to-shore container cranes at the Port are electric. Port-related equipment and activities are highly regulated.

- All container lift and horizontal transport equipment is regulated to Tier 4 off-road engine standards by the California Air Resources Board ("CARB"), which adopted and enforces a Mobile Cargo-Handling Equipment ("CHE") at Ports and Intermodal Rail Yards Regulation for California seaports.
- Drayage trucks serving the Port are all newer than 2007 and use diesel particulate filters.
- By the end of 2022, every truck will have model year 2010 or newer engines pursuant to the CARB Drayage Truck Regulation. Trucks newer than 2010 have selective catalytic reduction for NOx control.
- The Port runs a shore power program, with 75% of all 2018 calls using shore power.

Under the City Charter of the City of Oakland ("the Charter"), the Oakland Board of Port Commissioners is the legislative body of the City having complete and exclusive power and duty to control the "Port Area," as defined in the Charter, and to enforce rules and regulations for the purposes of the Port. The Port Area includes all the waterfront properties and lands adjacent thereto, including trust lands granted to the City by the State of California. The Port is not a typical public agency. As an enterprise department of the City of Oakland, the Port of Oakland does not collect tax revenues for itself, but instead must generate revenue to be self-supporting.

In late 2017, the Port began an 18-month process of drafting a new Seaport air quality plan since the Port's Maritime Air Quality Improvement Plan ("MAQIP") has a planning horizon from 2009 to 2020. The process of drafting a new Seaport air quality plan involved extensive stakeholder engagement. Two of the four co-chairs guiding the process for the Port's new seaport air quality plan are BAAQMD and WOEIP, who are also the two co-chairs of the WOCAP effort. The Seaport Air Quality 2020 and Beyond Plan ("2020 and Beyond Plan") establishes the Port's long-term vision of a zero-emissions seaport. The 2020 and Beyond Plan provides a framework for making future decisions on clean air projects involving community feedback. The Port Board approved the 2020 and Beyond Plan on June 13, 2019, and directed Port staff to:

1. Submit an Agenda Report to the Board within six months on the feasibility of replacing all CHE at the Port with zero-emissions equipment including the feasibility of related goals and metrics;

2. Submit an Agenda Report to the Board within six months on the feasibility of replacing all drayage trucks at the Port with zero-emissions trucks including the feasibility of related goals and metrics;

3. Submit an Agenda Report to the Board within six months on the capacity of the Seaport's electrical system, tenant needs for electric vehicle charging equipment, and the ability of the Port to provide electric vehicle charging equipment;

4. Submit an Agenda Report to the Board by June 1, 2020 on Port-related strategies and/or implementing actions that are legally required or that, in the Port's judgment, may meet the 2020 and Beyond Plan feasibility criteria, as a result of the final WOCAP prepared pursuant to AB 617 and any potential related updates to the 2020 and Beyond Plan;

5. Submit an Agenda Report to the Board within 18 months on 2019 emissions associated with ocean going vessels, tugboats, and rail tenants (BNSF and West Oakland Pacific Railroad), and on performance incentive programs for ocean vessels and rail tenants; and

6. Submit an Agenda Report to the Board within 18 months on costs and financing aspects associated with the 2020 and Beyond Plan including discussions of grant and incentive funding opportunities from outside sources (i.e., CARB, BAAQMD, and the California Energy Commission, etc.) and private sector and Port resources.

The Port shares the WOCAP goals of reducing harmful air emissions and reducing health risk impact on Port workers and the community. As published in the 2017 Seaport Emissions Inventory, the Port has achieved an 81% reduction in emissions of diesel particulate matter ("DPM") between 2005 and 2017, while cargo volume grew 6.5%.[1] A partial list of the numerous Port air quality improvement actions and achievements since 2009 is included below to provide background and highlight the Port's long-standing commitment to improving air quality. Port staff look forward to building on this success to further reduce emissions and contribute to improving the health of Port workers and the community.

1. The Port developed the MAQIP, which was approved by the Board on April 7, 2009, after the Board adopted the Maritime Air Quality Policy Statement on March 18, 2008 ("Policy Statement"). The Policy Statement documented the Port's adoption of the goal of reducing the health risks to its neighboring communities (expressed as increase in cancer risk) related to exposure of people to DPM emissions from Port sources by 85% by the year 2020 through all practicable and feasible means. The MAQIP expressed that goal as an 85% reduction in DPM emissions.
2. In 2010, CARB, BAAQMD, the Port, and the US Environmental Protection Agency ("EPA") collectively invested $33 million (with the Port's share being $5 million) in funding to initially retrofit 1,319 trucks and to subsequently replace an additional 627 trucks.
3. In 2013, the Port applied for and was awarded an EPA National Clean Diesel Funding Assistance program grant in the amount of $415,932 to repower four rubber tire gantry ("RTG") cranes to help reduce the diesel emissions related to off-road equipment operating on the Port's marine terminals. This RTG repowering project was completed and the grant file closed by the end of 2017.

[1] A detailed review of past and forecasted cargo growth should be available from the Bay Conservation and Development Commission ("BCDC") by June 17 as part of its proposed SF Bay Plan Amendment.

4. In 2017, the Port advocated before the CARB board for a more expansive eligibility determination for the CARB Zero and Near Zero Freight Facilities ("ZANZEFF") transportation electrification program, as the original staff guidelines could have excluded the majority of the seaport tenants and customers from receiving grant funding. As part of the ZANZEFF grant project, it is expected that $9 million will be awarded to improve air quality associated with Port seaport operations, out of a larger multi-port grant award, to demonstrate the viability of zero emissions cargo handling equipment and heavy-duty Class 8 electric trucks in seaport operations. The Port entered into a Memorandum of Understanding ("MOU") with the Port of Long Beach dated February 7, 2019, to implement the ZANZEFF grant project. As part of the ZANZEFF project and pursuant to the MOU, the Port committed to design and install ten charging stations and provide for a financial match of at least $1.25 million.
5. In 2018, the Port assisted with the successful application from one of its marine terminal operators for nearly $5 million in Carl Moyer air quality program funding from BAAQMD to replace and upgrade the diesel engines from all thirteen of that terminal operator's gantry cranes to a hybrid-electric system that reduces emissions of some air pollutants by 99%. As of June 2019, two of the thirteen cranes have been successfully repowered and are in use. The remaining eleven cranes will be done in series before June 15, 2020.
6. The Port spent approximately $55 million (including grant funding) to install shore side power at 11 berths at the Port. The shore side power implementation program was led by the Port in association with private marine terminal operators and ship owners, and was completed with $27 million in grant funding assistance from CARB, BAAQMD, the US Department of Transportation ("DOT") (via a Transportation Investments Generating Economic Recovery grant), and the Metropolitan Transportation Commission (via a federal pass-through DOT Congestion Management and Air Quality program grant).
7. These efforts, in combination with CARB regulations requiring emissions reductions from CHE, drayage trucks, refrigerated transportation units, ocean-going vessels, and harbor craft, have reduced DPM emissions from Port seaport operations. In 2018, the Port conducted the fourth update to its Seaport Emissions Inventory, using data from 2017 operations. The 2017 Seaport Emissions Inventory calculated that DPM emissions from trucks serving the seaport decreased 98% from the 2005 baseline. The Port's 2017 Seaport Emissions Inventory concluded that, overall, DPM emissions from Seaport sources decreased by 81%. These calculations are based on emission inventories rather than continuously measured emissions, using methods consistent with CARB's inventories.
8. The Port hosts weekly Trucker Office Hours every Thursday at the Customer Service Area near the terminal truck gates, an environmental initiative that began in August 2018. Trucker Office Hours allow Port staff to inform truck drivers about grant and voucher funding opportunities for cleaner equipment, assist with the grant application process, and provide updates on the latest zero-emissions demonstration projects. BAAQMD staff are always welcome to attend these office hours, which Port staff find to be a rewarding and productive way to advertise the technologies and funding available to truck drivers.

**Air Quality Improvement is a Strategic Priority at the Port of Oakland (*Growth with Care)***

In 2018, the Port published its five-year strategic plan called "Growth with Care" that harmonizes business growth with community and environmental benefits.[2] Growth at the Seaport will occur in a context of strict State and local regulation. California seaports lead the way in the use of Tier 4 CHE, model year 2007 and newer trucks, and shore power. Outside California, where some of the Port's competitors operate, these requirements do not apply. Due to the actions taken pursuant to the MAQIP and to comply with BAAQMD and CARB regulations, Port emission reductions have vastly outpaced Port growth since 2005. The 2020 and Beyond Plan represents the Port's continued commitment to improving the air quality in West Oakland.

The Port's compound annual growth rate (CAGR) from fiscal year 2008 to fiscal year 2018 was 0.4%.[3] The Port's fiscal year 2019 through fiscal year 2020 Operating Revenue Budgets are based on cargo growth estimates ranging from 0% to 2.0% annually. Budget projections through fiscal year 2024 reflect similar growth assumptions. The Port expects no growth in the number of annual vessel calls. In fact, the number of vessel calls has been decreasing in recent years, as the trend has been to bring the same or more cargo volume on fewer, larger ships.

The Port understands that part of the WOCAP effort will involve forecasting emissions five and ten years out. This necessitates cargo growth forecasts for the Port. CARB stated in its rulemaking documents for the Proposed Control Measure for Ocean-Going Vessels At Berth that it will assume a CAGR of 4.6% for the Port, based on its interpretation of the Federal Highway Administration Freight Analysis Framework Version 4.3.1 data. However, the Port maintains its position that this cargo growth estimate is overly aggressive and therefore misleading in the context of forecasting emissions.

The Port's 2009 MAQIP contains a discussion of growth projections in Section 6. In the low growth scenario, annual cargo volume was projected to reach 4.5 million TEU by 2020. The Port is currently at approximately 2.5 million TEU annually. This illustrates the difficulty with forecasting cargo growth even ten years out. While there may be short periods of high growth which may reach or exceed 4.6%, there will also inevitably be short periods of low growth or volume declines—the historic record clearly proves this to be true.

The BAAQMD has indicated to the Port that it may revise the growth assumptions between the forecast in the July 2019 draft WOCAP and the final forecast (estimated October 2019), based on additional information from BCDC and CARB. To avoid confusion and a misleading "first impression," the Port requests that BAAQMD's initial July 2019 draft forecast include an alternative growth scenario of about 2%, alongside the 4.6% growth scenario. Communication records with BAAQMD, CARB, and BCDC about growth forecasts are included as Attachment 1 to this letter.

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[2] https://www.portofoakland.com/strategic-business-plan-2018-2022/
[3] From Budget and Finance report at May 23, 2019 Port Board Meeting (File ID 098-19), slide 6.

**<u>The Port is Not a Responsible Agency Under CEQA</u>**

The Port offers these comments on the NOP and IS as a member of the AB 617 Steering Committee and as a committed participant in reducing emissions in West Oakland. In the specific case of the WOCAP, the Port is not a Responsible Agency as defined under the California Environmental Quality Act ("CEQA"). CEQA Guidelines section 15381 states "'Responsible agency' means a public agency which proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or negative declaration. For the purposes of CEQA, the term 'responsible agency' includes all public agencies other than the lead agency which have discretionary approval power over the project."

As stated in Section 1.6.4 of the NOP, "control strategies proposed to be implemented primarily or exclusively by other agencies…are included for information purposes only, however. They are not dependent on approval of the control strategies that are under the authority of the Air District. Further, the Air District's approval of the control strategies will not authorize or commit those agencies [including the Port] to any action. As these actions and activities by independent agencies are not Air District actions and will occur independently of the District's approval of the control strategies under their authority, they are not direct or indirect effects resulting from approval of the Plan that must be analyzed in this document. Accordingly, Chapter 2 [Environmental Checklist] does not address implementation actions by other agencies that are independent of the Air District's implementation actions under the Community Action Plan."

For the reasons discussed above, the Port will not be relying on the AB 617 WOCAP EIR to provide environmental review for future discretionary actions. In addition, the Port will not be making any discretionary approvals for the BAAQMD actions listed in Attachment A to the Initial Study. While Section 1.1 of the Initial Study states the Port is one of the government agencies with "primary responsibility for implementing the strategies in the [West Oakland] Community Action Plan," the Port is not a Responsible Agency under CEQA.

**<u>Comments on Section 1.0 Project Description</u>**

***Project Objectives***

CEQA Guidelines section 15124(b) states "A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project."

Section 1.0 of the Initial Study contains the Project Description and provides background on AB 617. Section 1.1 describes the proposed WOCAP and its strategies to "maximize emission reductions and reduce residents' cumulative exposure to criteria air pollutants, diesel particulate matter (Diesel PM), fine particulate matter ($PM_{2.5}$), and toxic air contaminants" and "work towards eliminating West Oakland's air pollution burden." The WOCAP is described as "an integrated multi-pollutant community air quality plan to eliminate health risk disparities in West Oakland." The Project Description in Section 1.5 of the Initial Study states "[t]he goal of the Community Action Plan is to reduce emission from air pollution sources within and adjacent to West Oakland."

The Port of Oakland requests that the DEIR Project Description include a comprehensive objectives statement to remove confusion about the goals of the WOCAP. The WOCAP strategies should support the goals. Many of the proposed actions are not related to emission reductions, such as street sweeping, barrier walls, tree canopy, air filtration, biofilters, etc. Similarly, Action #51 seems to be about safety, "Safe Routes to School." Is safety a goal of the WOCAP?

### *Section 1.4 Project Background*

The Port requests that BAAQMD present more background information in the DEIR than is currently provided in Section 1.4, Project Background. This request is consistent with CEQA Guidelines section 15125(h), which states "[a]n EIR must include a description of the physical environmental conditions in the vicinity of the project…from both a local and regional perspective." The Port requests more information about the State and regional setting for emissions and health risk. Information in this section may need to be repeated in the Air Quality Settings section of the DEIR, but it is important for the reader to understand the context early on.

- In light of the 81% DPM emissions reductions from Port sources between 2005 and 2017, the Port requests a comparison of ambient air and DPM emissions in 2005 and 2017. Port staff understand from BAAQMD Air Quality Summaries that the BAAQMD did not operate PM monitors in Oakland until 2007, and no PM monitor in West Oakland until 2009. Can other regional monitors be used to show the improvement in the ambient air over this time period?

- Item 5 on page 2 of the NOP indicates that the CARB monitoring plans required by October 1, 2018 would be ready and supplying information by July 1, 2019. The Port requests that BAAQMD add a table to the DEIR summarizing the monitoring results for the Bay Area as a whole and provide more regional and state-wide context.

- In addition to summarizing the regional attainment status and criteria air pollutant monitoring, Port staff request a discussion of toxic air contaminant monitoring in the Bay Area. This should include any information from BAAQMD Rule 12-16 and the AB 617 CARB monitoring plans and initial monitoring.

- Port staff request a comparison between the 2008 CARB Health Risk Assessment ("HRA") for West Oakland, the 2009 BAAQMD HRA for West Oakland, and the 2017 BAAQMD HRA for West Oakland prepared in support of the WOCAP. The comparison could include the differences in the domain and types of modeled sources. To accompany this comparison between HRAs, Port staff request an emissions comparison (DPM emissions by source, in tons per year) between 2005 and 2017.

- The San Francisco Community Risk Reduction Plan "HRA" is scheduled to be published in summer 2019. The Port requests a comparison of the 2017 West Oakland HRA with San Francisco's HRA, the 2008 ARB HRA for West Oakland and the South Coast Air Quality Management District Multiple Air Toxics Exposure Study ("MATES").

- Port staff understand that the West Oakland HRA Technical Report will be an appendix to the WOCAP. Please also include a summary of the results in the DEIR to inform readers about the current contribution of each source to local cancer risk.

- If a feasibility analysis of the strategies is included in the WOCAP, Port staff request that the analysis of the strategies includes a summary of the cost effectiveness relative to health impact reduction. For example, BAAQMD's analysis shows that drayage trucks serving the Port contribute 2% to cancer risk, and non-Port trucks on the streets and highways contribute 37% to cancer risk. The same analysis shows that the Union Pacific (UP) Rail Yard near the Port contributes 8% to cancer risk, and that locomotives through the area, including Amtrak, contribute 7%.

***Section 1.5 Project Description***

Recent CEQA case law has established that an EIR must contain an "accurate, stable, and finite" project description (*Washoe Meadows Community v. Department of Parks and Recreation,* November 15, 2017). This case notes that "[a] description of a broad range of possible projects, rather than a preferred or actual project, presents the public with a moving target and requires a commenter to offer input on a wide range of alternatives that may not be in any way germane to the project ultimately approved." Based on the discussion in Section 1.6.4, the project to be evaluated in the EIR is limited to the actions under the jurisdiction of the BAAQMD, and not the full list of actions in Attachment A to the Initial Study.

The Port recommends that the Project Description be revised to clearly state the scope of the project description, and include possible actions by other agencies in a discussion separate from the project description. The Port recommends that the Project Description be revised to clearly state the scope of the project description, consisting primarily of the 26 actions under the authority of BAAQMD listed in Attachment A of the Initial Study. The DEIR could include a discussion of possible actions by other agencies somewhere other than the project description. For example, in the background section, the DEIR could include a discussion of the AB 617 planning process and a list of the other agency actions, with a statement that they are included for informational purposes.

Section 1.5 includes a 3-item bullet list at the bottom of page 8. The list does not include some of the seemingly major contributors to local health risk, such as Union Pacific Rail Yard, Amtrak, CalTrans and the U.S. Postal Service facility located on 7th Street. The Port would like to understand how the WOCAP will meet its equity goals and best serve the community if it is silent on these potentially major sources.

The Port recommends that BAAQMD add more detail on its proposed actions. Some questions and suggestions for specific BAAQMD actions are provided below.

- BAAQMD Action #21 Land Use (Sustainable Freight Advisory Committee): The Port already has an established Task Force for air quality issues (MAQIP and 2020 Plan), of which BAAQMD and WOEIP are Co-Chairs. The Port suggests using the Port Seaport Air Quality Task Force, rather than creating a new forum.

- BAAQMD Action #41 Other Mobile Sources (Buy Back Old Autos): Clarify whether the Air District will offer more money if the old trucks are registered in West Oakland versus other neighborhoods in Oakland or the Bay Area.

- BAAQMD Action #43 Other Mobile Sources (Upgrade Tugs and Barges): Please explain which barges are included in this action and what emission sources are associated with barges.

- BAAQMD Action #60 Stationary Sources (ISR): Please refer to this as Indirect Source Rule ("ISR") instead of "magnet source" to reduce confusion.

  Growth in cargo may lead to more CHE or drayage truck activity, but may not lead to additional vessel calls, give current vessel size trends may. CHE and drayage trucks are each currently 2% of the population-weighted health risk and DPM concentration in West Oakland (see table above). Any growth in CHE or drayage truck activity which is not offset by cleaner equipment and operational efficiencies will incrementally increase these 2% impacts.

- BAAQMD Actions #69 and #72 Health Programs (Air Filters): Please make sure that any filter installation project includes a description of funding and management for filter maintenance.

The Port suggests that BAAQMD actions in the WOCAP that are currently not possible to evaluate under CEQA because they are "too speculative for evaluation" be removed from the DEIR Project Description and environmental impact assessment. Alternately, BAAQMD could identify assumptions or "boundaries" for more speculative actions to provide enough specificity for evaluation. For example, for Action #3 (incorrectly identified as Action #18 on page 12, please fix), BAAQMD could make reasonable assumptions about a high/low percent of trucks shifting traffic to I-580 and perform the impact analysis.

**Comments on Section 2.0 Environmental Checklist Form**

The Port submits the following comments on the scope of the DEIR. As described in Section 1.6.4, the Environmental Checklist and the DEIR apply only to BAAQMD actions. Accordingly, Port comments on the scope of environmental review only address potential impacts of BAAQMD actions.

***Overall Comments***

Most of the environmental resource sections in the IS checklist begin with a lettered list of significance criteria in a tabular format, but then in the discussion include a bullet list of Significance Criteria that differs from the first set of criteria. As a result, it is unclear if the checklist has identified the full range of potentially significant impacts that will be addressed in the DEIR. The DEIR should provide a single list of significance criteria for each resource section, and structure the impact analysis accordingly.

Ms. Ada E. Márquez
Port of Oakland Comments on AB 617 West Oakland Community Action Plan NOP of DEIR
Page 10 of 14

The Port requests that BAAQMD identify which actions are being analyzed for which environmental resource areas, using a table formatted similar to below. The Port is most interested in the resource areas listed in the table.

| Action # | Air Quality | Energy | GHG | Hazard. | Land Use | Noise | Population | Transp. | Utilities |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 12 | | | | | | | | | |
| 14 | | | | | | | | | |
| 21 | | | | | | | | | |
| 24 | | | | | | | | | |
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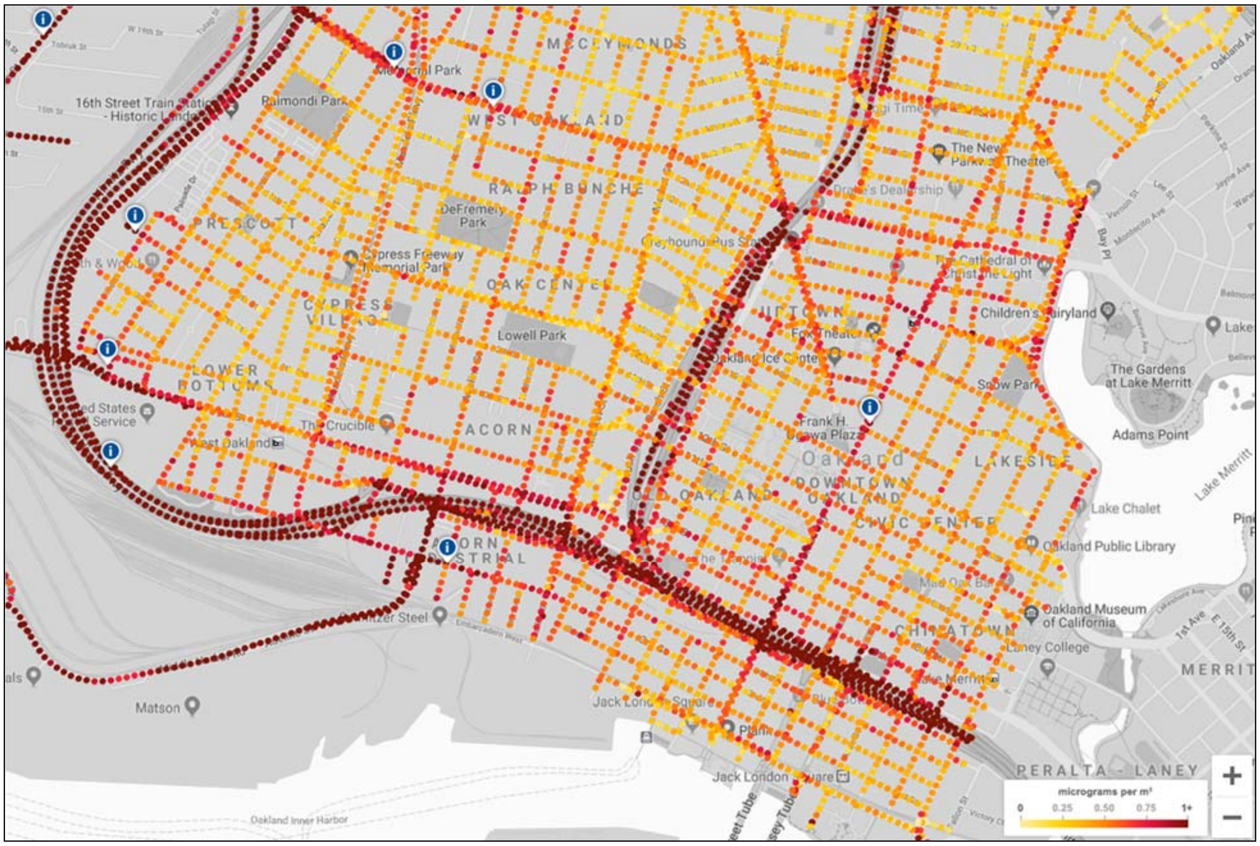
| 67 | | | | | | | | | |
| 69 | | | | | | | | | |
| 74 | | | | | | | | | |

***Air Quality***

As noted in Comments on Section 1.4, Project Background, Port staff request that the Air Quality Setting section describe the monitoring, health risk modeling, and recent (since 2005) air quality studies specific to West Oakland. For example, a recent monitoring study co-authored by WOEIP and BAAQMD and published in Environmental Science & Technology (2017), measured daytime levels of black carbon and NOx in East Oakland, West Oakland, and Downtown Oakland.[4] The map below of black carbon measurements in micrograms per cubic meter in West Oakland and Downtown Oakland shows that the neighborhoods may be similarly impacted.




1. Using mean instead of median: Port staff note that different presentations of this map have been held at different meetings. One such map uses red dots to show instances of black carbon above median. Please use mean instead of median, because using median ensures that exactly half of all readings are highlighted red which could lead to misunderstandings. Please use mean, or average, instead and make sure to document in the footer the average value and state the geographic boundary of the average value. For NOx, a comparison to the NAAQS would provide valuable context.

2. Port staff understand that BAAQMD, as the Lead Agency under CEQA, has the discretion to select its own thresholds of significance. The WOCAP is focused on a single neighborhood—West Oakland—and not the region. However, BAAQMD has selected the Regional Plan threshold in the BAAQMD's May 2017 CEQA Guidelines. The Initial Study cites "The Air District's draft CEQA Guidelines (BAAQMD, 2017a)" on page 50. Port staff request clarification as to whether the BAAQMD CEQA Guidelines are draft and not final, as they are not noted as Draft on either the website or on their cover page.

[4] https://www.edf.org/airqualitymaps/oakland/pollution-and-health-concerns-west-oakland

3. Please include emission reduction estimates for every action included in the DEIR project description since this is the primary area of interest of the WOCAP. The estimates will be useful even if they are speculative, as long as the assumptions are reasonable and clearly stated. A low/high bounding can be used to indicate level of uncertainty. Please also include an order of magnitude cost estimate. This will help the community make informed decisions about how to prioritize strategies and understand which solutions are the most cost-effective.

4. The Port notes that some of the actions may have undesirable consequences. For example, Action #42 is to replace diesel trucks with battery-electric. The batteries for Class 8 drayage trucks are so heavy that the trucks cannot carry a full load of cargo outside of specially designated overweight routes. This means that the weight of the battery has to come out of the cargo load. This in turn means an extra trip to a warehouse for "re-stuffing" the cargo, and an additional truck trip to spread out the load. These extra activities should be included in the analysis. This would affect the Transportation section as well.

5. If any of the 26 BAAQMD actions anticipate relocation of existing sources of pollution, the DEIR should address impacts associated with their new locations.

***Energy***

6. Action #18 has PG&E listed as the authority, but the description starts as a BAAQMD action to advocate for more electrical infrastructure. If this is a BAAQMD action, please describe any increased load on PG&E infrastructure due to the actions being analyzed, individually and cumulatively. Please include any information on communications with PG&E on the issue.

***Greenhouse Gas Emissions***

7. Page 74 of the Initial Study mentions modifications to refineries. To which refineries does this refer?

8. Action #45 is about a hydrogen fueling station. The GHG analysis should address where the Air District would procure the hydrogen and how it would it be made. Please include the life cycle of the hydrogen in the analysis to ensure that it does not unintentionally create more carbon dioxide ($CO_2$), a GHG. Please state whether the hydrogen will be subsidized to bring the cost in line with other fuels and electricity. Please identify the source of the subsidy, and how long it would it last. This latter information may belong in the Project Description.

***Hazards & Hazardous Materials***

9. Action #59: Please include in the impact analysis the handling and disposal of the waste stream produced by any scrubber or "bonnet" system. It is important to understand the impact of the entire life-cycle of the exhaust, once scrubbed.

***Land Use & Planning***

10. The 6th bullet, at the bottom of page 87, says that the Union Pacific Rail Yard is within the Port. That statement is incorrect. The Union Pacific Rail Yard is not within the Port; please correct this statement.

11. Action #18 says that PG&E is the authority, but the text begins with BAAQMD action to advocate for more electrical infrastructure and better land use support for electric trucks. If this is a BAAQMD action, please include an analysis of its land use impacts, such as land required for trucks to park while they charge overnight.

12. Some proposed actions address land use restrictions in industrial areas. Land Use, Population and Housing, and Transportation analyses should address the implications of such restrictions. Please include in the analysis any indirect impacts and how they affect the population.

***Noise***

13. This section identifies the potential noise impacts from construction activities. The DEIR should identify which BAAQMD actions entail construction activities that may generate noise.

***Transportation***

14. Action #3: Allowing trucks on I-580 should be analyzed using assumptions, such as reasonable low and high estimates of the percentage of trucks that would shift from I-880 to I-580. This would help the reader understand the range of possible impacts, including increased congestion and air emissions on I-580, increased potential for accidents on I-580, and increased construction impacts from more frequent repaving due to increased pavement wear from trucks on I-580.

***Utilities & Services Systems***

15. Action #46 is about Air District efforts to replace long haul diesel trucks owned by West Oakland businesses with zero emission trucks. This, will require a network of public truck charging stations throughout the Bay Area, the State, and beyond since long haul trucks cross state boundaries. Please address this need in the analysis. Please also address in the Land Use section the need for overnight parking and charging locations locally. Charging stations require a lot of space both to physically park and maneuver large trucks as well as sufficient parking stalls for overnight charging. Please include analysis for increased electrical demand locally. For example, will a new substation or more transmission capacity be required to meet demand? Where would new infrastructure be located? Impacts associated with new infrastructure should be addressed in this section.

**Closing**

Thank you for the opportunity to comment on the scope of the proposed DEIR. My staff and I look forward to discussing these issues with you. If you have any questions, please contact me at (510) 627-1182 or rsinkoff@portoakland.com.

Sincerely,

Richard Sinkoff
Director of Environmental Programs & Planning

CC: Chris Lytle, Executive Director
Danny Wan, Port Attorney

# Attachment 1

# Catherine Mukai

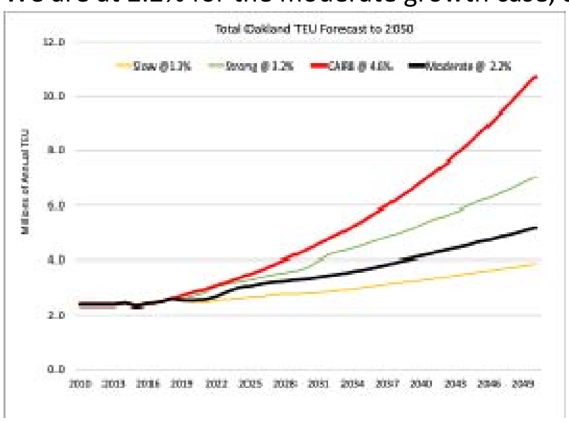
**From:** Dan Smith <dsmith@tiogagroup.com>
**Sent:** Friday, June 14, 2019 9:43 AM
**To:** Catherine Mukai; Michael Murphy; Phil Martien; eyura@baaqmd.gov; David M. Holstius; Henry Hilken; Pournazeri, Sam (sam.pournazeri@arb.ca.gov); david.phong@arb.ca.gov; bonnie.soriano@arb.ca.gov; Parmer, Cory@ARB; Foster, Jonathan@ARB; Furey, Russell@ARB; Scourtis, Linda@BCDC; daniel@hackettassociates.com; Delphine Prevost; Diane Heinze; Tracy Fidell
**Subject:** [EXTERNAL] Re: BAAQMD/ARB/BCDC/Port 6/11 call notes



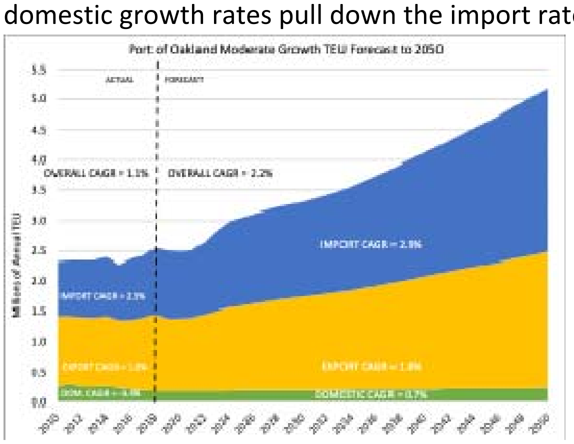
Catherine - Thanks!

Here are our concerns in a nutshell.

1. The proposed 4.6% CAGR for Oakland is far higher than what we have forecast, or what we are seeing in the industry. We are at 2.2% for the moderate growth case, as shown below.




This forecast is built up of separate import, export, empty, and domestic forecasts. The much slower export and domestic growth rates pull down the import rate to the 2.2% overall CAGR.



2. The international vessel mix at Oakland must be basically the same as at LALB because the vessel almost invariably call at LALB first and then come up to Oakland. You can see this in any of the AIS or Marine Exchange data, or on the carrier's vessel schedules. For example:

http://www.cma-cgm.com/products-services/line-services/flyer/JDX

https://www.cma-cgm.com/products-services/line-services/flyer/CALFB

We would be glad to go over any details.

Best,

Daniel Smith
Principal, The Tioga Group, Inc.
288 Rheem Blvd, Moraga, CA 94556
925-631-0742 dsmith@tiogagroup.com

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**From:** Catherine Mukai <cmukai@portoakland.com>
**Date:** Thursday, June 13, 2019 at 10:49 AM
**To:** Michael Murphy <MMurphy@baaqmd.gov>, Phil Martien <PMartien@baaqmd.gov>, "eyura@baaqmd.gov" <eyura@baaqmd.gov>, "David M. Holstius" <dholstius@baaqmd.gov>, Henry Hilken <HHilken@baaqmd.gov>, "Pournazeri, Sam (sam.pournazeri@arb.ca.gov)" <sam.pournazeri@arb.ca.gov>, "david.phong@arb.ca.gov" <david.phong@arb.ca.gov>, "bonnie.soriano@arb.ca.gov" <bonnie.soriano@arb.ca.gov>, "Parmer, Cory@ARB" <Cory.Parmer@arb.ca.gov>, "Foster, Jonathan@ARB" <Jonathan.Foster@arb.ca.gov>, "Furey, Russell@ARB" <Russell.Furey@arb.ca.gov>, "Scourtis, Linda@BCDC" <linda.scourtis@bcdc.ca.gov>, Daniel Smith <dsmith@tiogagroup.com>, Daniel Hackett <daniel@hackettassociates.com>, Delphine Prevost <dprevost@portoakland.com>, Diane Heinze <dheinze@portoakland.com>, Tracy Fidell <tfidell@portoakland.com>
**Subject:** BAAQMD/ARB/BCDC/Port 6/11 call notes

Hello everyone,

Here are my notes from our call on Tuesday 6/11. Please let us all know if you have any edits.

Cory, can you send us all the link to the exact FAF 4.3.1 information you are using for Oakland? You mentioned there is an FAF table of growth rates corresponding to the figure at the top of page 28 of the January 2019 ARB OGV inventory.

| BAAQMD | CARB | BCDC | Port |
|---|---|---|---|
| Michael Murphy<br>Phil Martien<br>Elizabeth Yura<br>David Holstius<br>Henry Hilken | David Phong<br>Sam Pournazeri<br>Bonnie Soriano<br>Cory Parmer<br>Jonathan Foster<br>Russell Fury<br>One other? We missed your name. | Linda Scourtis<br>Dan Smith, Tioga<br>Daniel Hackett, Hackett & Assoc. (sub to Tioga) | Delphine Prevost<br>Tracy Fidell<br>Catherine Mukai<br>Diane Heinze |

1. Port summary of how it projects Port growth rates and for what purpose (Delphine)
    a. The Port makes annual forecasts for revenue budgeting purposes. March 2019 forecast was FY2020 +5 operating years. In recent years, 0-2% TEU growth (full plus empty boxes) based on 10-year trend, 2-year trend, customer feedback, macro-economic factors, tariffs. No growth in vessel calls. The Port's Budget Book, which is online, contains these forecasts.

   b. Port also does periodic forecasts for land use and leasing studies, projects 1-3% growth. Base case of 3%, what-if case of 5%, but dropped the unrealistic 5% case. Even 3% is unrealistic for the near term. Latest study was in 2016 with a small refresh in 2017. 2016-2017 materials presented to Board.

2. BCDC summary of projected growth rates for Seaport Plan Amendments.
   a. Linda and Dan Smith shared background on BCDC's Seaport Plan and the study currently underway. The new study will be publicly available in draft form Monday 6/17. BCDC's charter is to make sure the Bay Area has sufficient seaport capacity for trade and commerce (not private terminals up the delta, not private refineries).
   b. Study looks at loaded imports/exports, empty imports/exports, domestic and international. Low, medium, and strong growth cases.
   c. Tariff and trade predictions make the next couple of years the least certain. Domestic trade at Oakland trending down due to market share shifts.
   d. Tioga's current estimate for Oakland container cargo is 2.2% annual growth.
   e. Daniel Hackett on basis for container forecasts:
      i. The base forecasts for imports are based on actual quarterly volumes from 2010 onwards incorporating SF growth spurt, national industrial production, GDP, industrial output. For exports, the cause of the recent downward trend had to go back further—quarterly actuals since 1998. Different factors from GDP and industrial production being forecast out. Inputs from Moody's to 2048 drive the model, then extrapolate to 2050. Vessel adjustments done with growth factors then adding in TEU for first port of call. First port of call adjustment adds ~500 boxes per call, max 70,000 TEU/year.
      ii. Michael: Different growth rate for vessel visits and TEUs? Dan: Finishing berth analysis now. Vessels that call in Oakland are determined by the vessels that call at LA/LB. All international lines calling Oakland also go to SPBP. Growth rate for vessel size depends on SPBP import growth. Tioga used the low-growth Mercator forecast for vessel size.
   f. Daniel Hackett reviewed FAF data for dry bulk and decided against using the FAF projections because they didn't line up with recent year actual activity.
   g. Daniel Hackett: FAF projections for 2040 rely on four main types of cargo only, and don't anticipate changes, like China's recent ban on waste paper exports.
   h. Dan Smith: FAF data are multi-model but focus on highways. FAF data are not specific to or designed for waterborne cargo. Delphine: Macroeconomic trends are different from port-specific projections. The differences between international trade and domestic movement activity are important.

3. ARB summary of projected growth rates for at-berth rulemaking
   a. Cory: The base for forecasting is 2016 actual vessel visits and duration at port. ARB considered linear extrapolation, doing its own analysis, or using FHWA FAF. FAF is a regional multi-modal model by commodity. Bay Area growth for commodity types that travel by container is 4.6% CAGR. It's done for 5-year increments and the annual average is 4.6%.
   b. ARB didn't use FAF for SPBP because SPBP have the Mercator study. FAF vs. Mercator for SPBP showed no real difference between now and 2030 (forecast-to-forecast comparison). Dan asked if ARB has compared the FAF and Mercator projections to actual SPBP growth.
      i. ARB does not do forecasting, it relies on FHWA to review a variety of economic sources and make assumptions, and to compare its FAF forecasts to reality.
   c. Delphine: Oakland sees fewer vessels each year, which ARB should include in its assumptions.
   d. For drayage trucks, ARB uses the FAF growth rate. For non-port trucks, ARB does NOT use the FAF growth rate. For CHE, ARB used an exponential rate of port growth. For the 2020 CHE inventory, ARB will account for operational changes that may offset growth rate, but ARB will use the TEU growth rate from FAF.

4. Delphine: The Port's historic growth rates fluctuate, but looking back 10 or 20 years the CAGR does not approach 4.6%.
5. BAAQMD: BAAQMD will use ARB's forecasts for the 2024 and 2029 Health Risk Assessment for AB617. BAAQMD will work with ARB to identify an alternative case once the BCDC Plan is out, to bracket the growth.
6. BAAQMD's July AB617 HRA draft will include only the FAF growth projections case. By October 2019 BAAQMD may have an additional lower-growth forecast in the final HRA using BCDC's projections.
7. Diane: How do growth rates and emissions correlate? Phil: It depends on emission factors, so it's not one-to-one.
   a. We need a follow-up conversation on this. Can BAAQMD send emission factors for 2024 and 2029?
8. Michael suggests that this group reconvene in July.

Thanks,
Catherine

# APPENDIX B

## Emission Calculations

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# West Oakland Community Action Plan
# Operational Emissions Summary

**Baseline Emissions (ton/yr)**

| Source | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2e (MT) |
|---|---|---|---|---|---|---|---|
| Hoteling | 0.25 | 0.67 | 8.24 | 0.43 | 0.23 | 0.20 | 597.26 |
| Storage Piles | - | - | - | - | 0.83 | 0.12 | - |
| Total | 0.25 | 0.67 | 8.24 | 0.43 | 1.05 | 0.33 | 597.26 |

**Control Strategy Emissions (ton/yr)**

| Source | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2e |
|---|---|---|---|---|---|---|---|
| Hoteling - 80% Shore Power | 0.07 | 0.37 | 2.01 | 0.22 | 0.10 | 0.09 | 579.52 |
| Storage Piles - Full Enclosure | - | - | - | - | 0.04 | 0.01 | - |
| Total | 0.07 | 0.37 | 2.01 | 0.22 | 0.14 | 0.09 | 579.52 |

**Net Emissions (ton/yr)**

| Source | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2e |
|---|---|---|---|---|---|---|---|
| Hoteling | -0.18 | -0.30 | -6.23 | -0.21 | -0.13 | -0.12 | -17.74 |
| Storage Piles | 0.00 | 0.00 | 0.00 | 0.00 | -0.79 | -0.12 | 0.00 |
| Total | -0.18 | -0.30 | -6.23 | -0.21 | -0.92 | -0.23 | -17.74 |

Note: Negative numbers indicate emission reductions.

**Assumptions:**

Hoteling emissions based on 100 days of hoteling.  Hoteling emissions include aux engine and boilers.
Mitigated hoteling emissions based on 80% shore power and 20% aux engine untilization.
Storage piles based on five 100 foot diameter by 40 foot height conical piles.
Mitigated storage piles based on full enclosures (95% control) for each pile.

**West Oakland Community Action Plan**
**Enclosure Construction Emission Summary**

| ACTIVITY | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2e (MT) |
|---|---|---|---|---|---|---|---|
| **Peak Daily Emissions (lb/day)** | | | | | | | |
| Construction of One Enclosure | 2.43 | 24.78 | 23.37 | 0.07 | 2.59 | 1.57 | 2.32 |
| Construction of Five Concurrent Enclosures | 12.17 | 123.89 | 116.87 | 0.35 | 12.97 | 7.85 | 11.60 |
| **Total Emissions (tons)** | | | | | | | |
| Construction of One Enclosure | 0.06 | 0.69 | 0.50 | 0.00 | 0.04 | 0.03 | 75.07 |
| Construction of Five Enclosure | 0.32 | 3.47 | 2.48 | 0.01 | 0.18 | 0.16 | 375.35 |

## Hoteling Emissions - No Shore Power
## Marine Vessel Emissions

**OGV Auxiliary Generator Usage per One-Way Transit**

| Activity | Auxiliary kW per Vessel (1) | Hours/ Transit | kW-Hrs/ Transit |
|---|---|---|---|
| Hoteling | 210 | 24.00 | 5,040 |

Notes: (1) Port of Long Beach 2016 Emissions Inventory - Table 2.1 (Starcrest 2017)

**OGV Auxiliary Boiler Usage per One-Way Transit**

| Activity | Boiler kW per Vessel (1) | Hours/ Transit | kW-Hrs/ Transit |
|---|---|---|---|
| Hoteling | 109 | 24.00 | 2,616 |

Notes: (1) Port of Oakland 2015 Emissions Inventory - Page 30 Environ 2016)

**Emission Factors for OGV**

| Engine Type | Assumed Fuel Type | Assumed Fuel Use Application | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2 | CH4 | N2O | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Main Propulsion Engine (g/kW-hr)** | | | | | | | | | | | | |
| OGV Main Engines | MGO (0.1% S) | All (CARB requir | 0.60 | 1.40 | 17.00 | 0.40 | 0.32 | 0.29 | 589 | 0.0120 | 0.02900 | (1,2) |
| Tugboat Main Engines | | | | | | | | | | | | |
| (Medium Speed Diesel) | ULSD (15 ppm S | 2007+Tier 3 | 0.70 | 5.50 | 5.85 | 0.01 | 0.13 | 0.13 | 652 | 0.0130 | 0.02900 | (3,4) |
| **Auxiliary Engine (g/kW-hr)** | | | | | | | | | | | | |
| OGV Auxiliary Engines | MGO (0.1% S) | All (CARB requir | 0.40 | 1.10 | 13.80 | 0.47 | 0.32 | 0.29 | 686 | 0.0080 | 0.02900 | (5) |
| Tugboat Auxiliary Engines | | | | | | | | | | | | |
| (High Speed Diesel) | ULSD (15 ppm S | 2007+Tier 3 | 1.00 | 5.29 | 5.97 | 0.01 | 0.19 | 0.19 | 652 | 0.0195 | 0.02900 | (3,4) |
| **Auxiliary Boiler (g/kW-hr)** | | | | | | | | | | | | |
| OGV Auxiliary Boilers | MGO (0.1% S) | All (current) | 0.10 | 0.20 | 2.00 | 0.60 | 0.17 | 0.15 | 922 | 0.002 | 0.0750 | (6) |

Notes: (1) Port of Long Beach Air Emissions Inventory - 2013 - Table 2.5. (Starcrest 2014)
(2) Port of Long Beach Air Emissions Inventory - 2013 - Table 2.6. (Starcrest 2014)
(3) Port of San Diego TAMT DEIR Volume 2 Page 298 Tioga and Scout tugs.
(4) Sulfur based on 15 ppm.
(5) Port of Long Beach Air Emissions Inventory - 2013 - Table 2.10, 2.11. (Starcrest 2014)
(6) Port of Long Beach Air Emissions Inventory - 2013 - Table 2.14, 2.15.. (Starcrest 2014)

**Total Emissions per Year - Combined**

| Project Scenario/Activity | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2(MT) | CH4(MT) | N2O(MT) | CO2e (MT) |
|---|---|---|---|---|---|---|---|---|---|---|
| Hoteling (Aux + Boiler) - lb/day | 5.02 | 13.38 | 164.87 | 8.65 | 4.54 | 4.09 | 5.87 | 0.00 | 0.00 | 5.97 |
| **Annual Total - 100 Days of Hoteling (tons/yr)** | **0.25** | **0.67** | **8.24** | **0.43** | **0.23** | **0.20** | **586.94** | **0.00** | **0.03** | **597.26** |

**Total Emissions per Day(g/visit) - Aux Engine**

| Project Scenario/Activity | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Hoteling | 2,016 | 5,544 | 69,552 | 2,352 | 1,613 | 1,462 | 3,457,440 | 40 | 146 | 3,502,004 |
| **Total** | **2,016** | **5,544** | **69,552** | **2,352** | **1,613** | **1,462** | **3,457,440** | **40** | **146** | **3,502,004** |

**Total Emissions per Day (g/visit) - Boiler**

| Project Scenario/Activity | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Hoteling | 262 | 523 | 5,232 | 1,570 | 445 | 392 | 2,411,952 | 5 | 196 | 2,470,550 |
| **Total** | **261.60** | **523.20** | **5,232.00** | **1,569.60** | **444.72** | **392.40** | **2,411,952.00** | **5.23** | **196.20** | **2,470,550** |

## Hoteling Emissions - Shore Power
## Marine Vessel Emissions

**OGV Auxiliary Generator Usage per One-Way Transit**

| Activity | Auxiliary kW per Vessel [1] | Hours/ Transit | kW-Hrs/ Transit |
|---|---|---|---|
| Hoteling - Assumes 4 hours of Non-Shore Power | 210 | 4.00 | 840 |

Notes: (1) Port of Long Beach 2016 Emissions Inventory - Table 2.1 (Starcrest 2017)

**OGV Auxiliary Boiler Usage per One-Way Transit**

| Activity | Boiler kW per Vessel [1] | Hours/ Transit | kW-Hrs/ Transit |
|---|---|---|---|
| Hoteling | 109 | 24.00 | 2,616 |

Notes: (1) Port of Oakland 2015 Emissions Inventory - Page 30 Environ 2016)

**Emission Factors for OGV**

| Engine Type | Assumed Fuel Type | Assumed Fuel Use Application | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2 | CH4 | N2O | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Main Propulsion Engine (g/kW-hr)** | | | | | | | | | | | | |
| OGV Main Engines | MGO (0.1% S) | All (CARB required) | 0.60 | 1.40 | 17.00 | 0.40 | 0.32 | 0.29 | 589 | 0.0120 | 0.02900 | (1,2) |
| Tugboat Main Engines | | | | | | | | | | | | |
| (Medium Speed Diesel) | ULSD (15 ppm S) | 2007+Tier 3 | 0.70 | 5.50 | 5.85 | 0.01 | 0.13 | 0.13 | 652 | 0.0130 | 0.02900 | (3,4) |
| **Auxiliary Engine (g/kW-hr)** | | | | | | | | | | | | |
| OGV Auxiliary Engines | MGO (0.1% S) | All (CARB required) | 0.40 | 1.10 | 13.80 | 0.47 | 0.32 | 0.29 | 686 | 0.0080 | 0.02900 | (5) |
| Tugboat Auxiliary Engines | | | | | | | | | | | | |
| (High Speed Diesel) | ULSD (15 ppm S) | 2007+Tier 3 | 1.00 | 5.29 | 5.97 | 0.01 | 0.19 | 0.19 | 652 | 0.0195 | 0.02900 | (3,4) |
| **Auxiliary Boiler (g/kW-hr)** | | | | | | | | | | | | |
| OGV Auxiliary Boilers | MGO (0.1% S) | All (current in-use fuel | 0.10 | 0.20 | 2.00 | 0.60 | 0.17 | 0.15 | 922 | 0.002 | 0.0750 | (6) |

Notes: (1) Port of Long Beach Air Emissions Inventory - 2013 - Table 2.5. (Starcrest 2014)
(2) Port of Long Beach Air Emissions Inventory - 2013 - Table 2.6. (Starcrest 2014)
(3) Port of San Diego TAMT DEIR Volume 2 Page 298 Tioga and Scout tugs.
(4) Sulfur based on 15 ppm.
(5) Port of Long Beach Air Emissions Inventory - 2013 - Table 2.10, 2.11. (Starcrest 2014)
(6) Port of Long Beach Air Emissions Inventory - 2013 - Table 2.14, 2.15.. (Starcrest 2014)

**Emission Factors Shore Power**

| Activity | Aux Power kW | Total Power kW-hr | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2 | CH4 | N2O | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hoteling (g/kW-hr) - Assumes 20 hours of Shore Power | 210 | 4200 | 0.01 | 0.45 | 0.35 | 0.02 | 0.04 | 0.04 | 652 | 0.0114 | 0.00110 | (1) |

(1) Updated GHG and Criteria Air Pollutant Emission Factors of the US Electric Generating Units in 2010 (Argonne National Lab, 2013). Table 2.

**Total Emissions per Delivery (lb/visit) - Combined**

| Project Scenario/Activity | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2(MT) | CH4(MT) | N2O(MT) | CO2e (MT) |
|---|---|---|---|---|---|---|---|---|---|---|
| Hoteling (Aux + Boiler) - lb/day | 1.42 | 7.32 | 40.29 | 4.48 | 1.93 | 1.76 | 5.73 | 0.00 | 0.00 | 5.80 |
| **Annual Total - 100 Days of Hoteling (tons/yr)** | **0.07** | **0.37** | **2.01** | **0.22** | **0.10** | **0.09** | **572.66** | **0.01** | **0.02** | **579.52** |

**Total Emissions per One-way Trip (g/visit) - Aux Engine**

| Project Scenario/Activity | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Hoteling - Aux | 336 | 924 | 11,592 | 392 | 269 | 244 | 576,240 | 7 | 24 | 583,667 |
| Hoteling - Shore Power | 48 | 1,872 | 1,450 | 72 | 162 | 162 | 2,738,400 | 48 | 5 | 2,740,974 |
| **Total** | **384** | **2,796** | **13,042** | **464** | **431** | **406** | **3,314,640** | **55** | **29** | **3,324,641** |

**Total Emissions per One-way Trip (g/visit) - Boiler**

| Project Scenario/Activity | ROG | CO | NOx | SOx | PM10 | PM2.5 | CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|
| Hoteling | 262 | 523 | 5,232 | 1,570 | 445 | 392 | 2,411,952 | 5 | 196 | 2,470,550 |
| **Total** | **261.60** | **523.20** | **5,232.00** | **1,569.60** | **444.72** | **392.40** | **2,411,952.00** | **5.23** | **196.20** | **2,470,550** |

**West Oakland Community Action Plan**
**Emission Reductions from Enclosures for Wind Blown Piles**
**PM10 Emission Estimate Calculations**

## Wind Erosion of Pile Surfaces and Ground Areas Around Piles

$E_3 = k \Sigma P_i$

where, $E_3$ = Emission Factor g/day, Wind Erosion

$k_2$ = Particle Size Multiplier, 0.5 for PM10

$\Sigma$ = Sum from 1 to N, N = number of disturbances per year

$P_i$ = Erosion potential corresponding to the observed (or probable) fastest mile of wind for the ith period between disturbances ($g/m^2$)

Source: U.S. EPA AP-42, 13.2.5 Eq. (2)

Using the procedure outlined in U.S. EPA AP-42, Section 13.2.5, on page 13.2.5-5.

Step 1: Determine Threshold Friction Velocity ($u_t$) for erodible material from Table 13.2.5-2

$u_t$ = 0.55 m/s

Step 2: Divide the exposed surface area into subareas of constant frequency of disturbance (N)

N = 365

Step 3: Tabulate fastest mile values ($u^+$) for each frequency of disturbance and correct them to 10 m ($u^+_{10}$) using Eq. 5

Review of the HARP met modeling data for the Oakland station shows the 99th percentile wind speed to be 23 miles/hr or 10.3 m/s.

$u^+ = u^+_{10}$ = 23.0 miles/hr or 10.3 m/s

Step 4: Convert fastest mile values (u+10) to equivalent friction (u*), taking into account the nonuniform wind exposure of elevated surfaces (piles) using Eq. 6 and Eq.7

From Table 13.2.5-4, using $u^+_{10}$ = 23 miles/hr,

u* for ($u_s/u_r$=0.2) = 0.21 m/s

u* for ($u_s/u_r$=0.6) = 0.62 m/s

u* for ($u_s/u_r$=0.9) = 0.93 m/s

Step 5: For elevated surfaces (piles), subdivide areas of constant N into subareas of constant u* and determine the size of each subarea

From Table 13.2.5.3, for a conical pile (Pile A)

| Pile Subarea | % | Area ($m^2$) |
|---|---|---|
| 0.2a | 5 | 85.988 |
| 0.2b | 35 | 601.92 |
| 0.6a | 48 | 825.49 |
| 0.9 | 12 | 206.37 |

Assume one conical pile with a maximum diameter of 100 ft and maximum height of 40 ft.

$A = \pi * r * (r^2 + h^2)^{0.5}$

A = 3704.72 $ft^2$ per pile

A = 18523.6 $ft^2$ Assumes 5 piles within region.

Step 6: For each subarea of constant N and u*, calculate the erosion potential ($P_i$) using Eq 3.

$P = 58 * (u^* - u_t^*)^2 + 24 * (u^* - u_t^*)$ and P= 0 for $u^* \le u_t^*$

For 23 miles/hr, $u^* < u_t^*$ for pile subarea 0.2a. Therefore, only 0.9 and 0.6 $P_i$ is calculated.

$P_{0.9+0.6}$ = $58(0.93 - 0.55)^2$ +25(0.93 - 0.55) + 58(0.62 - 0.55)2 +25(0.62 - 0.55)

$P_{0.9}$ = 19.9094 $g/m^2$

Step 7: Multiply the resulting emission factor for each subarea by the size of the subarea, and the sum for all subareas.

Since $P_{0.2}$ and $P_{0.6}$ = 0, $P = P_{0.9} * A_{0.9}$.

P = 19.9094 * 206.372

P = 4108.75 g/day

**West Oakland Community Action Plan**
**Emission Reductions from Enclosures for Wind Blown Piles**
**PM10 Emission Estimate Calculations**

## Uncontrolled Emissions

$E_3 = k * \Sigma P_i$

**$E_3$ = 4.53 lb/day**

**$E_3$ = 0.83 ton/yr**

## Full Enclosure Controlled Emissions

Enclosure Control Efficiency = 95 %, Source SCAQMD PAR 1158, Appendix C, page C-2.

$E_{3c} = E_3 * (1-0.95)$

**$E_{3c}$ = 0.23 lb/day**

**$E_3$ = 0.04 ton/yr**

## 3-Sided Enclosure Controlled Emissions

Enclosure Control Efficiency = 75 %, Source SCAQMD Mitigation Measure Examples Fugitive Dust From Storage Table XI-E.

$E_{3P} = E_3 * (1-0.75)$

**$E_{3P}$ = 1.13 lb/day**

**$E_3$ = 0.21 ton/yr**

References: U.S. EPA AP-42 Sections 13.2.4 (1/95), 13 U.S. EPA AP-42 Section 13.2.5 (1/95)

## Wind Erosion of Pile Surfaces and Ground Areas Around Piles

$E_3 = k \Sigma P_i$

where, $E_3$ = Emission Factor g/day, Wind Erosion

$k_2$ = Particle Size Multiplier, 0.075 for PM2.5

$\Sigma$ = Sum from 1 to N, N = number of disturbances per year

$P_i$ = Erosion potential corresponding to the observed (or probable) fastest mile of wind for the ith period between disturbances (g/m$^2$)

Source: U.S. EPA AP-42, 13.2.5 Eq. (2)

Using the procedure outlined in U.S. EPA AP-42, Section 13.2.5, on page 13.2.5-5.

Step 1: Determine Threshold Friction Velocity ($u_t$) for erodible material from Table 13.2.5-2

$u_t$ = 0.55 m/s

Step 2: Divide the exposed surface area into subareas of constant frequency of disturbance (N)

N = 365

Step 3: Tabulate fastest mile values ($u^+$) for each frequency of disturbance and correct them to 10 m ($u^+_{10}$) using Eq. 5

Review of the HARP met modeling data for the Oakland station shows the 99th percentile wind speed to be 23 miles/hr or 10.3 m/s.

$u^+ = u^+_{10}$ = 23.0 miles/hr or 10.3 m/s

Step 4: Convert fastest mile values (u+10) to equivalent friction (u*), taking into account the nonuniform wind exposure of elevated surfaces (piles) using Eq. 6 and Eq.7

From Table 13.2.5-4, using $u^+_{10}$ = 23 miles/hr,

u* for ($u_s/u_r$=0.2) = 0.21 m/s

u* for ($u_s/u_r$=0.6) = 0.62 m/s

u* for ($u_s/u_r$=0.9) = 0.93 m/s

Step 5: For elevated surfaces (piles), subdivide areas of constant N into subareas of constant u* and determine the size of each subarea

From Table 13.2.5.3, for a conical pile (Pile A)

| Pile Subarea | % | Area (m$^2$) |
|---|---|---|
| 0.2a | 5 | 85.988 |
| 0.2b | 35 | 601.92 |
| 0.6a | 48 | 825.49 |
| 0.9 | 12 | 206.37 |

Assume one conical pile with a maximum diameter of 100 ft and maximum height of 40 ft.

$A = \pi * r * (r^2 + h^2)^{0.5}$

A = 3704.72 ft$^2$ per pile

A = 18523.6 ft$^2$ Assumes 5 piles within the region.

Step 6: For each subarea of constant N and u*, calculate the erosion potential ($P_i$) using Eq 3.

$P = 58 * (u^* - u_t^*)^2 + 24 * (u^* - u_t^*)$ and P= 0 for $u^* \leq u_t^*$

For 23 miles/hr, $u^* < u_t^*$ for pile subarea 0.2a. Therefore, only 0.9 and 0.6 $P_i$ is calculated.

$P_{0.9+0.6}$ = 58(0.93 - 0.55)$^2$ +25(0.93 - 0.55) + 58(0.62 - 0.55)2 +25(0.62 - 0.55)

$P_{0.9}$ = 19.9094 g/m$^2$

Step 7: Multiply the resulting emission factor for each subarea by the size of the subarea, and the sum for all subareas.

Since $P_{0.2}$ and $P_{0.6} = 0$, $P = P_{0.9} * A_{0.9}$.

P = 19.9094 * 206.372

P = 4108.75 g/day

**West Oakland Community Action Plan**
**Emission Reductions from Enclosures for Wind Blown Piles**
**PM2.5 Emission Estimate Calculations**

### Uncontrolled Emissions

$E_3 = k * \Sigma P_i$

| | | |
|---|---|---|
| **$E_3$ =** | **0.68** | **lb/day** |
| **$E_3$ =** | **0.12** | **ton/yr** |

### Full Enclosure Controlled Emissions

Enclosure Control Efficiency = 95 %, Source SCAQMD PAR 1158, Appendix C, page C-2.

$E_{3c} = E_3 * (1-0.95)$

| | | |
|---|---|---|
| **$E_{3c}$ =** | **0.03** | **lb/day** |
| **$E_3$ =** | **0.01** | **ton/yr** |

### 3-Sided Enclosure Controlled Emissions

Enclosure Control Efficiency = 75 %, Source SCAQMD Mitigation Measure Examples Fugitive Dust From Storage Table XI-E.

$E_{3P} = E_3 * (1-0.75)$

| | | |
|---|---|---|
| **$E_{3P}$ =** | **0.17** | **lb/day** |
| **$E_3$ =** | **0.03** | **ton/yr** |

References: U.S. EPA AP-42 Sections 13.2.4 (1/95), 1: U.S. EPA AP-42 Section 13.2.5 (1/95)

## West Oakland Community Action Plan
## Operational Delivery Truck Emissions

| Equipment | Vehicle | Trip Length | Annual Trips | VMT | VOC | CO | Nox | SOx | Mobile PM10 | Fugitive PM10 | Total PM10 | Total PM2.5 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Emission Factor (lb/mi) | HHDT | 100 | 40 | 4000 | 0.00035 | 0.00231 | 0.01078 | 0.00004 | 0.00027 | 0.00231 | 0.00258 | 0.001 | 3.745 |
| Annual Emissions (lb/yr) | | | | | 1.409 | 9.232 | 43.108 | 0.140 | 1.067 | 9.257 | 10.325 | 2.641 | 14981.074 |
| **Annual Emissions (tons/yr)(MT/yr for CO2e)** | | | | | **0.001** | **0.005** | **0.022** | **0.000** | **0.001** | **0.005** | **0.005** | **0.001** | **6.795** |
| **Average Daily (lb/day)** | | | | | **0.004** | **0.025** | **0.118** | **0.000** | **0.003** | **0.025** | **0.028** | **0.007** | **41.044** |
| **Peak Daily (lb/day)** | | | | | **0.070** | **0.462** | **2.155** | **0.007** | **0.053** | **0.463** | **0.516** | **0.132** | **749.054** |

Notes:

(1) Peak day assumes 2 ammonia or catalyst delivery trucks.

(2) Emfac2014 emission factors for the San Francisco Bay Area District for 2019 fleet. Total PM2.5 = Mobile PM10 + 0.17*Fugitive PM10.

(3) Fugitive PM emission calculations for travel on paved roads from EPA AP-42 Section 13.2.1, January 2011

$E = k(sL)^{0.91} \times (W)^{1.02}$

Where: k = 0.0022 lb/VMT for PM10, sL = road silt loading (gms/m2)

(0.03 for major/collector roads), W = weight of vehicles (2.5 tons for light; 5.5 for medium trucks,

and 24 for heavy trucks)

(4) Carbon Dioxide Equivalence (CO2e) = $CO_2 + CH_4 * 21 + N2O*310$

where CO2 emissions factors are from Emfac2011. CH4 and N2O emissions factors are from Direct Emissions from Mobile Combustion Sources, EPA 2008.

where light vehicle are gasoline light duty trucks.

where medium/heavy duty vehicle are diesel heavy duty trucks.

| Chemical | 2019 | | |
|---|---|---|---|
| | Light | Medium | Heavy |
| CO2 (lb/mi) | 0.8949 | 2.2430 | 3.7418 |
| CH4 (g/mi) | 0.0148 | 0.0051 | 0.0051 |
| N2O (g/mi) | 0.0157 | 0.0048 | 0.0048 |
| CO2e (lb/mi) | 0.906 | 2.247 | 3.745 |

**West Oakland Community Action Plan**
**Operational Onroad Vehicle Emissions**

| Emissions Factors | Type | Fuel | VOC | CO | NOx | SOx | PM10 | PM2.5 | CO2e |
|---|---|---|---|---|---|---|---|---|---|
| Emission Factor (lb/vehicle-yr) | LDA | Gas/Dsl | 2.54E+01 | 1.31E+02 | 1.90E+01 | 5.39E-02 | 9.69E-01 | 6.03E-01 | 5.21E+03 |
| Emission Factor (lb/vehicle-yr) | LDA | Elec | 4.10E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.26E+00 | 8.96E-01 | 2.16E+03 |

**Gas/Diesel Vehicles Emissions**

| Program | Units | Vehicle | VOC | CO | NOx | SOx | PM10 | PM2.5 | CO2e (MT/yr) |
|---|---|---|---|---|---|---|---|---|---|
| Vehicle Buy Back | lb/yr | 60 | 1521.11 | 7870.85 | 1142.65 | 3.24 | 58.11 | 36.20 | 141.78 |
| Vehicle Buy Back | lb/yr | 80 | 2028.15 | 10494.47 | 1523.54 | 4.32 | 77.48 | 48.27 | 189.04 |
| Cleaner Cars for All | lb/yr | 40 | 1014.07 | 5247.24 | 761.77 | 2.16 | 38.74 | 24.13 | 94.52 |
| Cleaner Cars for All | lb/yr | 50 | 1267.59 | 6559.05 | 952.21 | 2.70 | 48.43 | 30.17 | 118.15 |

**Electric Vehicles Emissions**

| Program | Units | Vehicle | VOC | CO | NOx | SOx | PM10 | PM2.5 | CO2e (MT/yr) |
|---|---|---|---|---|---|---|---|---|---|
| Vehicle Buy Back | lb/yr | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vehicle Buy Back | lb/yr | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cleaner Cars for All | lb/yr | 40 | 1.64 | 0.00 | 0.00 | 0.00 | 90.31 | 35.82 | 39.10 |
| Cleaner Cars for All | lb/yr | 50 | 2.05 | 0.00 | 0.00 | 0.00 | 112.89 | 44.78 | 48.88 |

**Net Vehicles Emissions**

| Program | Units | Vehicle | VOC | CO | NOx | SOx | PM10 | PM2.5 | CO2e (MT/time) |
|---|---|---|---|---|---|---|---|---|---|
| Vehicle Buy Back | lb/day | 60 | -4.17 | -21.56 | -3.13 | -0.01 | -0.16 | -0.10 | -0.39 |
| Vehicle Buy Back | lb/day | 80 | -5.56 | -28.75 | -4.17 | -0.01 | -0.21 | -0.13 | -0.52 |
| Cleaner Cars for All | lb/day | 40 | -2.77 | -14.38 | -2.09 | -0.01 | 0.14 | 0.03 | -0.15 |
| Cleaner Cars for All | lb/day | 50 | -3.47 | -17.97 | -2.61 | -0.01 | 0.18 | 0.04 | -0.19 |
| Vehicle Buy Back | tons/yr | 60 | -0.76 | -3.94 | -0.57 | 0.00 | -0.03 | -0.02 | -141.78 |
| Vehicle Buy Back | tons/yr | 80 | -1.01 | -5.25 | -0.76 | 0.00 | -0.04 | -0.02 | -189.04 |
| Cleaner Cars for All | tons/yr | 40 | -0.51 | -2.62 | -0.38 | 0.00 | 0.03 | 0.01 | -55.42 |
| Cleaner Cars for All | tons/yr | 50 | -0.63 | -3.28 | -0.48 | 0.00 | 0.03 | 0.01 | -69.28 |

Notes:

Emfac2014 emission factors for the San Francisco Bay Area District for 2019 fleet. Assumes 1975-1996 fleet for gas/diesel and 2019 for electric.

CO2e factors from U.S. Department of Energy for California. https://afdc.energy.gov/vehicles/electric_emissions.html. Accessed 6-28-19.

## West Oakland Community Action Plan
## Operational Onroad Vehicle Fuel Use

| Emissions Factors | Type | Fuel | Fuel |
|---|---|---|---|
| Emission Factor (gal/vehicle-yr) | LDA | Gas/Dsl | 2.83E+02 |
| Emission Factor (gal/vehicle-yr) | LDA | Elec | 0.00E+00 |

**Gas/Diesel Vehicles Fuel Use**

| Program | Units | Vehicle | Fuel |
|---|---|---|---|
| Vehicle Buy Back | gal/yr | 60 | 16963.43 |
| Vehicle Buy Back | gal/yr | 80 | 22617.91 |
| Cleaner Cars for All | gal/yr | 40 | 11308.96 |
| Cleaner Cars for All | gal/yr | 50 | 14136.20 |

**Electric Vehicles Fuel Use**

| Program | Units | Vehicle | Fuel |
|---|---|---|---|
| Vehicle Buy Back | gal/yr | 0 | 0.00 |
| Vehicle Buy Back | gal/yr | 0 | 0.00 |
| Cleaner Cars for All | gal/yr | 40 | 0.00 |
| Cleaner Cars for All | gal/yr | 50 | 0.00 |

**Net Vehicles Emissions**

| Program | Units | Vehicle | Fuel |
|---|---|---|---|
| Vehicle Buy Back | gal/day | 60 | -46.48 |
| Vehicle Buy Back | gal/day | 80 | -61.97 |
| Cleaner Cars for All | gal/day | 40 | -30.98 |
| Cleaner Cars for All | gal/day | 50 | -38.73 |
| Vehicle Buy Back | gal/yr | 60 | -16963.43 |
| Vehicle Buy Back | gal/yr | 80 | -22617.91 |
| Cleaner Cars for All | gal/yr | 40 | -11308.96 |
| Cleaner Cars for All | gal/yr | 50 | -14136.20 |

Notes:

Emfac2014 emission factors for the San Francisco Bay Area District for 2019 fleet. Assumes 1975-1996 fleet for gas/diesel and 2019 for electric.

CO2e factors from U.S. Department of Energy for California. https://afdc.energy.gov/vehicles/electric_emissions.html. Accessed 6-28-19.

**West Oakland Community Action Plan**
**Enclosure Off-road Construction Emissions**

| | | | | | | | Emission Factors (lb/hr) | | | | | | Emissions (lb) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Phase** | **Equipment** | **HP** | **Amount** | **Days** | **Hr/Day** | **Total Hours** | **VOC** | **CO** | **NOx** | **SOx** | **PM10** | **CO2e** | **VOC** | **CO** | **NOx** | **SOx** | **PM10** | **PM2.5** | **CO2e (MT)** |
| Equipment Installation | Air Compressor | Comp | 1 | 60 | 8 | 480 | 0.02 | 0.21 | 0.13 | 0.00 | 0.01 | 0.01 | 10.93 | 99.76 | 61.01 | 0.14 | 4.74 | 4.70 | 3.40 |
| Equipment Installation | Crane | Comp | 1 | 60 | 4 | 240 | 0.05 | 0.40 | 0.72 | 0.00 | 0.03 | 0.04 | 12.61 | 95.56 | 173.84 | 0.35 | 8.01 | 7.93 | 8.49 |
| Equipment Installation | Forklift | Comp | 1 | 60 | 8 | 480 | 0.02 | 0.22 | 0.17 | 0.00 | 0.01 | 0.01 | 8.02 | 103.97 | 83.37 | 0.19 | 5.96 | 5.90 | 4.60 |
| Equipment Installation | Generator Sets | 50 | 2 | 60 | 8 | 960 | 0.02 | 0.28 | 0.13 | 0.00 | 0.01 | 0.01 | 21.87 | 269.92 | 122.02 | 0.28 | 9.49 | 9.39 | 6.81 |
| Equipment Installation | Aerial Lift | Comp | 4 | 60 | 8 | 1920 | 0.00 | 0.17 | 0.10 | 0.00 | 0.00 | 0.01 | 9.12 | 329.29 | 187.93 | 0.85 | 3.73 | 3.70 | 20.46 |
| Equipment Installation | Welder | 50 | 4 | 60 | 8 | 1920 | 0.03 | 0.23 | 0.18 | 0.00 | 0.02 | 0.01 | 63.62 | 436.11 | 347.73 | 0.75 | 29.23 | 28.94 | 17.99 |
| **Emissions for One Enclosure Construction (tons)** | | | | | | | | | | | | | **0.06** | **0.67** | **0.49** | **0.00** | **0.03** | **0.03** | **61.75** |
| **Peak Daily Emissions (lb/day)** | | | | | | | | | | | | | **2.10** | **22.24** | **16.27** | **0.04** | **1.02** | **1.01** | **1.03** |

Notes:

(1) Off-Road 2011 for 2019 fleet. CO emissions from SCAQMD, 2006 : http://www.aqmd.gov/ceqa/handbook/offroad/offroadEF07_25.xls

(2) Carbon Dioxide Equivalents (CO2e) are based on fuel use and default emission factors for diesel. Metric tons.

**West Oakland Community Action Plan**
**Enclosure On-road Construction Emissions**

| Phase | Vehicle | Trip Length | Total Trips | VMT | VOC (lb/mi) | CO (lb/mi) | NOx (lb/mi) | SOx (lb/mi) | PM (lb/mi) | Fugitive PM | CO2e (lb/mile) | VOC (lbs) | CO (lbs) | NOx (lbs) | SOx (lbs) | PM10 (lbs) | PM2.5 (lbs) | CO2e (tonnes) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment Installation | Commuters | 24.8 | 1200 | 29760 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.906 | 1.278 | 51.209 | 8.229 | 0.211 | 9.752 | 4.292 | 12.234 |
| Equipment Installation | Delivery | 40 | 10 | 400 | 0.000 | 0.002 | 0.007 | 0.000 | 0.000 | 0.000 | 2.247 | 0.169 | 0.758 | 2.662 | 0.010 | 0.379 | 0.224 | 0.408 |
| Equipment Installation | HHDT | 40 | 10 | 400 | 0.000 | 0.002 | 0.011 | 0.000 | 0.000 | 0.002 | 3.745 | 0.141 | 0.923 | 4.311 | 0.014 | 1.032 | 0.264 | 0.680 |
| **Emissions for One Enclosure Construction (Total Emissions)** | | | | | | | | | | | | **0.001** | **0.026** | **0.008** | **0.000** | **0.006** | **0.002** | **13.322** |
| **Emissions for One Enclosure Construction (Peak Daily)** | | | | | | | | | | | | **0.331** | **2.535** | **7.110** | **0.028** | **1.574** | **0.560** | **1.291** |

Notes:

(1) Peak day assumes 20 workers per day and all deliverise occur in one day. Project emissions based on 20 commuters per day for 60 days.

(2) Emfac2014 emission factors for the San Francisco Bay Area District for 2019 fleet.

(3) Fugitive PM emission calculations for travel on paved roads from EPA AP-42 Section 13.2.1, January 2011

$E = k(sL)^{0.91} \times (W)^{1.02}$

Where: k = 0.0022 lb/VMT for PM10, sL = road silt loading (gms/m2)

(0.03 for major/collector roads), W = weight of vehicles (2.5 tons for light; 5.5 for medium trucks,

and 24 for heavy trucks)

(4) Carbon Dioxide Equivalence ($CO_E$) = $CO_2$ + $CH_4$ * 21 + N2O*310

where CO2 emissions factors are from Emfac2011. CH4 and N2O emissions factors are from Direct Emissions from Mobile Combustion Sources, EPA 2008.

where light vehicle are gasoline light duty trucks.

where medium/heavy duty vehicle are diesel heavy duty trucks.

| | 2019 | | |
|---|---|---|---|
| **Chemical** | **Light** | **Medium** | **Heavy** |
| CO2 (lb/mi) | 0.8949 | 2.2430 | 3.7418 |
| CH4 (g/mi) | 0.0148 | 0.0051 | 0.0051 |
| N2O (g/mi) | 0.0157 | 0.0048 | 0.0048 |
| CO2e (lb/mi) | 0.906 | 2.247 | 3.745 |

## Appendix C:

**AB 617 Owning Our Air: The West Oakland Community Action Plan**
**Technical Support Document**
**Base Year Emissions Inventory and Air Pollutant Dispersion Modeling**

Note: Updated and replaced in whole for Final EIR, see Draft EIR for previous version.

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# Table of Contents

**1. Introduction ........ 1**
1.1 Context ........ 1
1.2 Background and Technical Framework ........ 2
1.3 Objectives ........ 5

**2. Emissions Inventory ........ 7**
2.1 Development and Overview ........ 7
2.1.1 Pollutants ........ 7
2.1.2 Domain ........ 7
2.1.3 Emissions Sources and Base Year ........ 8
2.1.4 Approach ........ 12
2.1.5 Emissions by Category ........ 13
2.2 Permitted Stationary Sources ........ 18
2.3 On-Road Mobile Sources ........ 22
2.3.1 Roadway Attributes ........ 24
2.3.2 Travel Activity ........ 27
2.3.3 Emission Factors ........ 32
2.3.4 Emissions ........ 33
2.4 Truck-Related Businesses ........ 34
2.4.1 Surveyed Businesses ........ 34
2.4.2 Schnitzer Steel ........ 36
2.5 Ocean-Going Vessels ........ 37
2.5.1 Port of Oakland ........ 37
2.5.2 Schnitzer Steel ........ 40
2.6 Commercial Harbor Crafts ........ 41
2.6.1 Operation and Maintenance Dredging and Disposal ........ 41
2.6.2 Assist Tugs ........ 42
2.6.3 Bunkering Barges ........ 44
2.7 Cargo Handling Equipment ........ 45
2.8 Port Trucks at Terminals ........ 48
2.9 Locomotives (Rail Lines) ........ 50
2.9.1 Freight Haul Lines ........ 50
2.9.2 Passenger Rail Lines ........ 51
2.10 Railyards ........ 53
2.10.1 BNSF ........ 53
2.10.2 OGRE ........ 55
2.10.3 UP ........ 56
2.11 Commuter Ferries and Excursion Vessels ........ 56

**3. Air Dispersion Modeling ........ 60**
3.1 Modeling Approach ........ 60
3.2 Meteorological Data ........ 61
3.2.1 Surface meteorology ........ 61
3.2.2 Upper-air meteorology ........ 63

3.3 AERMOD Model Configuration ....64
3.4 Sources....65
3.4.1 Overview ....65
3.4.2 Permitted Stationary Sources ....68
3.4.3 On-Road Mobile Sources ....69
3.4.4 Truck-Related Businesses ....75
3.4.5 Ocean-Going Vessels ....76
3.4.6 Commercial Harbor Crafts ....79
3.4.7 Cargo handling equipment ....81
3.4.8 Port Trucks at Terminals ....81
3.4.9 Locomotives (Rail Lines) ....82
3.4.10 Railyards....83
3.4.11 Commuter Ferries and Excursion Vessels....83
3.5 Receptors ....85
3.6 Background Concentrations....86

**4. Analysis Methods....90**
4.1 Estimating Pollutant Concentration and Cancer Risk ....90
4.1.1 Totals at Receptors ....90
4.1.2 Pollutant Concentration....91
4.1.3 Cancer Risk ....91
4.2 Spatial Distributions and Source Apportionment....94
4.2.1 Source Apportionment....94
4.2.2 Interpreting Map Products....94
4.2.3 Spatial Aggregation....95

**5. Results ....99**
5.1 $PM_{2.5}$ Concentrations ....99
5.2 DPM Concentrations ....99
5.3 Cancer Risk....102
5.4 Source Apportionment....102

**6. Limitations, Uncertainties, and Future Improvements ....106**
6.1 Emissions Inventory ....106
6.1.1 Permitted Stationary Sources ....106
6.1.2 On-Road Mobile Sources ....106
6.1.3 Truck-Related Businesses ....109
6.1.4 Port-Related Sources ....109
6.1.5 UP Locomotives and Railyard....110
6.1.6 Omitted Emissions Sources from Air Dispersion Modeling....112
6.2 Air Dispersion Modeling....115
6.2.1 Model Formulation....115
6.2.2 Dispersion Modeling and Emissions Source Parameters....116
6.2.3 Receptors....118
6.3 Risk Assessment Methodology....119

**7. References ....121**

**Attachment 1. Toxic Air Contaminants....................128**

**Attachment 2. Permitted Stationary Sources....................130**

**Attachment 3. Truck-Related Businesses....................138**

# Notation

## Acronyms

| | |
|---|---|
| AADT | annual average daily traffic |
| AB | Assembly Bill |
| ABAG | Association of Bay Area Governments |
| AERMAP | American Meteorological Society/Environmental Protection Agency Regulatory Model terrain pre-processor |
| AERMET | American Meteorological Society/Environmental Protection Agency Regulatory Model Meteorological Processor |
| AERMOD | American Meteorological Society/Environmental Protection Agency Regulatory Model |
| agl | above ground level |
| APCS | automated pavement condition survey |
| ASF | age sensitivity factor |
| asl | above sea level |
| AQS | Air Quality System |
| BAAQMD | Bay Area Air Quality Management District |
| BAU | business-as-usual |
| CalEPA | California Environmental Protection Agency |
| CAPCOA | California Air Pollution Control Officers Association |
| CAPP | Community Air Protection Program |
| CARB | California Air Resources Board |
| CARE | Community Air Risk Evaluation |
| CAS | Chemical Abstract Service |
| CEIDARS | California Emissions Inventory Development and Reporting System |
| CHC | commercial harbor craft |
| CHE | cargo handling equipment |
| CHEI | Cargo Handling Equipment Inventory (model) |
| CMAQ | Community Multi-scale Air Quality (model) |
| CPF | cancer potency factor |
| CRW | cancer risk-weighted |
| CT-EMFAC | Caltrans-EMissions FACtors (model) |
| DBR | daily breathing rate |
| DPM | diesel particulate matter |
| EBMUD | East Bay Municipal Utility District |
| EC | elemental carbon |
| ED | exposure duration |
| EDF | Environmental Defense Fund |
| EMFAC | EMission FACtors (model) |
| EPA | Environmental Protection Agency |
| EZ | exclusion zone |
| FAH | fraction of time at home |
| FHWA | U.S. Federal Highway Administration |
| GVWR | gross vehicle weight rating |

| | |
|---|---|
| HDV | heavy-duty vehicle |
| HHDT | heavy heavy-duty truck |
| HRA | health risk assessment |
| IDW | inverse distance weighting |
| LDV | light-duty vehicle |
| LHDT | light heavy-duty truck |
| LST | local standard time |
| MSAT | mobile source air toxic |
| MDV | medium-duty vehicle |
| MHDT | medium heavy-duty truck |
| NAD83 | North American Datum of 1983 |
| NEI | National Emissions Inventory |
| NEPA | National Environmental Policy Act |
| NOAA | National Oceanic and Atmospheric Administration |
| NT | Non-Truck |
| OEHHA | Office of Environmental Health Hazard Assessment |
| OGV | ocean-going vessel |
| O&M | operation and maintenance |
| O-D | origin-destination |
| PeMS | Performance Measurement System |
| PM | particulate matter |
| $PM_{10}$ | particulate matter 10 micrometers or less in diameter |
| $PM_{2.5}$ | particulate matter 2.5 micrometers or less in diameter |
| POM | polycyclic organic matter |
| POAK | Port of Oakland |
| PSD | prevention of significant deterioration |
| QA | quality assure/assurance |
| SIC | Standard Industrial Classification |
| SMOKE | Sparse Matrix Operator Kernel Emissions (model) |
| SRTM | Shuttle Radar Topography Mission |
| TAC | toxic air contaminants |
| TIGER | Topographically Integrated Geographic Encoding and Referencing |
| TOG | total organic gases |
| TRU | transport refrigeration unit |
| UP | Union Pacific |
| USGS | United States Geological Survey |
| UTM | Universal Transverse Mercator |
| VHT | vehicle hours traveled |
| VMT | vehicle miles traveled |
| WD | weekday |
| WE | weekend |
| WETA | Water Emergency Transportation Authority |
| WOEIP | West Oakland Environmental Indicators Project |
| WRF | Weather Research and Forecasting (model) |

## Units

| | |
|---|---|
| g | gram |
| kg | kilogram |
| lb | pound |
| mg | milligram |
| ton | U.S. ton (2,000 lb) |
| tpy | tons per year (U.S. ton/y) |
| µg | microgram |
| | |
| L | liter |
| gal | gallon |
| | |
| ft | feet |
| nmi | nautical mile |
| m | meter |
| mi | mile |
| | |
| h | hour |
| min | minute |
| s | second |
| | |
| mph | miles per hour (mi/h) |
| kt | knot (1.15078 mph) |
| | |
| °C | degrees Celsius |
| °F | degrees Fahrenheit |
| K | Kelvin |
| | |
| ppm | parts per million |
| | |
| bhp | brake horsepower |
| hp | horsepower |
| kW | kilowatt |

# 1. Introduction

The technical work performed to support the West Oakland Community Action Plan pursuant to Assembly Bill 617 is described in this document. The objective of this technical work was to spatially map the contribution of emissions from major emissions sources to pollutant concentrations and estimate cancer risk within the West Oakland community that may potentially impact current and future residents.

## 1.1 Context

The California State Assembly adopted Assembly Bill (AB) 617 in 2017 (C. Garcia, Chapter 136, Statutes of 2017). The bill established the Community Air Protection Program (CAPP),[1] which focuses on reducing exposure in communities most impacted by air pollution. Local air districts are tasked with partnering with community groups, environmental organizations, regulated communities, and other stakeholders to develop a new community-focused action framework for community protection.

To meet AB 617 statutory requirements, the California Air Resources Board (CARB) was directed to provide "[a] methodology for assessing and identifying the contributing sources or categories of sources, including, but not limited to, stationary and mobile sources, and an estimate of their relative contribution to elevated exposure to air pollution in impacted communities…" (following California Health and Safety Code §44391.2(b)(2)).[2] CARB outlined a general methodology in its *Community Air Protection Program Blueprint* (California Air Resources Board 2018a), and five recommended technical approaches in an accompanying document, *AB 617 Recommended Source Attribution Approaches* (California Air Resources Board 2018a). These approaches include creating "community inventory ratios" (Approach 1), where community-specific emissions inventories are developed and ratios of emissions from different sources are compared, and "community-specific air quality modeling" (Approach 2), which uses the community-specific emissions inventory, meteorological data, and air quality models to estimate the impacts and contributions of emission sources on overall air pollution concentrations within the community.

The Bay Area Air Quality Management District (BAAQMD, the "District") identified West Oakland as a Year 1 community under the CAPP (Bay Area Air Quality Management District 2018). West Oakland is considered one of the most impacted areas in the San Francisco Bay Area due to presence of many sources of diesel particulate matter (DPM). The technical work performed to support the West Oakland Community Action Plan ("Action Plan") pursuant to AB 617 is described in this document. The objective of this technical work was to spatially map the contribution of emissions from major emissions sources to pollutant concentrations within the West Oakland community that may potentially impact current and future. Following CARB's suggested technical approaches, to identify areas with elevated air pollutant concentrations and higher population exposure, a bottom-up air pollutant *emissions inventory* was developed, and *air pollution dispersion modeling* was performed to support a *source apportionment* analysis. This

[1] http://www.baaqmd.gov/community-health/community-health-protection-program.
[2] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB617.

document therefore describes how emissions from major source categories were estimated, how the dispersion model was selected and configured, and presents the output from the dispersion model.

## 1.2 Background and Technical Framework

West Oakland is bounded by three major freeways (I-580, I-880, I-980), is adjacent to large industrial sources and the Port of Oakland (the "Port"), and is the location of a major U.S. Postal Service Distribution Center (**Figure 1-1**). Based on modeling and field studies conducted under the District's Community Air Risk Evaluation Program (CARE), the District identified West Oakland as a community impacted by poor air quality (elevated fine particulate matter and DPM), where residence have poor health outcomes and are subjected to elevated cancer risk.[3]

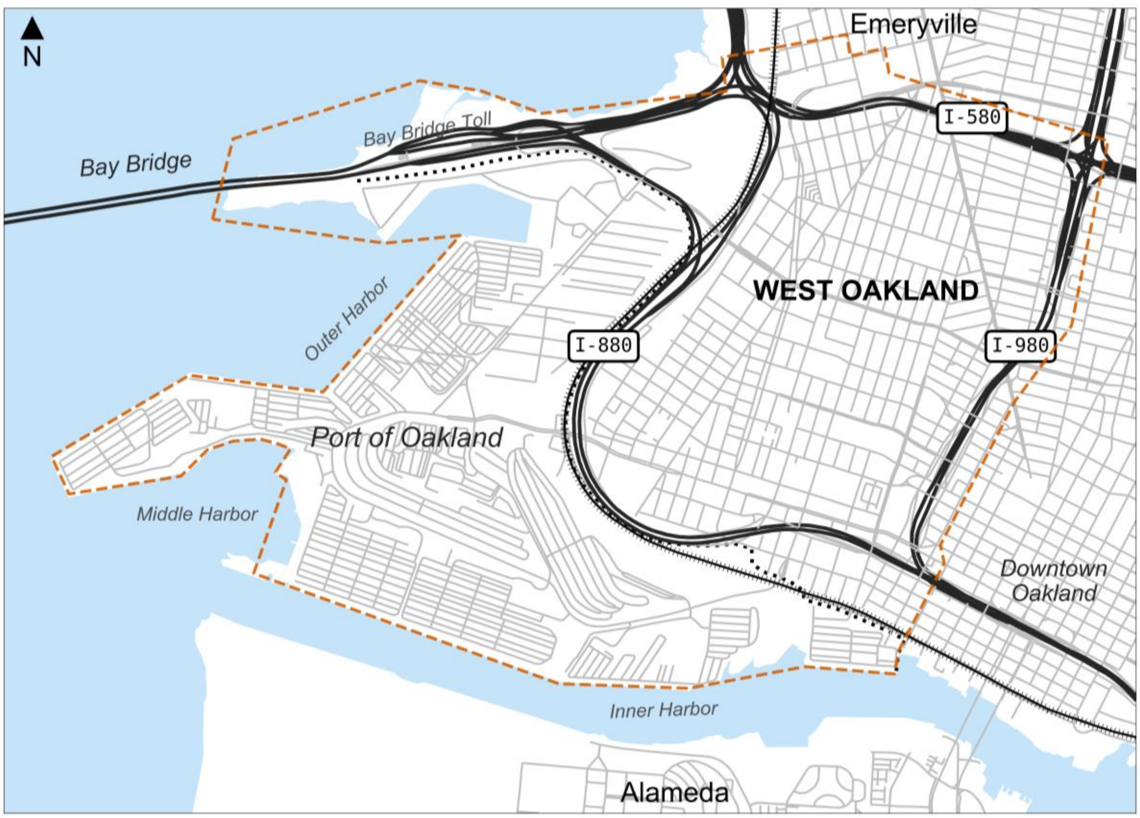


**Figure 1-1.** Map of the West Oakland. The extents of West Oakland community (dashed red line) and the Port of Oakland (dotted black line), roadways (solid black and grey lines) and rail lines (hatched black lines) are denoted.

Emissions inventories contain information on the quantity of air pollutants that are emitted from specific sources or source categories over a specific period. In this analysis, emissions inventories of fine particulate matter (particulate matter 2.5 micrometers or less in diameter [$PM_{2.5}$]) and toxic

[3] Previous analyses (Bay Area Air Quality Management District 2014) identified impacted areas based on elevated fine particulate matter concentrations and high rates of cancer, incidences of mortality, hospitalization rates, and respiratory illnesses.

air contaminants (TACs) that have documented cancer toxicities (see **Attachment 1**) were developed. The emissions inventory accounts for *primary pollutants* only.[4] $PM_{2.5}$ and TACs are the primary air pollutants which pose the greatest risk to the health of residents in West Oakland and are further described below.

> **Toxic Air Contaminants (TACs):** CARB is responsible for identifying TACs, which are defined as pollutants that "may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health."[5] Exposure to TACs can cause serious health effects, including cancer and birth defects. Other adverse health effects can include damage to immune, neurological, reproductive (reduced fertility), developmental, and respiratory systems. TACs are emitted from many sources in the Bay Area, including: diesel engines, vehicles (e.g., cars, trucks), industrial processes, and gas stations. Types of TACs include DPM, lead, benzene, formaldehyde, and hexavalent chromium (a complete list of TACs examined in this analysis is provided in **Attachment 1**). DPM is the most significant TAC in the Bay Area, accounting for ~85% of the cancer risk.

> **Fine Particulate Matter ($PM_{2.5}$):** $PM_{2.5}$ is composed of a mixture of many small airborne particles or liquid droplets. $PM_{2.5}$ originates from a variety of sources, including fossil fuel combustion, residential wood burning and cooking, and natural sources (such as wildfires and re-entrained road dust). Epidemiological studies have established that exposure to $PM_{2.5}$ has serious adverse health impacts (e.g., Cohen and Pope 1995, Krewski *et al.* 2009, Health Effects Institute 2010). $PM_{2.5}$ can enter deep into lungs and the bloodstream. Exposure to $PM_{2.5}$ has negative effects on the respiratory system (such as triggering asthma attacks, aggravating bronchitis, and diminishing lung function), cardiovascular system (and may cause atherosclerosis [hardening of the arteries], ischemic strokes [caused by an obstruction of the blood supply to the brain], and heart attacks). Because of the serious cardiovascular effects of exposure to $PM_{2.5}$, studies have found a clear correlation between exposure to elevated $PM_{2.5}$ levels and mortality. Studies also indicate that exposure to $PM_{2.5}$ may be related to other negative health effects, including impacts on the brain (such as reduced cognitive function), and increased risk of diabetes. Exposure to $PM_{2.5}$ remains the leading public health risk and contributor to premature death from air pollution in the Bay Area. More information on fine PM and associated health effects can be found in the report *Understanding Particulate Matter: Protecting public health in the San Francisco Bay Area*, prepared by the District (Bay Area Air Quality Management District 2012).

The emissions inventory developed for this analysis includes emissions from various local pollutant sources in West Oakland: permitted stationary sources (small and large complex facilities regulated by the District), on-road mobile sources (vehicles on all surface streets and freeways, and

---

[4] Primary pollutants are those compounds emitted directly into the atmosphere. In dispersion modeling, primary pollutants are also assumed to be nonreactive. *Secondary pollutants* (compounds formed in the atmosphere as a result of chemical reactions) were not included in this analysis because (1) their formation involves complex chemical reactions that cannot be accounted for in the dispersion models, and (2) near-source exposures tend to be driven by emissions of primary pollutants; secondary pollutants form downwind of sources and tend to be distributed at a regional scale.

[5] California Air Resources Board Glossary: https://ww2.arb.ca.gov/about/glossary (accessed January 2019).

extended idling from trucks operating at certain large businesses), marine operations and railyard activity at the Port, locomotives, and commuter ferries and excursion vessels.[6]

Emissions inventories were developed for three years: a ("current") base year (effective 2017), a forecasted near-term future year (2024), and a far-term future year (2029). The base year is used to establish initial concentrations where mitigation strategies may be developed to reduce future-year exposures. The future-year emissions inventories include anticipated reductions from existing regulations and known changes in source activity (*business-as-usual* [BAU] conditions); additional anticipated reductions from presumed implementation of proposed mitigation measures under this Action Plan were also included to show where high levels of air pollution may persist, and additional actions may be warranted. The base year emissions inventory is further described in this document (**Section 2**); forecasted future-year emissions inventories are described in *Appendix A – Technical Support Document Part II: Business-As-Usual Future Year Emissions Inventory and Air Pollutant Dispersion Modeling* ("Part II"), and estimates of reductions from strategies of the Action Plan are described in *Appendix A – Technical Support Document Part III: Community Action Plan Emission Reduction Estimates* ("Part III").

Air pollutant concentrations at a *receptor* (a location where concentrations are sampled) represent the sum of all concentration contributions from many emissions *sources*; that is, the total concentrations at a receptor can be *apportioned* to different sources. From a spatiotemporal perspective, concentrations at a receptor also represent the sum of concentrations due to local sources and those from regional sources. Accordingly, two modeling analyses were performed:

(1) "Regional-scale modeling" was used to provide an estimate of the "background" pollutant concentrations,[7] i.e., the air pollutant concentrations in West Oakland in the absence of any local emission sources in West Oakland. Pollutant concentrations were simulated within 1 km grid cells over the entire Bay Area using a modeling framework consisting of a numerical meteorological model (Weather Research and Forecasting [WRF] model), an emissions inventory model (Sparse Matrix Operator Kernel Emissions [SMOKE] modeling system), and a chemical transport model (Community Multiscale Air Quality [CMAQ] modeling system), where local emissions sources within West Oakland were excluded.

(2) "Community-scale modeling" was used to quantify the local impacts from emissions sources on air pollutant concentrations in West Oakland at a finer spatial scale. Dispersion models use a time-averaged, simplified representation of turbulent atmospheric dispersion to approximate how pollutants are transported and diluted. Critical inputs to the dispersion models are estimates of emissions from major air pollution sources and source characteristics. Dispersion factors were generated using the American Meteorological Society/ Environmental Protection Agency Regulatory Model

[6] Emission estimates from these sources are further described in this document (**Section 2**); emissions from other local sources that were not included are described in **Section 2.1.5** (**Table 2-3**) and discussed in **Section 6.1.6**. Local concentrations are also influenced by pollutant emitted elsewhere (outside of the West Oakland area); the "background" concentrations are addressed in **Section 3.6**.

[7] The regional-scale modeling was also used for a modeling platform evaluation, where modeled air pollutant concentrations were compared to concentrations measured at local air quality monitors within the Bay Area.

(AERMOD) system with a single year of representative meteorological data (2014). Year-specific emissions inventories were then convolved with the dispersion factors to obtain year-specific air pollutant concentrations for the West Oakland community.

Using this approach, the results of the AERMOD dispersion modeling, which only accounts for local emissions sources, could be added to the background concentration from the regional modeling to yield a concentration that approaches the total concentration (**Figure 1-2**).[8] The results from the dispersion modeling can also be thought of as the "additional burden" caused by the local emissions in West Oakland alone. The community-scale modeling using AERMOD is further described in this document (**Section 3**); the regional-scale modeling is briefly described herein (**Section 3.6**), and fully documented elsewhere (Tanrikulu *et al.* 2019a, Tanrikulu *et al.* 2019b).

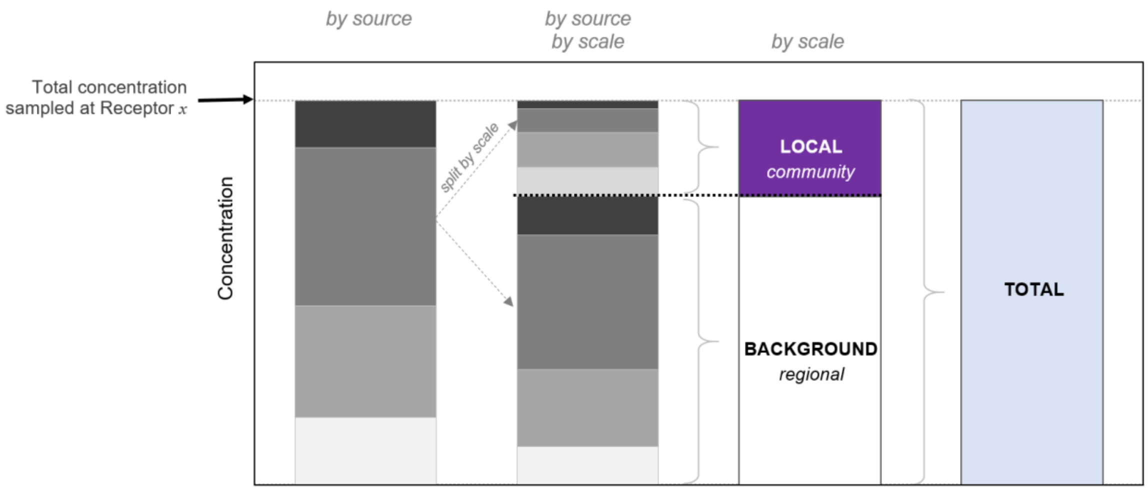


**Figure 1-2.** Schematic representation of how concentration contributions are disaggregated in a source apportionment analysis using "regional-scale" and "community-scale" modeling. Grey bar sections represent the concentration contributions from different arbitrary source categories.

## 1.3 Objectives

The District, in partnership with the West Oakland Environmental Indicators Project (WOEIP), developed an Action Plan for West Oakland to promote innovative policies to improve air quality. The objective of this technical work was to understand the spatial distribution of pollutant concentrations in West Oakland due to local emissions sources. Collaboration with WOEIP helped the District identify specific goals and action-oriented strategies for West Oakland that will focus on reducing exposure to $PM_{2.5}$, DPM, and TACs. To assist with this effort, the District performed a community-scale analysis to:

- Develop a base year emissions inventory and risk assessment for all major emissions sources impacting West Oakland residents;

[8] A model evaluation can be performed by comparing the total concentration to those observed at monitoring locations within the same domain. This analysis is not discussed in this document.

- Provide source apportionment of (a) emissions and (b) air pollutant concentrations at receptors by source category (i.e., trucks, locomotives, etc.) or source origin (e.g., Port of Oakland, freeways);
- Establish a baseline to track the benefits of future emission reductions on the burden of future new emissions sources.
- Develop a framework for modifying and expanding the emissions inventory for local emissions sources.

In this analysis, an emissions inventory was developed (**Section 2**), air dispersion modeling was performed (**Section 3**), and pollutant concentrations and cancer risk estimates were calculated (**Section 4**). A brief overview of the results (**Section 5**), and a discussion of sources of uncertainty in the methods (**Section 6**) are also presented.

# 2. Emissions Inventory

The District developed bottom-up emissions inventories for $PM_{2.5}$ and TACs from all emissions sources in West Oakland for which emissions information (quantity, physical characteristics, spatiotemporal resolution) was available and sufficiently resolved at the time of analysis. A summary of the emissions inventory developed for the Action Plan for the base year (effective 2017) is described in this section by source category, including: permitted stationary sources, on-road mobile sources, truck-related businesses, sources due to activity in the Port of Oakland (ocean-going vessels, commercial harbor crafts, cargo handling equipment, Port Trucks at terminals, railyards), locomotives, railyards, and commuter ferries and excursion vessels. Emissions inventories from Port-related sources were based on the *Port of Oakland 2017 Seaport Air Emissions Inventory* (Ramboll 2018), unless otherwise indicated. Specific temporal and spatial allocation information for emissions source categories are discussed in **Section 3**, as they pertain to the emissions and dispersion modeling.

For emissions sources where emission information was not readily available (e.g., woodsmoke, construction), the District developed top-down emissions inventories (see **Table 2-3** and a discussion in **Section 6.1.6**). Emissions from these categories are included in the emissions inventory, but not in subsequent dispersion modeling and risk analysis.

## 2.1 Development and Overview

### 2.1.1 Pollutants

AB 617 focuses on evaluating local community risk impacts associated with $PM_{2.5}$ and TACs (which includes DPM), which are the primary air pollutants that pose the greatest risk to the health of residents in West Oakland (California Air Resources Board 2008a). A full list of TACs compounds included in this analysis is provided in **Attachment 1**. In the following emissions inventories and modeling results, DPM is both included in TAC emission estimates and presented separately from $PM_{2.5}$ and TACs. Only $PM_{2.5}$ emissions and concentrations from directly emitted $PM_{2.5}$ and TACs were evaluated; secondary $PM_{2.5}$ and TACs were not included.

### 2.1.2 Domain

All sources in this analysis were located within the "Source Domain", which encompasses the entire West Oakland community and Port of Oakland, as well as part of downtown Oakland (**Figure 2-1**). For comparison purposes, the extents of the Source Domain were defined such that they correspond to a subset of the two-dimensional grid cells used in the regional-scale modeling analysis (see **Section 3.6**). The Source Domain is 7 km × 5 km. All emission sources discussed in this section are located within the Source Domain; if an emissions source's extents were beyond those of the Source Domain, only the emissions associated with the area within the Source Domain were included in the inventory.

**Figure 2-1.** Extents of the Source Domain (red dotted lines) used to develop the emissions inventories. The extents of the map represent the extents of the Source Domain. The inner tiles represent the 1 km × 1 km grid cells of the regional-scale modeling.

### 2.1.3 Emissions Sources and Base Year

The emissions inventory consists of emissions from various source categories, as shown in **Figure 2-2** and **Table 2-1**. These sources include stationary and mobile (on-road, off-road) sources of emissions. Annual emissions estimates were developed for a base year, effective 2017 (i.e., the emissions data from the year closest to 2017 was used for each source category).[9]

In West Oakland, a large number of emissions source types are attributed to activity from the Port of Oakland. The Port is the eighth busiest port in the U.S.[10] and serves as a gateway for intermodal cargo transport. In 2017, the Port consisted of four active marine terminals (TraPac, Nutter (STS/Everport), Oakland International Container Terminal [OICT], and Matson), and two railyards (Burlington Northern Santa Fe [BNSF], and Oakland Global Rail Enterprise [OGRE]). A fifth terminal (the Charles P. Howard terminal, located on the southeastern corner of the Port), is not currently being used as a marine shipping terminal, but rather hosts several operational truck-related companies. Presently, the American Baseball League the Oakland Athletics (the A's) is investigating the possibility of building a baseball stadium on the site that is currently being used for long term Port (drayage) Truck parking.

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[9] Forecasted inventories for 2024 and 2029 are presented in Part II.
[10] Based on 2017 cargo volume data, from: https://www.oaklandseaport.com/performance/facts-figures/ (accessed August 2019).

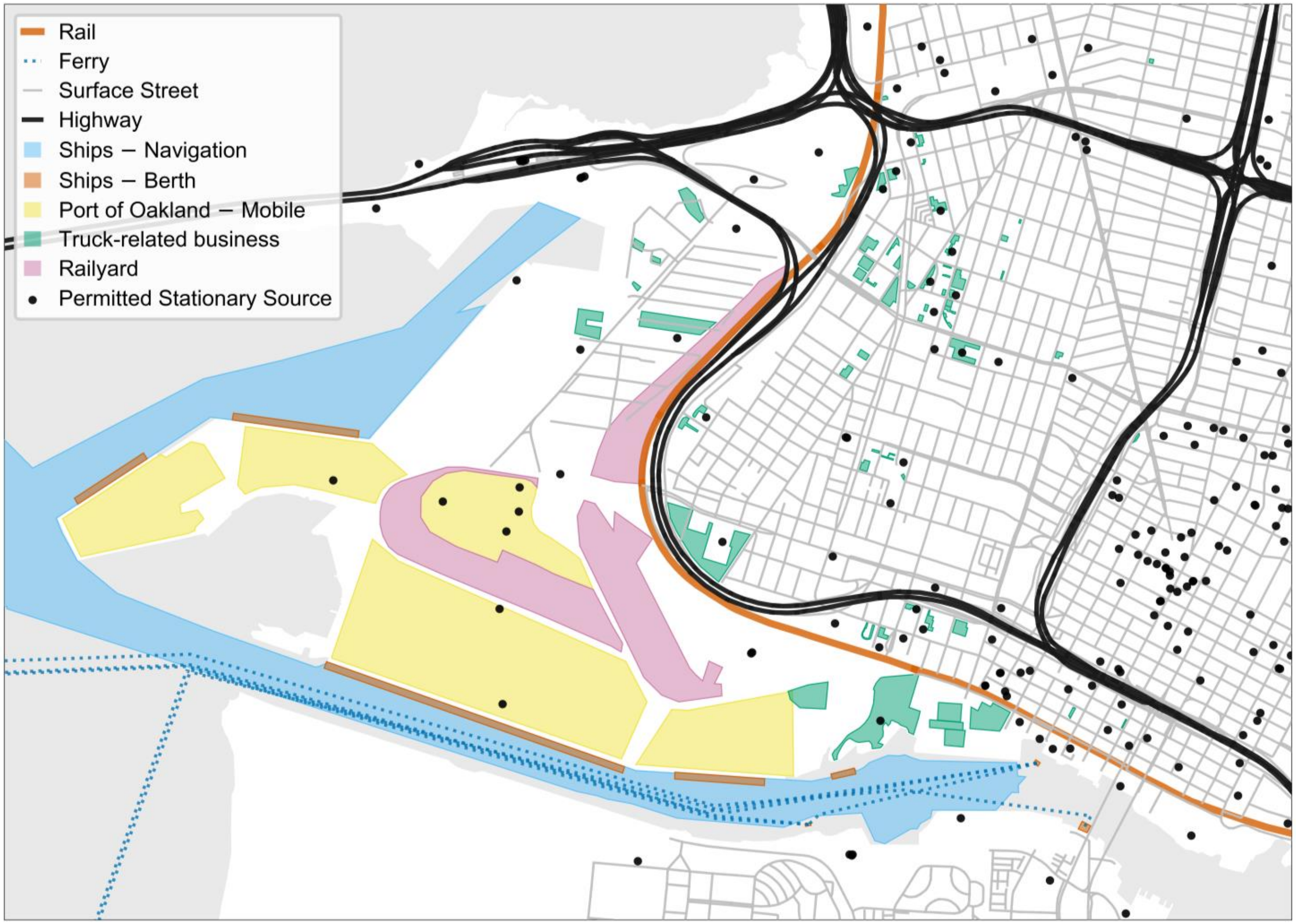


**Figure 2-2.** Composite of emissions source categories locations for the community-scale modeling in West Oakland. Ships – Navigation encompasses the areas of emissions from ocean-going vessels (maneuvering) and commercial harbor crafts (assist tugs, dredgers, and bunkering tugs and pumps) at the Port, as well as ships transiting to Schnitzer Steel; Ships – Berth includes berthing areas for ships at the Port, Schnitzer Steel, commuter ferries, and excursion vessels. Port of Oakland – Mobile encompasses the areas of emissions from Port Truck activity (idling and transiting) and cargo-handling equipment; Surface Street may include on- and off-ramps. Only permitted stationary sources that were modeled are included.

**Table 2-1.** Emission source categories in West Oakland and year of data used to create the 2017 base year emissions inventory. The reference or data sources of the activity data and/or emissions data are indicated. Emissions inventories developed using a bottom-up approach were used for further air dispersion modeling and analyses; emissions inventory developed using a top-down approach are included in the total emissions inventory, but not included in any subsequent modeling.

| Approach | Section | Source Category | Year | Reference/Data Source |
|---|---|---|---|---|
| Bottom-up | 2.2 | Permitted stationary sources | 2015–2018 | District (based on 2017 CEIDARS report) |
| | 2.3 | On-road mobile sources | 2017 | Citilabs, StreetLight, Caltrans Truck Volumes, Caltrans PeMS, EMFAC2017, CT-EMFAC2017, Bay Area Air Quality Management District (2009) |
| | 2.4 | Truck-related businesses | 2018 | Bay Area Air Quality Management District (2009), District survey (2018) |
| | 2.5 | Ocean-going vessels | 2017 | Ramboll (2018), Port of Oakland, CARB, California Air Resources Board (2019), District |
| | 2.6 | Commercial harbor crafts | 2017 | Ramboll (2018), Port of Oakland, CARB, Ramboll |
| | 2.7 | Cargo handling equipment | 2017 | Ramboll (2018), Port of Oakland |
| | 2.8 | Port Trucks at Terminals | 2017 | Ramboll (2018), District |
| | 2.9 | Locomotives | 2017–2018 | District (passenger), UP and BNSF (freight) |
| | 2.10 | Railyards | 2017 | Environ International Corporation (2008), UP |
| | 2.11 | Commuter ferries and excursion vessels | 2018 | CARB, WETA, District survey (2018) |
| Top-down | 2.1.4 | Other area sources | 2017 | CEPAM 2016 SIP Emissions Inventory, ABAG, SMOKE |
| | 2.1.4 | Non-road sources | 2017 | CEPAM 2016 SIP Emissions Inventory, ABAG, SMOKE, OFFROAD |

Maritime emissions developed for the West Oakland Action Plan were largely based on the *Port of Oakland 2017 Seaport Air Emissions Inventory* developed by Ramboll (2018), herein referred to as the "2017 Port Inventory." The District contracted Ramboll (with prior approval from the Port) to assist in developing further spatial and temporal allocations of emissions associated with Port activities. Most of the emissions inventory information for Port-related sources discussed herein are partially excerpted from Ramboll (2018), including information for: maneuvering from ocean-going vessels (OGVs) (**Section 2.5**), commercial harbor crafts (CHCs) (**Section 2.6**), cargo handling equipment (CHE) (**Section 2.7**), operational emissions from Port Trucks operating at terminals (**Section 2.8**), locomotives (**Section 2.9**), and railyards (**Section 2.10**).

While there are some privately owned terminals and non-maritime activity on Port property, emissions from these sources are not included in the Port source categories. For example, emissions from activities at Schnitzer Steel and from truck fleets operating on Port property were accounted for separately.

Finally, emissions sources and categories that were not included in the community-scale emissions inventory used for air pollution dispersion modeling include:

- residential wood burning (from fireplaces and wood stoves),
- commercial and residential cooking,
- construction activities,
- personal power boats,
- transport refrigeration units (TRUs),[11]
- lawn and home gardening equipment,
- portable combustion engines,
- small artisans or businesses that do not require District permits, and
- the Amtrak Oakland maintenance facility (located near 3rd Street/Adeline Street).

While emissions from these categories are potentially important sources of $PM_{2.5}$ and TACs on a community scale, they are either (a) difficult to analyze (e.g., for wood burning and cooking, the spatial and temporal distribution of emissions are poorly understood), or (b) deemed to be less important than similar sources that are included in the emissions inventory (e.g., emissions from lawn equipment, an off-road mobile source, are many times smaller than emissions from on-road mobile sources; emissions from personal power boats are many times smaller compared to those from ocean-going vessels). The emissions from some of these categories were estimated using top-down approaches (see **Table 2-3**), but were not further included in the air dispersion modeling analysis or risk assessment.

[11] In this analysis, for the community-scale bottom-up emissions inventory, it was assumed that none of the on-road mobile sources across all source categories (all vehicles on all road types, including Port Trucks and trucks operating at truck-related businesses) were TRUs; that is, no emissions from the refrigeration units were estimated for any portion of these fleets. However, emissions from TRUs were estimated in the top-down emissions inventory based on regional-scale data.

### 2.1.4 Approach

*(a) Bottom-up (emissions inventory, air dispersion modeling, and analysis)*

A bottom-up emissions inventory involves estimating emissions using (1) emission factors (mass of pollutant emitted per unit of activity), and (2) local activity information of the emission processes (e.g., number of events, duration of activity). Emission factors vary by source type and/or emissions process, and can depend on other factors, such as the source age, model year, control technology, load, fuel type, speed of travel, and ambient conditions, where applicable. Local activity information varies by source and by year (and by season and/or hour, depending on the source). In this analysis, activity data from 2017 (or nearest year available; **Table 2-1**) by source type was used, and then convolved with corresponding emission factors to estimate emissions. The methods used for each source category are described in **Section 2.2–2.11**.

*(b) Top-down (emissions inventory only)*

A top-down approach was used to develop an emissions inventory for emissions sources for which there was insufficient emissions information (quantity, physical characteristics, spatiotemporal resolution). Emissions from these categories are included in the emissions inventory, but not in subsequent dispersion modeling and risk analysis.

A top-down emissions inventory can be developed by using (1) a large-scale (e.g., county-wide) emissions inventory, and (2) spatial surrogates and/or temporal profiles, which are used to disaggregate total emissions to finer spatiotemporal scales. Top-down emissions inventories were developed for area and non-road sources (see **Table 2-3**) using CARB's regional-scale inventory for Alameda County, the California Emission Projection Analysis Model (CEPAM) 2016 State Implementation Plan (SIP) inventory[12] v1.04, and processing those emissions through SMOKE to generate gridded and speciated emissions data over the West Oakland Source Domain. Specifically:

(1) Gridding: emissions for Alameda County were allocated to model grid cells (**Figure 2-1**) using SMOKE using spatial surrogates (e.g., land use data, economic data) derived from geospatial data from the Association of Bay Area Governments (ABAG) and other data sources (Reid, 2008).

(2) Speciating: emissions of $PM_{2.5}$ and total organic gases (TOG) were speciated into individual chemical species, including TACs. SMOKE disaggregates TOG and $PM_{2.5}$ emissions into a series of model species that are used to represent atmospheric chemistry in photochemical models. Speciation profiles developed for the SAPRC-07 chemical mechanism were applied to TOG emissions from all sources, and profiles developed for the AERO6 aerosol module (AE6) were applied to $PM_{2.5}$ emissions from all sources. The SAPRC-07 mechanism treats some toxic species explicitly, including acetaldehyde, benzene, and formaldehyde. However, other TACs are lumped into model species that act as surrogates for multiple compounds with similar mass and reactivity; for the District's

[12] This inventory can be accessed online via https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php. The 2016 SIP inventory is based on a 2012 base year.

regional modeling, existing SAPRC07 speciation profiles for TOG were modified to treat additional air toxics explicitly (e.g., acrolein and 1,3-butadiene). Once the revised speciation profiles were generated, SMOKE was used to speciate criteria pollutant emissions estimates into individual TAC compounds.

Once the SMOKE processing was complete, emissions associated with grid cells in the West Oakland Source Domain were extracted from SMOKE outputs and summed to obtain the total Source Domain-wide emissions for the source categories.

Although emissions estimated using the top-down approach were not evaluated further in the air dispersion modeling and risk assessment, they help provide a comprehensive understanding of the total local emissions inventory in West Oakland. This component of the emissions inventory complements the air dispersion modeling and risk assessment results, and helps to address areas of uncertainty and future improvements for this analysis (see **Section 6**).

### 2.1.5 Emissions by Category

Based on the bottom-up emissions inventory, there were 85.91 tpy of $PM_{2.5}$ and 23.91 tpy of DPM emitted in 2017 in West Oakland (**Figure 2-3**). These values represent the total emissions from numerous source categories, as described in the remaining sections and in **Table 2-2**, and are used to perform the community-scale dispersion modeling (using AERMOD) and risk assessment (**Section 4**). The largest portion of $PM_{2.5}$ emissions in West Oakland arises from on-road mobile sources (~53.5%, including Port Trucks, operations at truck-related businesses, and road dust); the Port and permitted stationary sources contribute nearly equal amounts (~25.6% and ~20.8%, respectively). In contrast, most DPM emissions in West Oakland are from activity related to the Port (~66.4%).

As discussed in **Section 2.1.3**, there are several emission sources in West Oakland that could only be estimated using a top-down approach. These emissions sources were namely fuel combustion and commercial area sources, and non-road mobile sources (**Table 2-3**). Emissions from these sources were derived from regional-scale information, but were not included in the air dispersion modeling analysis or risk assessment. Of these emissions sources, only non-road mobile sources emit DPM.

The grand total emissions in West Oakland (**Figure 2-4**) can be estimated by summing the results from the bottom-up emissions inventory (**Table 2-2**) and the top-down emissions inventory (**Table 2-3**). Therefore, the grand total $PM_{2.5}$ emissions in West Oakland were estimated as 129.31 tpy, where the community-scale emissions accounts for 66.4% of these total emissions. Similarly, the grand total DPM emissions were 28.03 tpy, where 85.3% of total DPM emissions are accounted for in the community-scale analysis.

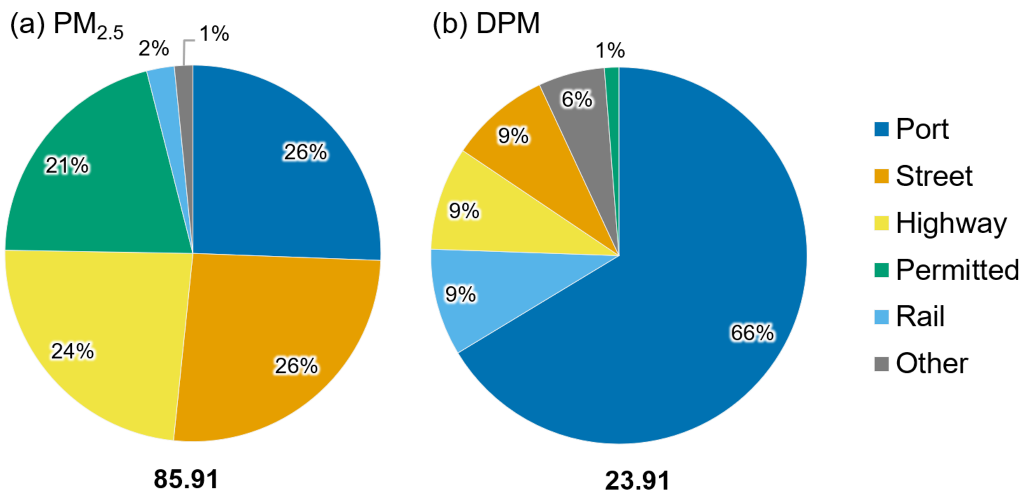


**Figure 2-3.** Emissions of (a) $PM_{2.5}$ and (b) DPM by source category included in the 2017 community-scale (bottom-up) West Oakland emissions inventory within the Source Domain. Emissions from Highway and Street are composed of emissions from all on-road mobile sources except Port Trucks, which are attributed to the Port category. The total emissions (tpy) of each pollutant is displayed below their respective pie chart. Source categories are further described in **Table 2-2**.

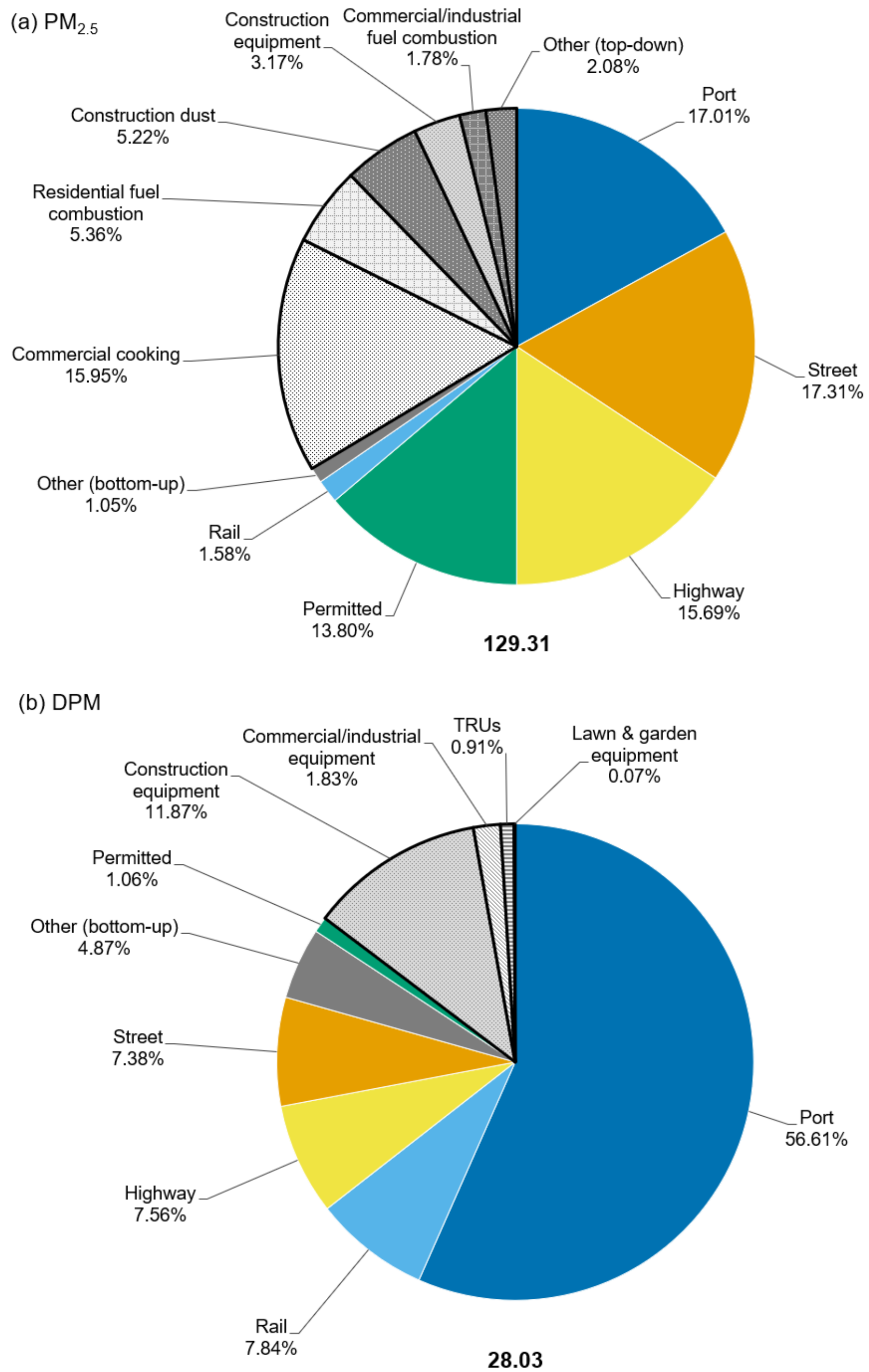


**Figure 2-4.** Total Emissions of (a) $PM_{2.5}$ and (b) DPM by source category in the West Oakland Source Domain. Emissions included in the community-scale emissions inventory (bottom-up) are colored, whereas and those omitted from further modeling (top-down) are greyscale. The total emissions (tpy) of each pollutant is displayed below their respective pie chart. Source categories for the community-scale emissions inventory are further described in **Table 2-2**. "Other (top-down)" emissions (panel (a) only) represents the total emissions from: commercial/industrial equipment, TRUs, lawn and garden equipment, industrial processes, and other area and non-road sources that are not otherwise indicated.

**Table 2-2.** Emissions by Source Category within the Source Domain. Cancer risk-weighted (CRW) emissions represent the total of DPM and other TAC emissions weighted by corresponding cancer risk (where applicable; see **Section 4.1.3**). Percentage (%) of emissions are reported as a total of the modeled inventory ("Total"). "Port Truck" emissions represent the total emissions, regardless of location (i.e., within the Port, on Highways and Surface Streets).

| Source Category | $PM_{2.5}$ | | DPM | | Cancer risk-weighted TACs | |
|---|---|---|---|---|---|---|
| | tpy | % of total | tpy | % of total | CRW tpy | % of total |
| **Highway** | **20.29** | **23.6** | **2.12** | **8.9** | **1,791** | **9.4** |
| Non-Trucks | 12.22 | 14.2 | 0.19 | 0.8 | 331 | 1.7 |
| LHDT | 0.41 | 0.5 | 0.09 | 0.4 | 69 | 0.4 |
| MHDT/HHDT | 2.48 | 2.9 | 1.84 | 7.7 | 1,392 | 7.3 |
| Road dust | 5.17 | 6.0 | - | - | - | - |
| **Surface Streets** | **22.38** | **26.1** | **2.07** | **8.6** | **1,692** | **8.9** |
| Non-Trucks | 4.82 | 5.6 | 0.09 | 0.4 | 183 | 1.0 |
| LHDT | 0.35 | 0.4 | 0.09 | 0.4 | 76 | 0.4 |
| MHDT/HHDT | 2.44 | 2.8 | 1.88 | 7.9 | 1,434 | 7.5 |
| Road dust | 14.77 | 17.2 | - | - | - | - |
| **Port** | **21.99** | **25.6** | **15.87** | **66.4** | **11,831** | **62.0** |
| OGV – maneuvering | 3.94 | 4.6 | 3.84 | 16.1 | 2,859 | 15.0 |
| OGV – berthing | 7.83 | 9.1 | 4.31 | 18.0 | 3,212 | 16.8 |
| Dredging | 1.12 | 1.3 | 1.16 | 4.9 | 864 | 4.5 |
| Assist Tugs | 3.82 | 4.4 | 3.94 | 16.5 | 2,932 | 15.4 |
| Bunkering (tugs, pumps) | 0.27 | 0.3 | 0.28 | 1.2 | 209 | 1.1 |
| CHE | 1.59 | 1.9 | 1.58 | 6.6 | 1,177 | 6.2 |
| Port Trucks | 0.93 | 1.1 | 0.50 | 2.1 | 372 | 2.0 |
| Road dust | 2.25 | 2.6 | - | - | - | - |
| Railyard – OGRE | 0.07 | 0.1 | 0.08 | 0.3 | 57 | 0.3 |
| Railyard – BNSF | 0.17 | 0.2 | 0.18 | 0.8 | 136 | 0.7 |
| **Rail** | **2.04** | **2.4** | **2.20** | **8.6** | **1,637** | **8.6** |
| Locomotives | 1.02 | 1.2 | 1.09 | 4.5 | 810 | 4.2 |
| Railyard – UP | 1.02 | 1.2 | 1.11 | 4.6 | 826 | 4.3 |
| **Permitted** | **17.84** | **20.8** | **0.30** | **1.2** | **1,101** | **5.8** |
| CA Waste (10th Street) | 0.46 | 0.5 | 0.00 | 0.0 | - | - |
| California Cereal | 0.58 | 0.7 | 0.00 | 0.0 | < 1 | < 0.1 |
| CASS | 0.72 | 0.8 | 0.00 | 0.0 | < 1 | < 0.1 |
| Dynegy | 1.96 | 2.3 | < 0.01 | < 0.1 | 1 | < 0.1 |
| EBMUD | 3.99 | 4.6 | 0.09 | 0.4 | 110 | 0.6 |
| Pinnacle Ag Services | 1.48 | 1.7 | 0.00 | 0.0 | - | - |
| Schnitzer Steel – stationary | 5.20 | 6.1 | 0.00 | 0.0 | 823 | 4.3 |
| Sierra Pacific | 0.91 | 1.1 | 0.00 | 0.0 | - | - |
| Other | 2.53 | 2.9 | 0.21 | 0.8 | 168 | 0.9 |
| **Other** | **1.36** | **1.6** | **1.36** | **5.7** | **1,016** | **5.3** |
| Ferry/Excursion vessels | 0.91 | 1.1 | 0.93 | 3.9 | 695 | 3.6 |
| Schnitzer Steel – OGV | 0.30 | 0.4 | 0.30 | 1.3 | 225 | 1.2 |
| Schnitzer Steel – trucks | 0.04 | < 0.1 | 0.01 | < 0.1 | 8 | < 0.1 |
| Truck-related businesses | 0.11 | 0.1 | 0.12 | 0.5 | 87 | 0.5 |
| **Total** | **85.91** | **100.0** | **23.91** | **100.0** | **19,054** | **100.0** |

**Table 2-3.** Total emissions by Source Category within the Source Domain based on regional-scale emissions inventory (not included in community-scale bottom-up emissions inventory). Cancer risk-weighted emissions represent the total of DPM and other TAC emissions weighted by their corresponding cancer risk (see **Section 4.1.3**). Percentage (%) of emissions are reported as a total of the inventory ("Total"). "Port Truck" emissions represent the total emissions, regardless of location (i.e., within the Port, on Highways and Surface Streets).

| Source Category | $PM_{2.5}$ | | DPM | | Cancer risk-weighted TACs | |
|---|---|---|---|---|---|---|
| | **tpy** | **% of total** | **tpy** | **% of total** | **CRW tpy** | **% of total** |
| **Area** | **30.40** | **70.0** | - | - | **413** | **11.0** |
| Commercial cooking | 20.63 | 47.5 | - | - | 9 | 0.2 |
| Food and agriculture | - | - | - | - | 13 | 0.4 |
| Fuel combustion – residential | 6.93 | 16.0 | - | - | 18 | 0.5 |
| Fuel combustion – Commercial/industrial | 2.30 | 5.3 | - | - | 17 | 0.5 |
| Industrial processes | 0.03 | 0.1 | - | - | 176 | 4.7 |
| Solvent use | 0.00 | 0.0 | - | - | 125 | 3.3 |
| Consumer products | 0.00 | 0.0 | - | - | 41 | 1.1 |
| Other | 0.50 | 1.2 | - | - | 13 | 0.4 |
| **Non-road** | **13.00** | **30.0** | **4.12** | **100.0** | **3,358** | **89.0** |
| Construction – equipment | 4.10 | 9.5 | 3.33 | 80.8 | 2,501 | 66.3 |
| Construction – dust | 6.74 | 15.5 | - | - | - | - |
| Commercial/industrial equipment | 1.17 | 2.7 | 0.51 | 12.5 | 436 | 11.6 |
| Lawn and garden equipment | 0.12 | 0.3 | 0.02 | 0.5 | 79 | 2.1 |
| TRUs | 0.24 | 0.5 | 0.26 | 6.2 | 192 | 5.1 |
| Other | 0.63 | 1.4 | 0.00 | 0.0 | 151 | 4.0 |
| **Total** | **43.40** | **100.0** | **4.12** | **100.0** | **3,771** | **100.0** |

## 2.2 Permitted Stationary Sources

Stationary sources of air pollution are regulated and subject to permitted conditions established by the District. These include complex sources such as metal smelting, wastewater treatment plants, and smaller facilities, such as diesel generators, gasoline dispensing facilities (GDFs, or gas stations), and boilers. The District maintains a database of its permitted sources and their associated characteristics and emissions. These emissions are determined either through direct measurement (via source tests) or by engineering calculation (based on process throughput and industry emission factors). Emission values are updated annually or bi-annually, depending on their permit cycle. Emissions from all permitted facilities are reported annually to CARB under the California Emissions Inventory Development and Reporting System (CEIDARS)[13] and, subsequently, reported to the U.S. Environmental Protection Agency (EPA) to supplement the National Emissions Inventory (NEI) database.[14] The 2017 CEIDARS report was used as the basis to assemble emissions for permitted facilities located in West Oakland and surrounding areas (encompassing zip codes 94607, 94608, 94609, 94612, 94615, and 94501). The inventory was developed for $PM_{2.5}$ and TACs, including DPM.

Quality assurance (QA) was performed and updates were made to the report to include newly permitted facilities and removed facilities that closed after 2017. Another important improvement was the addition of GDFs to the point-source inventory. Historically, emissions from GDFs have been aggregated and reported as part of county-level area totals in CEIDARS. The emissions inventory for West Oakland includes 32 GDFs geolocated with actual or permitted throughputs, which were used to estimate their emissions individually.

The District made other updates to the emissions estimates in the 2017 CEIDARS report, mainly to ensure that the latest emissions factors, source test results, and methods used to estimate emissions were incorporated. In most of these cases, the individual facility's emissions were revised by specific facility source (e.g., Custom Alloy Scrap Sales [CASS], East Bay Municipal Utility District [EBMUD], and Schnitzer Steel; **Table 2-4**). Otherwise, source specifications and associated emissions from entire source categories were updated (**Table 2-4**).

Certain categories of permitted stationary sources were not included in the community-scale emissions inventory, such as portable engines, other portable equipment, and registered restaurants,[15] since their operations are intermittent and their emissions are generally not well characterized.[16] Dry cleaners were also excluded since pollutants currently emitted from these sources do not contribute to cancer risk.[17] Other permitted stationary sources were excluded from this analysis for one of the following reasons:

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[13] CEIDARS data for individual stationary sources are available through CARB's Facility Search Tool website: https://ww3.arb.ca.gov/ei/disclaim.htm. Data online may not reflect changes made by the District (e.g., **Table 2-4**).
[14] https://www.epa.gov/air-emissions-inventories.
[15] One restaurant with charbroiling operations was included since emissions information was available.
[16] These emissions sources are permitted by the District, but emissions data are not collected. Portable engines and equipment change location over time, and therefore could not be geolocated. Emissions from these sources are included in the top-down emissions inventory instead.
[17] All dry cleaners in the Source Domain used petroleum-based solvents, and therefore did not have associated cancerous TAC emissions.

**Table 2-4.** Updates performed to permitted stationary sources in the 2017 CEIDARS report. The name of the facility or category of the source is provided, with the plant number (P), source ID, and information regarding updates to the emission factors (EF) and/or emissions.

| Name/Category | P | ID | Source Description | Updates |
|---|---|---|---|---|
| CASS | 146 | 1 | furnace | Emissions increased to reflect source test results. |
| | | 2 | furnace | Emissions were decreased by using updated EFs. |
| | | 7 | material handling | Emissions increased. |
| Schnitzer Steel | 208 | 6 | shredder | Emissions increased based on source test results (reported for Stack 15, identified as Source 6). |
| | | – | – | Fugitive emissions included. |
| EBMUD | 591 | 100 | wet treatment process | Emissions decreased based on influent testing. |
| | | 37 – 39 | standby generator | Emissions for DPM increased by using default EFs. |
| | | 52 | portable emergency electric generator | Source removed from the inventory since it is no longer in use. |
| | | – | – | Other carcinogenic pollutants associated with diesel fuel were excluded since DPM is a surrogate for all toxic compounds collectively emitted during diesel oil combustion. |
| Central Concrete | 1253 | 1 | aggregate piles | Emissions were decreased by using updated EFs. |
| | | 2 | cement silo | Emissions were decreased by using updated EFs. |
| | | 3 | conveyors | Emissions were decreased by using updated EFs. |
| | | 4 | cement batcher | Emissions were decreased by using updated EFs. |
| Dynergy | 11887 | 1 – 6 | gas turbine | Emissions were decreased by using updated EFs. |
| Sierra Pacific | 18268 | 1, 2 | aggregate handling | Emissions were decreased by using updated EFs. |
| | | 3 | silo | Emissions were decreased by using updated EFs. |
| | | 4 | truck loading | Emissions were decreased by using updated EFs. |
| | | 5 | conveyor | Emissions were decreased by using updated EFs. |
| standby generators and fire pumps | – | – | – | DPM was used as a surrogate to represent all carcinogenic compounds that may be emitted from combustion of diesel fuel. However, other toxic compounds were included in the analysis if the generators burned natural gas or digester gas. |

- There were no associated $PM_{2.5}$ emissions and/or TAC emissions available, or these emissions could not be estimated based on data available; and/or
- There were no $PM_{2.5}$ emissions and TAC emissions were non-cancerous.

While the permitted stationary source database originally contained 430 individual sources among 205 unique facilities, only 322 sources had associated emissions of $PM_{2.5}$ or cancerous TACs among 170 unique facilities. These 322 sources were modeled in this analysis (**Table 2-5**). The final list of facilities included in this analysis is provided in **Attachment 2**. Less than half (~42%) of these sources had known release heights (required for dispersion modeling; see **Section 3.1**), and only ~34% had complete dispersion modeling parameters.[18]

**Table 2-5.** Summary of data completeness for permitted stationary sources in West Oakland. The final inventory reflects the number of sources modeled in this analysis that had associated emissions of $PM_{2.5}$ and/or TACs that contribute to cancer risk.

| Inventory | Record type | Number of records |
|---|---|---|
| Original | Number of permitted stationary sources | 430 |
| | Number of unique facilities | 205 |
| Final | Number of permitted stationary sources | 322 |
| | Number of unique facilities | 170 |
| | Sources with known release heights | 134 |
| | Sources with complete dispersion modeling parameters | 110 |

The majority of permitted stationary sources in West Oakland are located on the eastern side of the modeling domain (**Figure 2-5**). GDFs are the most evenly spatially distributed. Back-up generators are clustered in the downtown Oakland area, as many multi-story buildings (such as hotels or offices) have emergency generators. Coffee roasters are mainly located in the industrial area south of I-880, whereas cement-related facilities are located in the northwest quadrant of the West Oakland community. Other sources are associated with industrial activities and tend to be located near main arterial roadways such as 7th Street, West Grand Avenue, and Peralta Street.

[18] A complete set of release parameters for point sources includes: stack height, stack diameter, gas exit temperature, and gas exit flow rate. A complete set of release parameters for volume sources includes: stack height, and initial lateral dispersion coefficient (which can be estimated from the stack diameter).

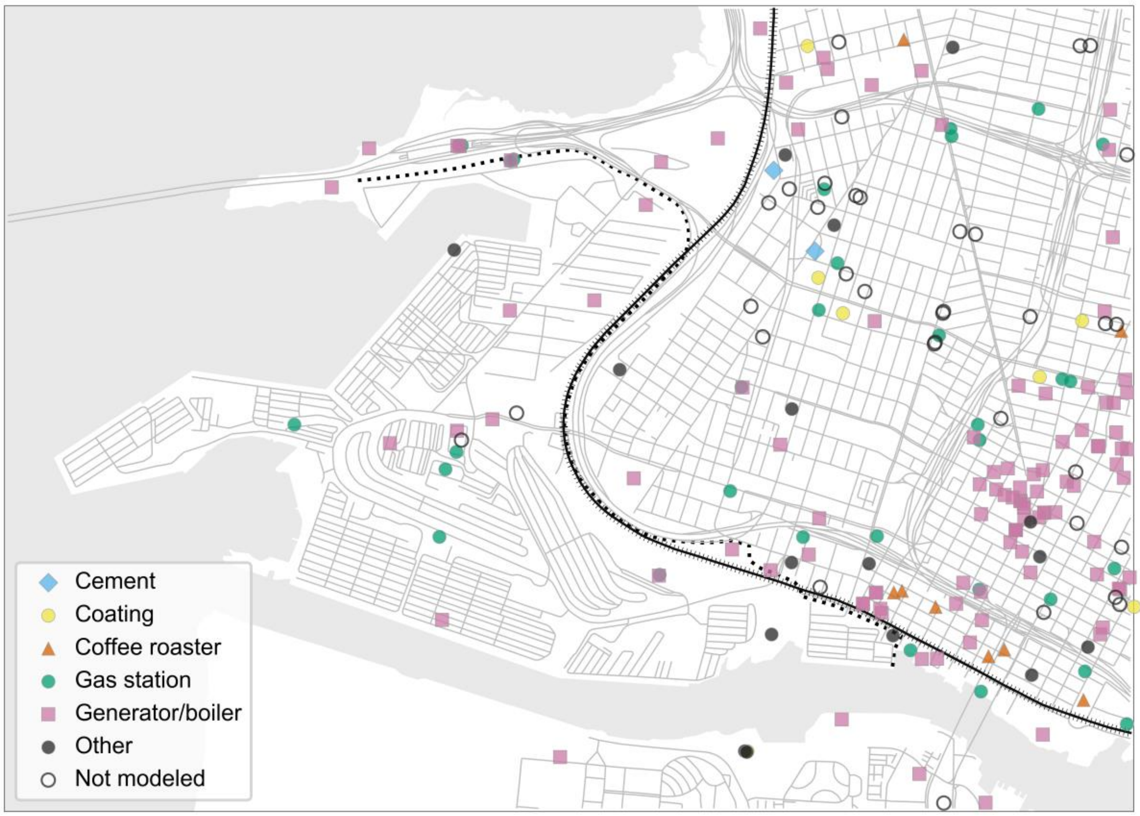


**Figure 2-5.** Location of permitted stationary sources in West Oakland. "Generator/boiler" indicates either a generator (primary or standby), boiler, generator and boiler, or generator and fire pump. "Other" sources include: charbroilers, cremators, electric shredders, furnaces, grain systems, microturbines, printing presses, recycling, sandblasting, smoke houses, soil vapor extraction, and turbines. Sources that were "Not modeled" were excluded because either $PM_{2.5}$ emissions were not available, or because the TACs that are emitted do not contribute to cancer risk.

## 2.3 On-Road Mobile Sources

The approach for developing an emissions inventory from on-road mobile sources depended on location: due to data availability, those from roadways within terminals at the Port were developed separately (by Ramboll (2018); see **Section 2.8**) from those within the rest of the Port area and West Oakland community. In this section, the process for developing a bottom-up emissions inventory for the remaining roadways is presented.

Emissions from vehicles travelling on roadways in urban environments tend to occur near *sensitive receptors*,[19] and have been shown to have a high intake fractions (ratio of inhaled to emitted pollutants; Marshall *et al.* 2005). For this analysis, a bottom-up emissions inventory of $PM_{2.5}$ and TAC pollutants was developed using annual average daily emission profiles for each roadway segment (or roadway "link"[20]) within the West Oakland Source Domain. Annual average daily emission profiles were developed by vehicle category and by day type: weekday (WD) (Monday–Friday) and weekend (WE) (Saturday–Sunday). Traffic varies significantly by day of week; typically, total daily traffic is higher on weekdays, with slower fleet average speeds, and peak traffic periods by day type may also vary due to commuting.

Pollutants are emitted from on-road mobile sources due to the following processes:

- *Operational* emissions result from the consumption and combustion of fuel or from wear of vehicle-related materials.[21] The emissions processes include:
    - Running exhaust, when pollutants are emitted from the tailpipe of the vehicle as the fuel is combusted;
    - Running loss, when fuel vapors escape from the fuel system during operation;
    - Tire wear, when PM is emitted as a result of a vehicle's tires wearing on the road surface; and
    - Brake wear, when PM is emitted as a result of wearing of brake discs as the vehicle's brakes are applied.

  In California, emission factors from these processes are typically estimated by using the EMission FACtors (EMFAC) model,[22] which is developed and maintained by CARB. In this analysis, operational on-road mobile source emission included the four processes listed above,[23] as defined in the latest version of EMFAC,[24] EMFAC2017 (v1.0.2) (California Air Resources Board 2017b).

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[19] Sensitive receptors are locations where occupants are more susceptible to adverse health effects of air pollution exposure, including schools, hospitals, daycare facilities, elderly housing, etc.
[20] A link is a section of roadway where either roadway attributes or travel activity are constant along the length of the section.
[21] In this analysis, no vehicles were treated as TRUs; that is, emissions from refrigeration units on trucks (Port Trucks or non-Port Trucks) were not included.
[22] Additional information on EMFAC and mobile source emissions estimates are available at https://ww3.arb.ca.gov/msei/msei.htm.
[23] Other emission processes from on-road mobile sources, such as from start exhaust, resting evaporative loss, and others (see California Air Resources Board 2017b), were not included in the bottom-up inventory; for Alameda County, these emissions are generally a small portion of the total emissions for $PM_{2.5}$ and DPM.
[24] EMFAC2017 is a trip-based mobile source emissions model. As such, running exhaust emission factors also account for idling events (and other processes, such as crankcase exhaust) during normal vehicle operation (California Air Resources Board 2015), such as a vehicle idling while queuing at an intersection for a limited amount of time. Therefore, idling exhaust emissions were not explicitly calculated for on-road mobile sources. Extended idling events of heavy-duty vehicles were accounted for separately (see **Section 2.4**).

- *Re-entrained road dust* emissions are particulate matter from resuspended road surface material (dust) that is entrained by vehicles traveling on roads. Currently, road dust emission factors are estimated following CARB's methodology for paved road dust (California Air Resources Board 2016), which is based on the EPA Air Pollution (AP) report *AP-42 Compilation of Air Pollutant Emissions Factors, Volume I* (or simply "AP-42") Chapter 13.2.1 Paved Roads (U.S. Environmental Protection Agency 2011). Entrained road dust on paved roadways can be significant source of $PM_{2.5}$, especially as the relative proportion of emissions from other vehicle processes decreases over time (Reid *et al.* 2016).

Bottom-up emissions inventories from on-road mobile sources can be calculated at different levels of aggregation. For example, emissions may be calculated by individual vehicle types (e.g., passenger car, motorcycles), or by vehicle categories (e.g., Non-Trucks, which includes passenger cars and motorcycles and other non-truck vehicles; **Table 2-6**). EMFAC2017 groups all vehicle classes into three categories: Non-Truck, Truck 1, and Truck 2.

**Table 2-6.** Emission source and vehicle categories from on-road mobile sources. Vehicle categories are generally based on gross vehicle weight rating (GVWR) and EMFAC2017 (see California Air Resources Board 2017a). Non-POAK-Truck 2 is abbreviated as NPT2.

| Emissions Category | Vehicle Category | Description/Vehicle Types |
|---|---|---|
| Operational | Non-Truck | Passenger cars, passenger trucks, medium-duty trucks (GVWR ≤ 8,500 lb), buses, motorcycles, motor homes, motor coaches. |
| | Truck 1 | Light-Heavy Duty Trucks (LHDT) (GVWR 8,501–14,000 lbs) |
| | POAK | Heavy-Heavy Duty Diesel Drayage Truck in Bay Area (GVWR > 33,000 lb) (referred to as "Port Trucks" or "drayage trucks" here). |
| | NPT2 | Medium-Heavy Duty Trucks (MHDT) (GVWR 14,001–33,000 lb) and Heavy-Heavy Duty Trucks (HHDT) (GVWR > 33,000 lb), excluding Port Trucks. |
| Road dust | All | Entrained road dust ($PM_{10}$ and $PM_{2.5}$) on paved roads. |

In this analysis, operational emissions were namely estimated by vehicle category (**Table 2-6**) based on the vehicle categorization EMFAC2017, as well as analysis needs (so that potential mitigation measures can be applied to specific source categories within the source apportionment). The EMFAC2017 default Non-Truck and Truck 1 results were used, but the default Truck 2 category was further divided into two categories: Port Trucks (POAK),[25] and the remaining EMFAC2017 Truck 2 vehicles (Non-POAK-Truck 2).[26] This was done because Port Trucks have historically been significant source of DPM in West Oakland (California Air Resources Board 2008a); however, POAK emission factors in EMFAC2017 suggest a much cleaner Port Truck fleet because of CARB's Drayage Truck Regulation (California Air Resources

[25] In this analysis, the terms "Port Trucks" and "Drayage Trucks" are interchangeable. Port Trucks refer to those vehicles whose engines are subject to CARB's Drayage Truck Regulation (California Air Resources Board 2011b), regardless of vehicle activity location (Port terminal, railyard, business; within terminals, or between terminals and other destinations), or activity type (short-hauling or otherwise).

[26] Default EMFAC2017 fleet information was used for each of these categories, which includes an inter-category fleet mix, and model year and vehicle age distributions.

Board 2011b). Finally, the total of all truck-related categories – Truck 1, POAK, and Non-POAK-Truck 2 – may be referred to collectively as “Trucks”.

To develop a bottom-up link-level emissions inventory for on-road mobile sources, the data needed are (1) roadway attributes, (2) vehicle travel activity, and (3) corresponding emissions factors (by vehicle emissions process and category). In this analysis, the majority of the roadway attributes and travel activity data were purchased from Citilabs (Streetlytics platform).[27] A set of shapefiles containing the geographic location, travel activity (volume and speed), and roadways attributes of roadway segments in Alameda County was obtained for 2016 by hour of day for four seasons and four day types (Monday–Thursday, Friday, Saturday, and Sunday). To use this dataset to develop an emissions inventory and to support AERMOD dispersion modeling:

(1) The roadway network was clipped to the Source Domain; some roadway segments were shortened and their lengths recalculated, while other segments had to be manually extended to meet the edge of the domain (namely, the roadway segments representing the San Francisco-Oakland Bay Bridge).
(2) Roadway segments were excluded in Port terminal areas.
(3) Corresponding roadway segments that represented the total 2-way directional traffic were merged, so that the resulting line geometry represented the approximate centerline of the roadway.[28] As a result, there were 6,861 roadway segments in the West Oakland Source Domain.
(4) By performing (3), the number of lanes and hourly traffic volume in both directions were added, and the hourly traffic speeds were averaged (weighted by hourly volume).
(5) The data was then aggregated into two day types: WD, representing travel activity from Monday–Friday, and WE, representing travel activity from Saturday-Sunday. These data were averaged across all seasons to obtain an annual average diurnal profiles.

A description of the parameters from Citilabs and other data sources used to develop a vehicle-type (Non-Truck/Truck) and day-type (WD/WE) specific emissions inventory are described in the following sections.

### 2.3.1 Roadway Attributes

The geometry of each roadway link is used to perform AERMOD dispersion modeling, while the associated roadway attributes are used to estimate emissions from on-road mobile sources. The roadway attributes required include: roadway length, road type, and number of lanes. A description of these attributes and how they are used to support developing the emissions inventory and/or dispersion modeling are provided in **Table 2-7**.

The road type assigned to each roadway segment was mainly based on the roadway functional class provided by Citilabs (based on HERE), which is defined as “a hierarchical network [index] used to determine a logical and efficient route for a traveler.”[29] These classes were matched to corresponding U.S. Federal Highway Administration (FHWA) Road Types, which are based on

[27] http://www.citilabs.com/.
[28] The District did not QA the location of the roadway segment centerlines.
[29] See http://marketing.citilabs.com/hubfs/Here_Attributes.pdf (accessed February 2019).

level of service and are used to determine roadway widths, and CARB Road Types, which are based on "anticipated usage, modes of usage, and silt loading potential" (California Air Resources Board 2016) and are used to determine roadway surface silt loading factors (**Table 2-8**). Because of the mismatch between roadway classification systems, freeway on- and off-ramps, which are assigned to multiple functional classes, can then be assigned to numerous CARB and FHWA road types; for simplicity, the District did not adjust these assignments.[30] Additionally, roadway segments were also assigned to road category ("Highway" and "Surface Street"; **Table 2-8**) which were created to align with available data and the source apportionment approach.

**Table 2-7.** Roadway attributes and associated data sources used for estimate emissions from on-road mobile sources.

| Parameter | Purpose | Reference/ Data Source |
|---|---|---|
| Roadway Length | Determine (a) geographic locations of roadways (used in AERMOD dispersion modeling; **Section 3.4.3**), and (b) calculate vehicle miles traveled (VMT) used in estimating emissions. | Citilabs (updated by the District) |
| Road Type | Determine (a) roadway width (used in AERMOD dispersion modeling; **Section 3.4.3**), and (b) silt loading (to calculate road dust emissions). | Citilabs, California Air Resources Board (2016) |
| Number of Lanes | Determine total width of roadway (used in AERMOD dispersion modeling; **Section 3.4.3**). | Citilabs (updated by the District) |

**Table 2-8.** Cross-reference of road type classification schemes used in this analysis. Functional Class were obtained from Citilabs and mapped to CARB Road Type (based on California Air Resources Board (2016), used to determine silt loading factors for estimating road dust emissions), FHWA Road Type (based on FHWA and American Association of State Highway and Transportation Officials (2018), used to determine roadway width), and Road Category (used in this analysis for source apportionment).

| Functional Class | CARB Road Type | FHWA Road Type | Road Category |
|---|---|---|---|
| 2 - Major Highways | Freeway | Freeway | Highway |
| 3 - Minor Highways | Major/Collector | Arterial | Surface Street |
| 4 - Minor Streets | Major/Collector | Arterial | Surface Street |
| 5 - Local Roads | Local | Local | Surface Street |

Finally, truck route type was assigned to each roadway segment based on information obtained from the City of Oakland:[31] (1) prohibited truck routes, (2) major truck routes, or (3) neither

[30] This results in a conservative estimate for road dust emissions; on- and off-ramps are then assigned to arterial and local roads, which typically have more dust (higher silt loading factors) than freeways.
[31] See City of Oakland Truck Routes and Prohibited Streets: https://www.oaklandca.gov/resources/truck-routes-and-prohibited-streets.

(**Figure 2-6**). These route designations were used to determine fleet mix information (see **Section 2.3.2(b)**).

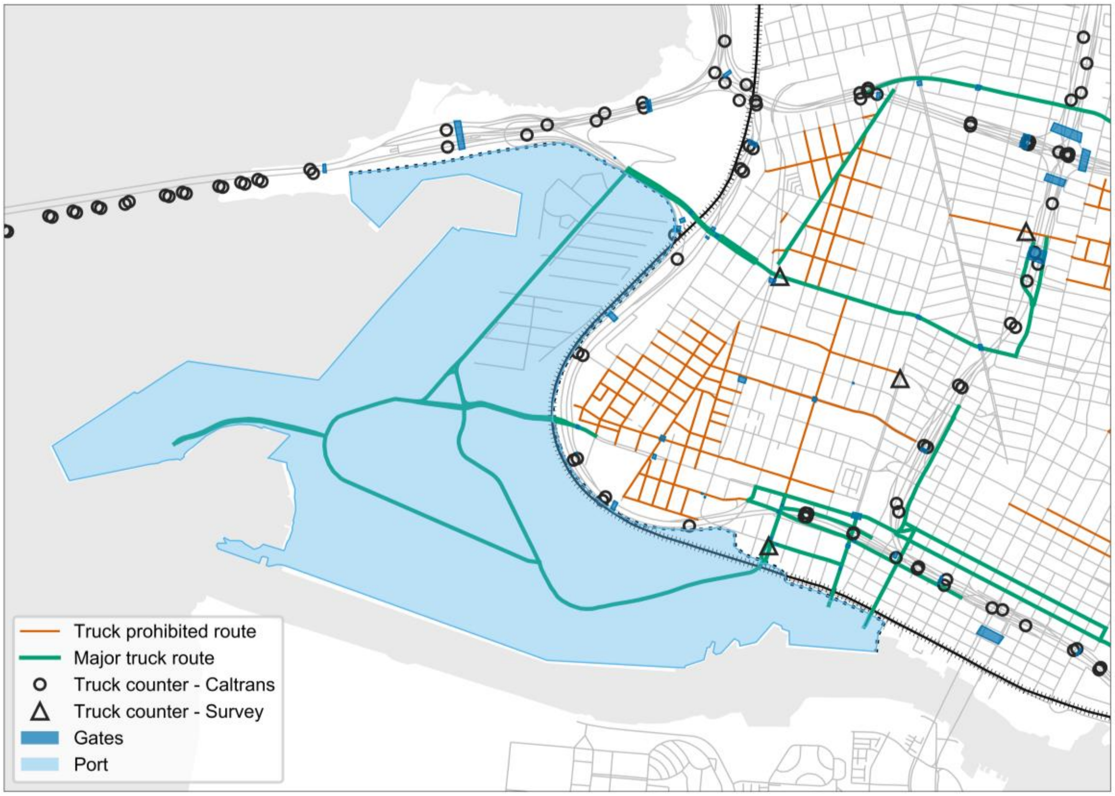


**Figure 2-6.** Roadway network and data sources used to develop the emissions inventory for on-road mobile sources. The roadways (solid lines, provided by Citilabs), traffic counters (open symbols), Port boundary (dashed line), and gates (blue polygons, used in the StreetLight InSight platform) are plotted. Caltrans truck counters may appear off of the Bay Bridge because the bridge was reconstructed (completed ~2013) and the location of the counters were not updated in PeMS. Only roadway segments modeled as volume sources in AERMOD are plotted (i.e., some roadways in the Port terminal areas are not displayed, since they were accounted for in the Port emissions inventory; see **Section 2.8**).

For the resulting 2-way merged roadway network, QA was performed on the number of lanes only for roadways where (a) there was one lane in either direction, and (b) the total 2-way AADT $\geq$ 5000.[32] The District updated the number of lanes of 274 roadway segments (4% of the roadway dataset). If the number of lanes for a segment was not a whole number (integer), the value was rounded down (e.g., 4.5 lanes was rounded to 4 lanes), as the fractional lane often corresponded to roadway sections designated for street parking.

[32] According to the District's current California Environmental Quality Act guidelines, a roadway with AADT < 10,000 is likely not a significant source. In this analysis, AADT ≥ 5,000 was used to determine which roadways should be reviewed, to be conservative (Bay Area Air Quality Management District 2017).

### 2.3.2 Travel Activity

Vehicle travel activity data characterizes the type of fleet and how that fleet travels on a roadway. Emissions are estimated based on these parameters, which include: volume, speed, fleet mix, and fleet average vehicle weight (**Table 2-9**). These parameters are further described below.

**Table 2-9.** Travel activity parameters and associated data sources used for estimate emissions from on-road mobile sources. Parameters can vary hourly and by roadway link.

| Parameter | Description | Purpose | Reference/ Data Source |
|---|---|---|---|
| Volume | Average total traffic fleet volume. | Calculate VMT and VHT, which are used to estimate emissions from all processes (operational and road dust). | Citilabs |
| Speed | Average total traffic fleet speed. | (a) Estimate running exhaust emissions (emission factors are speed-dependent), and (b) estimate VHT. | Citilabs |
| Fleet Mix | Composition of vehicle fleet (i.e., volume fraction for each vehicle category). | Apportion fleet-total VMT to each vehicle category. | StreetLight, Caltrans Truck Traffic Volumes, Caltrans PeMS, Bay Area Air Quality Management District (2009) |
| Fleet average vehicle weight | Volume-weighted average weight of vehicle in fleet | Estimate road dust emission factors. | CT-EMFAC2017 |

*(a) Volume and Speed*

For each link, traffic volume and speed can be used to calculate:

- Vehicle miles travelled (VMT): the mileage of all vehicles traveling on a link over a specific period (e.g., hourly, daily). That is, VMT is the product of volume (unitless) and link length (mi). VMT is used to estimate emissions that are based on gram-per-mile (g/mi) emission factors (running exhaust, tire wear, brake wear, road dust).
- Vehicle hours traveled (VHT): the travel time of all vehicles traveling on a link over a specific period (e.g., hourly, daily). VHT is estimated by dividing VMT (mi) by speed (mph). VHT is used to estimate emissions due to running loss.

Hourly total fleet volume and speed data by roadway link and day type were obtained from Citilabs. Due to availability, this data was based on 2016 travel activity; to create a 2017 base year activity data set, the District then adjusted the total volumes (and therefore VMT and VHT) by a growth factor (0.6%) derived from the Alameda County VMT information in EMFAC2017. For each roadway link, hourly VMT and VHT were calculated, and VMT was then allocated to vehicle types (**Table 2-6**) by using fleet mix information (see below).

*(b) Fleet Mix*

The annual average fleet mix by WD and WE were developed in two steps: (1) by deriving volume-based fleet mix fractions of Non-Truck, Truck 1 and Truck 2, and then (2) by splitting the Truck 2 fraction into POAK and Non-POAK-Truck 2. Due to data availability, fleet mix information for step (1) was developed by road category, as follows:

- For Highways: the fractions of Non-Truck, Truck 1 and Truck 2 were first derived from the 2016 Truck Traffic Volumes (Truck AADT) from the California Department of Transportation (Caltrans).[33] The dataset contains traffic counts by axles at specific locations on freeways. Counts were then be allocated to Non-Truck, Truck 1, and Truck 2. However, given the limited spatial coverage of the counters (e.g., there are no counters on I-880), a second dataset was compiled to further develop fleet mix information, based on Caltrans Performance Measurement System (PeMS)[34] counters. PeMS data contains total traffic flow and truck flow at specific locations on freeways. Data was obtained for 2016 and used to derive total truck fractions[35] along remaining highway roadway segments. As PeMS truck flow represents the total traffic flow of all Trucks, the truck fraction from PeMS was split into fractions of Truck 1 and Truck 2 based on VMT from EMFAC2017 (for 2017 Alameda County) by truck category. The resulting truck fractions were assigned to highway links based on their spatial proximity to Caltrans Truck Traffic counters or Caltrans PeMS counters (**Figure 2-6**).

- For Surface Streets: the fractions of Non-Truck, Truck 1 and Truck 2 were derived based on traffic axle counts at four auto-counters located on surface streets from the 2009 West Oakland Truck Survey (Bay Area Air Quality Management District 2009; **Figure 2-6**, **Table 2-10**). The fractions were assigned to surface street links based on their spatial proximity to the counters. If a surface street link was a major or prohibited truck route, then the nearest counter of the same route type was used; this prevented assigning higher truck fractions to surface streets that were truck-prohibited routes. For roadway links within Port area, fleet mix fractions were derived from the counter at the Port access point (3rd Street/Adeline Street) only.

**Table 2-10.** Description of location of automatic traffic counters from the 2009 West Oakland Truck Survey (Bay Area Air Quality Management District 2009).

| Automatic counter location | Total traffic level | Route description |
|---:|:---:|---|
| 3rd Street/Adeline Street | High | Major truck route (3rd Street) |
| West Grand Avenue/Mandela Parkway | High | Major truck route (West Grand Avenue) |
| 18th Street/Market Street | Moderate | Truck-prohibited route (18th Street) |
| 30th Street/Martin Luther King Drive | Low | Truck-prohibited route (30th Street) |

33 Available from http://www.dot.ca.gov/hq/tsip/gis/datalibrary/Metadata/TruckAADT.html (downloaded February 2019).
34 http://pems.dot.ca.gov/.
35 All truck flow (volume) data in the PeMS data used in this analysis was marked as "imputed." This means that the data are estimated from other available parameters from the traffic counter and/or other surrounding traffic counters in the PeMS network (see http://pems.dot.ca.gov/?dnode=Help&content=help_calc#truck).

Generally, the fleet mix by roadway link resulted in a higher proportion of Trucks on major Truck routes and some major arterials in West Oakland, and a lower proportion of Trucks on truck-prohibited routes and local roads (**Figure 2-7**). Notably, using this procedure resulted in a high Truck fraction in near the Port entrance at 3rd Street/Adeline Street and in the surrounding neighborhood, especially on weekdays.

In step (2), the fleet fraction of Truck 2 was split into POAK and Non-POAK-Truck 2 categories. At the time of this analysis, no traffic counts of Port Trucks from traffic measurements or travel models were readily available. Instead, the POAK fraction of Truck 2 was derived from origin-destination (O-D) analyses using the StreetLight InSight platform.[36] The platform simulates trips from Truck 2 vehicles (commercial vehicles) between origin and destination zones based on data from GPS navigation systems installed on the vehicles. A zone can be any size, so long as the geographic extents intersect a roadway. When a zone is drawn as a narrow polygon perpendicular to a roadway, it is referred to as a “gate.” An O-D analysis generates a traffic “index” which quantifies the number of trips between an origin and a destination zone, as well as all trips in each zone independent of trip start or end locations.

In this analysis, it was assumed that all trips originating or ending at the Port were from Port Trucks, which are subject to CARB’s Drayage Truck Regulation[37] (i.e., they are POAK vehicles). The entire Port area was designated as a zone, in addition to 49 gates, which were located on highways and surface streets to account for different road types and traffic conditions (including 21 on freeways, 4 on on-/off-ramps, and 24 on surface streets; **Figure 2-6**). The O-D analyses were conducted for each Port and gate pair. The traffic index between the Port and gate was considered as surrogate of POAK volume, while the traffic index of all trips at gate was considered as surrogate of total Truck 2 volume. Therefore, the fraction of POAK within the Truck 2 category was equal to the POAK traffic index divided by the Truck 2 traffic index. This fraction was assigned to each roadway link based on the spatial proximity of the link to a gate, and then multiplied by the Truck 2 fraction (step (1)) to estimate the fraction of POAK in the entire vehicle fleet. The fraction of Non-POAK-Truck 2 was calculated as the remaining fraction of Truck 2 vehicles. From this, it was estimated that > 75% of the Truck 2 fleet on roadways near or in the Port was composed of POAK vehicles (**Figure 2-8**).

[36] https://www.streetlightdata.com/.

[37] CARB adopted the Drayage Truck Regulation in 2011 (approved in 2007, changes approved and adopted in 2010; California Air Resources Board 2011b), which requires all Port Trucks to meet or exceed emissions standards for 2007 model year engines. The implementation of the rule has effectively reduced emissions from Port Trucks (e.g., Harley *et al.* 2014).

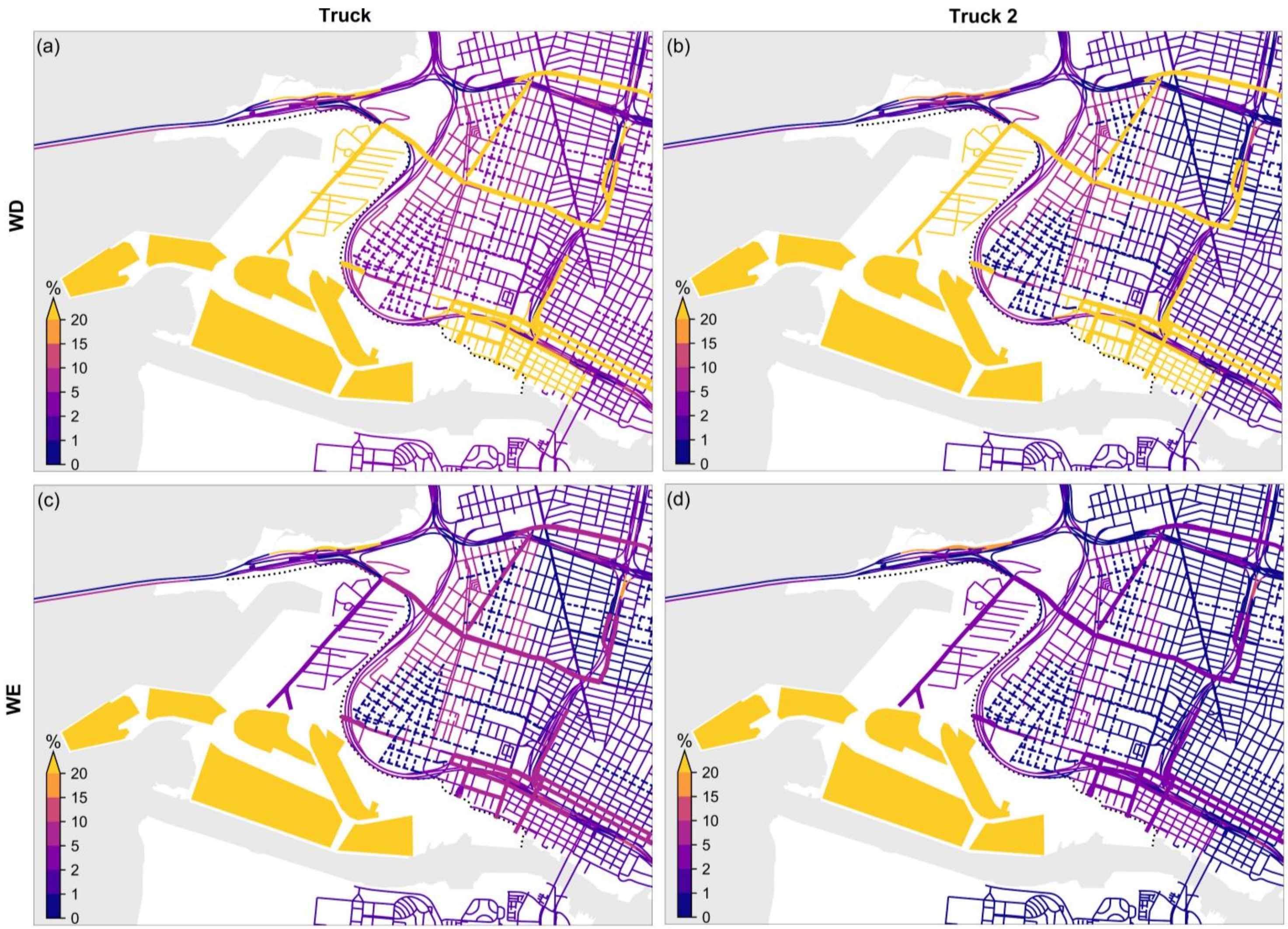


**Figure 2-7.** Total daily average fleet mix by roadway link in West Oakland for total (a, c) Trucks and (b, d) Truck 2 vehicles by day type (WD, WE). Fleet mix (%) is displayed by roadway (solid line), major truck route (thick solid line), and truck-prohibited route (dashed line). Total fleet volume varies by roadway link. Only roadway segments modeled as volume sources in AERMOD are plotted (*c.f.* **Figure 2-1**); emissions from on-road mobile sources operating within the Port are plotted as polygons.


**Figure 2-8.** As in **Figure 2-7**, but for total daily average POAK percentage of Truck 2 fleet on weekdays.

*(c) Fleet Average Vehicle Weight*

For each link, average vehicle weight of the vehicle fleet is required to estimate emission factors for road dust. The fleet average vehicle weight is calculated as follows, where subscripts denote vehicle aggregation levels (vehicle type, VT, or vehicle category, VC, where $x \epsilon \{VT, VC\}$):

$$F_{VT} = \frac{VMT_{VT}}{VMT_{VC}}$$

$$F_{VC} = \frac{VMT_{VC}}{VMT_{fleet}}$$

$$W_{VC} = \sum\nolimits_{VT} W_{VT} \cdot F_{VT}$$

$$W_{fleet} = \sum\nolimits_{VC} W_{VC} \cdot F_{VC}$$

where

$F_x$ = VMT-based weighting factor for the vehicle type or category (unitless)
$VMT_x$ = VMT of all vehicles at vehicle aggregation level $x$ (mi)
$W_x$ = weight of vehicle at vehicle aggregation level $x$ (tons)

Therefore, the fleet average vehicle weight is simply the weighted-sum of all vehicle weights. Vehicle weights were taken from the Caltrans-EMFAC2017 (CT-EMFAC2017) tool[38] (California Department of Transportation 2019; using the `Vehicle` table in the underlying CT-EMFAC2017 database).

### 2.3.3 Emission Factors

Emission factors by emission process were developed for $PM_{2.5}$ and TACs by vehicle category.

*(a) Operational Emission Factors*

Emission factors from on-road mobile sources are typically estimated using the EMFAC2017, using default fleet mix within vehicle categories. As EMFAC2017 does not generate emission factors for TACs, the District leveraged the CT-EMFAC2017, which generates emission factors for $PM_{2.5}$ and mobile source air toxics (MSATs).[39] CT-EMFAC2017 is based on emission factors and activity data from EMFAC2017, while emission factors for MSATs are based on EMFAC2017 data and chemical speciation profiles from CARB and EPA.

CT-EMFAC2017 can generate emission factors for Non-Truck, Truck 1, and Truck 2 categories. Annual average emission factors were obtained for 2017 Alameda County. The emission factors for POAK and Non-POAK-Truck 2 categories were then derived in the following manner:

- For POAK: $PM_{2.5}$ emission factors were obtained directly from CARB's EMFAC2017 web database.[40] A chemical speciation profile for HHDV vehicles from CARB[41] was applied to total organic gases (TOG) emission factors from the EMFAC2017 web database to derive emission factors for each TAC pollutant.

- For Non-POAK-Truck 2: The emission factor of all Truck 2 vehicles can be expressed as the weighted sum of the emission factors from POAK and Non-POAK-Truck 2:

$$EF_{T2} = (F_{POAK} \cdot EF_{POAK}) + (F_{NPT2} \cdot EF_{NPT2})$$

  where $EF_x$ are emission factors for a given pollutant, and $F_x$ are the fleet mix fractions within the Truck 2 category. Then, $PM_{2.5}$ and TAC emission factors can be back-calculated for POAK emission factors (from above), Truck 2 emission factors (from CT-EMFAC2017), and VMT-based vehicle category weighting factors (from the CT-EMFAC2017 database) as follows:

$$F_{POAK} = 1 - F_{NPT2}$$

[38] http://www.dot.ca.gov/env/air/ctemfac-license.html

[39] MSATs in CT-EMFAC2017 include the nine priority pollutants identified by the FHWA within the National Environmental Policy Act (NEPA): 1,3-butadiene, acetaldehyde, acrolein, benzene, DPM, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter (POM) (Biondi, 2016). In this analysis, the emissions of these TACs were estimated except for POM (which is a group of compounds and therefore does not have a single associated toxicity value).

[40] https://www.arb.ca.gov/emfac/2017/.

[41] https://www.arb.ca.gov/ei/speciate/speciate.htm.

$$F_{NPT2} = \frac{VMT_{NPT2}}{VMT_{T2}}$$

$$EF_{NPT2} = \frac{1}{F_{NPT2}} \left[EF_{T2} - (EF_{POAK} \cdot F_{POAK})\right]$$

This back-calculation approach can be applied to derive emission factors from all emission processes, including emission factors for running loss; while the associated activity is VHT, the VHT-based weighting factor will be equivalent the VMT-based weighting factor (since the travel data used from Citilabs does not distinguish speed by vehicle category).

*(b) Road Dust Emission Factors*

In this analysis, road dust emission factors were estimated for each roadway link following California Air Resources Board (2016), reproduced below:

$$EF_{fleet} = k \cdot sL^{0.91} \cdot W_{fleet}{}^{1.02} \cdot \left(1 - \frac{P}{4N}\right)$$

where

| | | |
|---|---|---|
| $EF_{RD}$ | = | road dust emission factor (g/mi) |
| $k$ | = | particle size multiplier (0.00033 lb/VMT for $PM_{2.5}$) |
| $sL$ | = | road surface silt loading factor, based on CARB road type (**Table 2-11**) (g/m$^2$) |
| $W_{fleet}$ | = | fleet average vehicle weight (ton) (**Section 2.3.2(c)**) |
| $P$ | = | number of “wet” (precipitation ≥ 0.01 in) days in averaging period (days) ($P = 41$ days for Alameda County) |
| $N$ | = | total number of days in averaging period (days) ($N = 365$ days for annual analysis) |

**Table 2-11.** Road surface silt loading factor ($sL$) by road type used in CARB method to estimate emission factors from road dust emissions. Values taken from California Air Resources Board (2016).

| CARB Road Type | $sL$ (g/m$^2$) |
|---|---|
| Freeway | 0.015 |
| Major/Collector | 0.032 |
| Local | 0.320 |

### 2.3.4 Emissions

For operational emissions from on-road mobile sources, annual average daily emissions were estimated by roadway link by vehicle category (Non-Truck, Truck 1, Non-POAK-Truck 2, POAK), and day type (WD, WE), for each emissions process:

- For running exhaust, tire wear, and brake wear:

$$E_{VC} = \sum_{h=1}^{24} VMT(h)_{VC} \cdot EF(s(h))_{VC}$$

where emissions ($E$, in g) are summed over all hours ($h$) of the day (and VMT is a function of hour of day, and for running exhaust, the emission factor is a function of the speed by hour of day).

- For running loss:

$$E_{VC} = \sum_{h=1}^{24} VHT(h)_{VC} \cdot EF_{VC}$$

For road dust emissions, the total fleet annual average daily $PM_{2.5}$ emissions were estimated by roadway link by day type (WD, WE):

$$E_{fleet} = \sum_{h=1}^{24} VMT(h)_{fleet} \cdot EF_{fleet}$$

For each link, the emissions from all processes were summed. The result is an annual average daily emissions inventory by pollutant, by day type, and by vehicle category. The emissions were then converted to emission rates (g/s) with corresponding diurnal activity profiles (see **Section 3.4.3**). The total emissions by vehicle category are reported in **Table 2-2**.

## 2.4 Truck-Related Businesses

Numerous "truck-related businesses" are located in West Oakland. These businesses offer Port services, such as truck scales and delivery, or operate a fleet of trucks to support their own business activities. Emissions from idling trucks within the business premises were estimated and included in the emissions inventory; operational and road dust emissions from these trucks are already accounted for as part of on-road mobile source emissions inventory (**Section 2.3**). If the business had TRUs in their fleet, emissions estimates from the refrigeration units on the trucks were not included.

### 2.4.1 Surveyed Businesses

The District worked with Environmental Defense Fund (EDF) and the Oakland Planning Department to develop a comprehensive list of businesses that may operate a fleet of trucks in West Oakland. The District expanded the initial business list from the 2009 West Oakland Truck Survey (Bay Area Air Quality Management District 2009) to include businesses that were selfregistered on the West Oakland Works website[42] and from other field studies performed by EDF. To determine the current level of truck activity at each business, the District sent surveys to the businesses to determine the average number of truck visits per day and the number of loading docks. The District received responses from 52 of 91 businesses surveyed.[43] Responses from the 2009 West Oakland Truck Survey were used for businesses where the District did not receive a response. When no information was available, a default of either 5 or 10 trucks per day was used, based on the survey response received from similar business types. Businesses were then removed from the emissions inventory if:

- Emissions from trucks associated with a business were already accounted for under another source category (i.e., trucks operating at terminals or railyards);
- There were ≤ 3 trucks per day at the business; or
- The business did not have an active truck fleet (e.g., truck brokers, marketing companies).

See **Attachment 3** for a list of truck-related businesses and truck fleet sizes.[44]

Because businesses were not asked to provide truck fleet mix information in the surveys, the District estimated a default truck fleet based on the results from the 2009 West Oakland Truck Survey (**Table 2-12**), which includes heavy heavy-duty trucks (HHDT), medium heavy-duty trucks (MHDT), light heavy-duty trucks (LHDT), and Port Trucks (T7 Port of Oakland drayage trucks; T7 POAK). This default was applied to all businesses except for those where the fleet was clearly not representative of the business operation type; for example, all vehicles were assumed to be buses at the Greyhound Bus Terminal, and all vehicles were assumed to be MHDVs at shredding facilities. Fleet mix type by business are also reported in **Attachment 3**.

**Table 2-12.** Default fleet mix used for truck-related businesses, as derived from the 2009 West Oakland Truck Survey (Bay Area Air Quality Management District 2009).

| Truck category | Percentage of fleet (%) |
|---:|:---:|
| HHDT | 26.5 |
| MHDT | 13.5 |
| LHDT | 10.0 |
| T7 POAK | 50.0 |

CARB's commercial motor vehicle idling regulation states that all heavy-duty vehicles in California with GVRW ≥ 10,000 lb are prohibited from idling longer than five minutes (California Air Resources Board 2004). However, the regulation allows for longer idling times due to traffic congestion, inspection or service, operating a take-off device, adverse weather conditions, mechanical failure, passenger loading, queuing, or if the engine meets the optional clean idle certification standard. To be conservative, the District assumed that there was 15 min of idling per truck trip.

[42] http://www.westoaklandworks.com/our-directory/.
[43] District staff visited seven of these businesses in person.
[44] For most truck-related businesses, truck fleet size was used as a surrogate for truck trips.

Emission factors for diesel-fueled truck categories[45] were obtained from EMFAC2017 using a 2017 base year for Alameda County. The emissions were then estimated from each business using the following equation:

$$E_i = N \cdot I \cdot EF_i$$

where

| | | |
|---|---|---|
| $E_i$ | = | emissions of pollutant $i$ (g) |
| $EF_i$ | = | emission factor of pollutant $i$ (g/h) |
| $N$ | = | number of vehicles |
| $I$ | = | idling time (h) ($I = 0.25$ h) |

To calculate the annual emissions, the District assumed that truck-related businesses operated 6 days per week (312 days per year).

### 2.4.2 Schnitzer Steel

A separate emission inventory for trucking operations was developed for Schnitzer Steel based on its permitted operations. Products are transported by trucks to bulk carriers which dock at the Schnitzer Steel deep-water terminal.

The District currently limits the number of trucks that can operate at Schnitzer Steel.[46] There are currently no restrictions on the type of trucks that can operate at Schnitzer Steel; therefore, for this assessment, the District assumed that all trucks were diesel fuel MHDTs and HHDTs (modeled as either Non-POAK-Truck 2 or heavy-heavy duty diesel single unit truck, T7 Single[47]). Due data availability, the vehicle category associated with the emission factors used varied depending on the emission process (**Table 2-13**).

Unlike for the other truck-related businesses in the West Oakland emissions inventory, because of the size and characteristics of the property, emissions from trucks operating at Schnitzer Steel included driving-related emissions. Emissions due to running exhaust, idle exhaust, and tire wear, brake wear and road dust (for PM) were calculated for Schnitzer Steel using the following assumptions: (1) each truck idled for 15 min on the property (to be conservative), (2) each truck drove 800 m on the property (two-times the approximate length of the property, from the entrance to near the ship berth), (3) trucks drove at 10 mph on the property (consistent with the average truck speed of trucks driving within terminals at the Port; Ramboll 2018), (4) trucks drove on unpaved roads, which were modeled as Local Roads for the purposes of calculating re-entrained road dust (**Table 2-11**). Emissions were calculated as in **Section 2.3.4**, and are summarized in **Table 2-13**.

[45] From EMFAC2017, emission factors for LHDT are based on that of LHDT1 (which are highest among all LHDTs), and emission factors for HHDTs are based on the composite of emission factors for all T7 vehicles except T7 POAK (Port Trucks).

[46] Schnitzer Steel's current permit is for 63,875 truck trips per year.

[47] A T7 Single vehicle usually has the highest emission factors of all T7 vehicles in EMFAC2017; this vehicle type was used to provide a conservative estimate of emissions.

**Table 2-13.** Emission estimates from trucks operating at Schnitzer Steel in 2017 by emission process. The Fleet indicates the EMFAC2017-based fleet from which the emission factor was derived. A hyphen (–) indicates that emissions from the emission process are not applicable.

| | | Emissions (tpy) | |
|---|---|---|---|
| **Process** | **Fleet** | **$PM_{2.5}$** | **DPM** |
| Running exhaust | Non-POAK-Truck 2 | 0.0073 | 0.0076 |
| Idle exhaust | T7 Single | 0.0034 | 0.0036 |
| Tire wear | Non-POAK-Truck 2 | 0.0002 | – |
| Brake wear | Non-POAK-Truck 2 | 0.0010 | – |
| Road dust | Non-POAK-Truck 2 | 0.0267 | – |
| **Total** | | **0.0386** | **0.0112** |

## 2.5 Ocean-Going Vessels

Emissions from OGVs were estimated for active terminals at the Port and the privately-owned terminal operated by Schnitzer Steel. Emissions from OGVs include emissions from transiting, maneuvering, and berthing (hoteling). OGVs use propulsion engines for transiting, auxiliary engines for on-board electrical power, and small boilers to meet steam and hot water demands.

### 2.5.1 Port of Oakland

OGVs use propulsion engines for transiting, auxiliary engines for on-board electrical power, and small boilers to meet steam and hot water demands. Pollutants are emitted based on the operating mode of each OGV. Common modes include open ocean cruising, cruising at reduced speed (in the reduced speed zone [RSZ]) in the Bay, maneuvering (lower speed operation near berths), and hoteling (at berth). RSZ mode occurs after the bar pilot takes command of the vessel at the sea buoy until the vessel slows to a maneuvering speed directly in front of the Port. Emissions associated with cruising from the open ocean and most of the RSZ emissions were excluded in this analysis, since these emissions are outside the Source Domain. Therefore, for this analysis, the District included emission from (a) low speed vessel maneuvering south of the Bay Bridge within the West Oakland Source Domain, and (b) berthing at the Port. The details of how emissions were estimated for both of these operating modes are described below.

*(a) Maneuvering*

Emissions due to OGV maneuvering were calculated based on Ramboll (2018) to estimate emissions due navigating within the Source Domain.

In 2017, OGVs calling at the Port were exclusively container ships, including some with the capability to handle roll-on/roll-off cargo. All ship calls in 2017 were exclusive to the Port and did not include visits to other ports. An estimated 1,596 vessel voyages[48] to the Port were reported in the 2017 Port inventory. Many vessels follow regular route and schedules; 66% of the total calls were from vessels visiting 4 to 10 times in 2017, while 15% of total calls were from vessels visiting 11 or more times. Most of the vessels are relatively new; 85% were built since 2000, and the call-weighted median age of vessels was 9 years old.

Vessel call data were provided by the Marine Exchange of San Francisco Bay Region (SFMX). This dataset included the vessel identification number, Port berth, and date and time of the beginning and end of each movement, from which the time at berth (time between 'first line on' and 'last line off') and at anchor was inferred. The vessel identification numbers were cross-referenced with data obtained from the 2018 IHS Fairplay database,[49] which contains vessel characteristics such as vessel build date (which was used to estimate the emissions control regulations for the engine, which in turn determines the emission factor), cruise speed, engine type, and installed power. These parameters affect estimates of engine load for each vessel call. Actual vessel speed profiles (travel time by speed bin) were obtained from the Automatic Identification System (AIS),[50] provided by SFMX.

Emissions were determined for each transport mode based on the engine rated power (the maximum power that the engine can produce), typical load factor (the fraction of the actual to the rated power that the engine operates for a given mode), and time elapsed at that load. Emissions per vessel were calculated from propulsion engines, auxiliary engines, and boilers using the emissions factors and methods from CARB (California Air Resources Board 2011c, as amended by California Air Resources Board (2014b) and CARB's Marine Emissions Model v2.3L [California Air Resources Board 2014a]) as follows:

$$E_i = EF_i \cdot e \cdot LF \cdot T_O$$

where

$E_i$ = emissions of pollutant *i* (g)
$EF_i$ = emission factor of pollutant *i* (by engine type, operating mode, and fuel type) [g/(kW h)]
$e$ = rated power (maximum power the engine can produce) (kW)
$LF$ = load factor (unitless)
$T_O$ = operating time in mode (h)

Data from the 2018 IHS Fairplay database indicate that the most common propulsion engines used on vessels calling at the Port in 2017 were slow speed engines (2-stroke engines, typically lower than 200 rpm) followed by steam engines powered by boilers for the remaining ships. Emission rates assuming 0.1% fuel sulfur content were used based on CARB fuel regulation except for steamships for which 2.7% sulfur content was used. Emissions factors for DPM (based on emission factors for $PM_{10}$) and $PM_{2.5}$ used for each OGV engine type are presented in **Table 2-14**.

[48] Vessel voyages account for inbound/outbound trips, whereas calls to the Port represent the number of berthing events (there can be multiple calls per voyage, e.g., when a vessel moves between berths at the Port).
[49] Ramboll (2018) extracted data from IHS Fairplay (Bespoke Maritime Data Services, Ship Data) on February 15, 2018.
[50] AIS data were available from June through December 2017. These data were used to calculate speed distributions. It is assumed that data during this period are representative of OGV transiting behavior over the whole year.

**Table 2-14.** OGV DPM and $PM_{2.5}$ emission factors by engine and fuel type. From Ramboll (2018), based on California Air Resources Board (2014a).

| Engine Type | Fuel Type | Emission Factor [g/(kW h)] | |
|---|---|---|---|
| | | **DPM** | **$PM_{2.5}$** |
| Slow speed | Marine distillate (0.1% sulfur) | 0.250 | 0.230 |
| Steam | Marine distillate (2.7% sulfur) | 0.800 | 0.780 |
| Auxiliary | Marine distillate (0.1% sulfur) | 0.250 | 0.230 |
| Auxiliary boiler | Marine distillate (0.1% sulfur) | 0.133 | 0.130 |

Load factor for the propulsion power were determined using Stokes Law:

$$LF = (s/s_{\mathrm{max}})^3$$

where

$LF$ = load factor (unitless)
$s$ = vessel speed
$s_{\mathrm{max}}$ = vessel maximum speed

The speed and maximum speed of the vessel must be expressed in the same units. A load factor of 100% corresponds to the vessel operating at its maximum speed. When the vessel is cruising, the vessel cruise speed is assumed to be equal to its design speed, which is 93.7% of its maximum speed. Using the equation above, this results in a load factor of 0.823. The load factor varies depending on the vessel's speed during other modes. Adjustment factors were also applied to obtain emission factors applicable to operation at low loads where the engine does not operate as efficiently.[51]

Emissions from maneuvering were estimated for the area inside the Source Domain only. Vessels were assumed to be in maneuvering mode while moving between the Bay Bridge and the Port berths. This mode consists of short low speed transits, turns at the berth or in the turning basins, and a start and stop of the propulsion engine at the berth with tug assist. Maneuvering time is shorter for the Outer Harbor terminal calls (Berths 24 through 37) than the Inner Harbor terminal calls (Berths 55 through 68) because of the shorter distance from the Bay Bridge and proximity of the Outer Harbor turning basin to the Outer Harbor berths. Larger ships also require more time to turn. The time from the beginning to the end of the maneuvering mode was obtained from SFMX; 0.25 h were added to account for propulsion engine start up and shut down. The 0.75 h per shift (when a vessel moves between berths or from berth to anchorage) was also included in the emission estimates. Emissions associated with occasional vessel shifts between berths or between anchorage and berth were included in the maneuvering total for purposes of spatial allocation.

Vessel auxiliary power is used during both maneuvering and berthing operations. Vessel auxiliary power was derived from auxiliary generator capacity taken from the 2018 IHS Fairplay database or estimated from a comparable ship (by size and owner) if data were not available. The auxiliary

[51] This is consistent with the approach used in the 2014 Port of Los Angeles Inventory (Ramboll 2018).

engine load factor for maneuvering was assumed to be 50% (California Air Resources Board 2011c).

Emissions from OGV maneuvering (within the Source Domain) to each terminal are summarized in **Table 2-15**. Propulsion steam and auxiliary boiler PM emissions are not included in the DPM total because they are not generated by diesel engines.

**Table 2-15.** $PM_{2.5}$ and DPM emissions from OGV maneuvering and berthing by terminal. The District only included emissions within the Source Domain (the emissions presented in this table are lower than those reported in the 2017 Port Inventory).

| Terminal | Maneuvering (tpy) | | Berthing (tpy) | |
|---|---|---|---|---|
| | **$PM_{2.5}$** | **DPM** | **$PM_{2.5}$** | **DPM** |
| TraPac | 0.657 | 0.640 | 1.305 | 0.719 |
| Nutter | 0.376 | 0.366 | 0.746 | 0.411 |
| OICT | 2.649 | 2.578 | 5.260 | 2.897 |
| Matson | 0.262 | 0.255 | 0.520 | 0.286 |
| **Total** | **3.945** | **0.110** | **7.830** | **4.313** |

*(b) Berthing*

During berthing, main engines are turned off while the auxiliary engines are running. Emission estimates due to berthing were provided directly by CARB (personal communication, 12 July, 2019).[52] These emissions estimates include both emissions from the auxiliary engine and boiler operations (**Table 2-15**).

### 2.5.2 Schnitzer Steel

Schnitzer Steel receives only bulk carriers calling for scrap steel. Emissions from vessel voyages associated with calls at Schnitzer Steel are not included in the Port's maritime inventory because the Schnitzer facility is not owned or controlled by the Port of Oakland. Similar to the emissions inventory developed for the Port (Ramboll 2018), emissions from OGVs operating from Schnitzer Steel were estimated based on the rated power and load factor of each vessel, duration of each trip, and the pollutant-specific emission factors during transiting, maneuvering, and hoteling. Emissions from container ship assist tugs (harbor craft) used to assist cargo vessels movements upon arrival and departure from the terminal were included in the OGV emissions. The District current limits the number of ship calls to Schnitzer Steel on an annual basis.[53] No temporal variations were estimated for OGV trips.

Due to confidentiality agreement, the District cannot release specific parameter information used to derive the OGV emissions for Schnitzer Steel. Emission factors for the main and auxiliary engines were taken from California Air Resources Board (2011c). Emission factors for auxiliary

[52] These emissions are consistent with the current draft OGV at-berth inventory (California Air Resources Board 2019; the final version will be publicly posted 60 days before the CARB Board hearing for the At-Berth Regulation Amendment).
[53] Schnitzer Steel's current permit is for 26 ship calls per year.

boiler operations were taken from the Port of Los Angeles Inventory of Air Emissions for 2017 (Starcrest Consulting Group, LCC 2018). Emission factors for harbor craft emission factors were taken from California Air Resources Board (2012b). Based on CARB fuel regulations, emission factors were based on fuel with 0.1% fuel sulfur content. Estimates of emissions were limited to the Source Domain; transport outside of the domain were not estimated or modeled. The total emissions are summarized in **Table 2-16**.

**Table 2-16.** $PM_{2.5}$ and DPM emissions from OGVs and assist tugs operating at Schnitzer Steel.

| Activity | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---:|---|---|
| Transiting | 0.060 | 0.060 |
| Maneuvering | 0.087 | 0.087 |
| Berthing | 0.155 | 0.155 |
| **Total** | **0.302** | **0.302** |

## 2.6 Commercial Harbor Crafts

CHCs are regularly used at the Port to support: (1) operation and maintenance dredging in the channels and at berths, (2) disposal of dredged material, (3) assist container ships (assist tugs), and (4) tug trips and fuel pumping from fuel barges towed from Richmond to refuel ships' bunkers at the Port. Most CHCs at the Port are tugs; otherwise, there are a few small work boats that assist dredging operations, and dredgers.

### 2.6.1 Operation and Maintenance Dredging and Disposal

Operation and maintenance (O&M) dredging is conducted annually at the Port to maintain the depth of channels and berths and to ensure safe navigation. Materials that are deposited into the Bay by stream and urban runoff are removed, and shallow areas are eliminated by redistributing the bottom sediments from shoaling. Dredging is conducted using diesel-powered derrick barge (clamshell) dredgers, accompanied by tender tugs and work boats. Dredged material is transferred to scows (barges), which are then towed to a disposal site by a diesel-powered tug. After the barge is emptied, the tug returns with the empty barge to pick up a new load.

Recent channel dredging was conducted from August 2017 into February 2018, while berth dredging was conducted in August, October, and the first two weeks of November 2017. During this period, 89,000 cubic yards of material from the Port's berth and 559,000 cubic yards of material from the channel were removed and disposed of at the San Francisco Deep Ocean Disposal Site, located 49 nmi west of the Golden Gate Bridge. These activities were treated as two separate activities in the 2017 Port Inventory: (1) O&M dredging, which includes operation of the clamshell dredge and associated support vessels, and (2) disposal, when dredge materials are transported from the dredging area to disposal sites. Only disposal was inside the Source Domain was included in this analysis (which includes only ~2.3 nmi of transit distance, or ~9.4% of total transiting emissions).

Emissions from dredging equipment was estimated as follows:

$$E_i = EF_i \cdot e \cdot LF \cdot T_O$$

where

$E_i$ = emissions of pollutant *i* (g)
$EF_i$ = emission factor of equipment of pollutant *i* [g/(bhp h)]
$e$ = engine brake horsepower rating (bhp)
$LF$ = time-weighted engine load factor (fraction of full load) based on different operating modes during a round trip (unitless)
$T_O$ = operating hours of equipment (h)

The dredging contractor provided a list of dredging equipment, engine characteristics, and hours of operation. In 2017, dredging operations were performed using a clamshell dredge on a dredge barge (using a main and auxiliary diesel engine), and dredge tenders and work boats (each with two main propulsion diesel engines, and up to two auxiliary engines). Specific information on engine model, power, load factor, emissions factors, and hours of operation are provided in the 2017 Port Inventory. Vessel emission factors, deterioration factors, fuel correction factors, and load factors from CARB's Commercial Harbor Craft Emission Inventory tool (California Air Resources Board 2011a) were used to estimate emissions for all engines used on the dredging and support vessels. Emission factors for the dredgers were derived from CARB's OFFROAD model,[54] which are based on the model year and age of equipment (in 2017). Emission factors for diesel engines on tugs and tenders were estimated based on load factors, zero-hour emission factors, and deterioration factors available in California Air Resources Board (2011a). The resulting emissions are presented in **Table 2-17**.

**Table 2-17.** Emissions of $PM_{2.5}$ and DPM from O&M dredging and disposal of dredge material. The District only included emissions within the Source Domain (the emissions presented in this table are lower than those reported in the 2017 Port Inventory).

| Activity | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|
| O&M Dredging | 1.078 | 1.111 |
| Dredge disposal | 0.043 | 0.044 |
| **Total** | **1.121** | **1.155** |

### 2.6.2 Assist Tugs

Tugs are used to assist cargo vessel movements upon arrival, berthing, and departure from the Port, and tow or push a wide variety of barges and other equipment. Assist tugs ensure safe navigation within the Bay, especially when vessels are reversing direction near berths in the Inner and Outer Harbor. Tugs are matched to vessels to ensure they are equipped to handle the vessel based on their size and power level, among other criteria. On average, two tugs are used for each cargo vessel that are inbound or outbound between berths at the Port and the Federal Channel near

[54] See https://ww3.arb.ca.gov/msei/ordiesel.htm for more information.

the Bay Bridge, though up to five tugs are required to assist larger vessels. Emissions from assist tugs were estimated for when they were (1) assisting vessel operation, and (2) transiting to and from berthing bases to conduct the assists.

Tugs assigned to ships calling at the Port are operated by five companies: AMNAV, Foss Maritime, Starlight Marine (part of Harley Marine Services), Crowley, and BayDelta. Vessel call data specific to the Port was provided by SFMX. The activity of each company in 2017, based on the number of calls to the Port, are reported in **Table 2-18**. Although these tugs are used elsewhere in the Bay, emissions were only estimated for activity during transiting and assisting ship calls at the Port.

**Table 2-18.** Activity (percentage of total calls) of assist tugs calling to the Port by operator. The base indicates where the company bases their operations (at/near). Based on calls to the Port in 2017.

| Operator | % calls | Base |
|---:|:---:|---|
| AMNAV | 78 | Berth 9, Port of Oakland |
| Starlight Marine | | Alameda side of Inner Harbor Turning Basin |
| Foss Maritime | 7 | Richmond |
| Crowley | 8 | Bay Bridge, San Francisco |
| BayDelta | 8 | Bay Bridge, San Francisco |

Assist tugs emissions were estimated based on the methods presented in California Air Resources Board (2011a). The equation used to estimate emissions from each assist tug class was as follows:

$$E_i = AEF_i \cdot e \cdot LF \cdot T_O$$

where

$E_i$ = emissions of pollutant $i$ (g)
$AEF_i$ = adjusted emission factor of pollutant $i$ for main or auxiliary engine (adjusted for model year, deterioration rate, and fuel, averaged by tug class) [g/(bhp h)]
$e$ = engine brake horsepower rating, as a weighted average between main propulsion and/or auxiliary engine brake horsepower rating of engines in the tug class (bhp)
$LF$ = time-weighted engine load factor (fraction of full load) for the maneuvering phase for the main engine and/or auxiliary engine (unitless)
$T_O$ = operating hours by tug class (based on number of vessel calls, average maneuvering time per call, average number of tugs assigned to each assist by inbound/outbound direction) (h)

The characteristics of tugs by company that were in operation in 2017 were obtained, including: engine model year, main engine power and tier regulation, and auxiliary power. The total assists by company were evenly distributed among individual tugs. Maneuvering time was estimated for each call based on the Port berth location and the vessel length. Time transiting to and from assists for each tug was estimated using the distances from each operator's base (**Table 2-18**) to various assist destinations, assuming the transit trips were made at an average speed of ~ 9.2 mph (8 kt). For each trip, emissions were calculated for inbound vessels assuming 2.20 tugs, and for outbound trips using 2.08 tugs. Time for each assist including maneuvering ships inbound and outbound from the Port and transiting to and from maneuvering assists.

Zero-hour emission factors, engine emissions deterioration factors, and fuel correction factors for both main propulsion and auxiliary engines were based on California Air Resources Board (2011a). An additional adjustment factor to account for engine deterioration between 2015-2017 was also included (Chris Lindhjem, Ramboll, personal communications, 9 August, 2019). The engine load factor for main engines and auxiliary engines was 0.31 and 0.43, respectively. The total emissions from assist tugs are presented in **Table 2-19**.

**Table 2-19.** $PM_{2.5}$ and DPM emissions from assist tugs.

| Operator | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|
| AMNAV<br>BayDelta<br>Crowley<br>Foss Maritime | 2.96 | 3.05 |
| Starlight Marine | 0.86 | 0.88 |
| **Total** | **3.82** | **3.94** |

### 2.6.3 Bunkering Barges

Bunkering is when ships are supplied with fuel. At the Port, tugs tow fuel barges from Richmond to refuel ships at berth. The bunkering barge was towed from and returned to the Richmond long wharf, approximately 10 nmi from the Port; only the portion of the bunkering trip from the Port to Richmond within the Source Domain (a distance of ~1.8 nmi) was used to estimate the emissions. Foss Maritime provided the date and fuel costs for bunkering events in 2017, which was used to develop the emissions inventory for this activity.

Bunkering emissions were estimated using the same approach as that described for dredging (**Section 2.6.1**) since each operation involves a barge and an accompanying tug. The tug load and time-in-mode for movement of the bunkering barge were used to estimate the emissions during the transit trip. Emissions from the tug used to tow the fuel barge between Richmond and the Port were estimated following the method used to estimate emissions from assist tugs (**Section 2.6.2**). Emissions from the barge-mounted diesel-powered pumps were estimated using the emission rate for pumps in CARB's OFFROAD model.

A total of 314 bunkering events occurred in 2017 across 219 unique dates. This means that, for the 95 events that occurred on the same day as another event, there was likely no return trip to Richmond between events. Therefore, only 219 round trips to Richmond from the Port were accounted for in the emissions analysis.

Assuming the one-way trip from Richmond to the Port takes 2.5 h, the total operating hours for towing barges for bunkering was 1,095 h. Time to refuel ships took up to 8 h. Taking the travel time and time required to refuel, the average bunkering event was assumed to take 4 h for pumping (1,256 h of pumping for all 314 bunkering events). Pumping was performed by two 500 hp model year 2003 diesel barge pumps using non-road Tier 2 engines. The propulsion and auxiliary engine model year and power for the two tugs used to tow the bunkering barges are presented in the 2017 Port Inventory.

Total emissions for the bunkering operation to tow boats and barge pumps are shown in **Table 2-20**.

**Table 2-20.** $PM_{2.5}$ and DPM emissions from operating bunkering barges and pumps by terminal operator.

| Terminal | Bunkering Barges (tpy) | | Bunkering Pumps (tpy) | |
|---|---|---|---|---|
| | **$PM_{2.5}$** | **DPM** | **$PM_{2.5}$** | **DPM** |
| TraPac | 0.032 | 0.033 | 0.013 | 0.014 |
| Nutter | 0.018 | 0.019 | 0.007 | 0.008 |
| OICT | 0.130 | 0.134 | 0.051 | 0.055 |
| Matson | 0.013 | 0.013 | 0.005 | 0.005 |
| **Total** | **0.199** | **0.193** | **0.075** | **0.082** |

## 2.7 Cargo Handling Equipment

CHE is primarily used to transfer freight between modes of transportation, such as between marine vessels and trucks or between trains and trucks. At the Port, CHE are used almost exclusively to move shipping containers. As such, the types of CHE at the Port are limited to yard tractors, rubber-tired gantry (RTG) cranes, top or side handlers (picks), and forklifts. Other types general purpose off-road equipment, such as sweepers, bulldozers, backhoes, excavators, and other off-road equipment, were not included as part of the CHE category since they are used at the Port for facility maintenance and construction. A more detailed explanation of emissions estimates can be found in the 2017 Port Inventory report.

Annual 2017 emissions for each piece of CHE equipment were estimated at each Port terminal based on the equipment type, engine characteristics (model year, rated power, after-treatment retrofit control device), and equipment operation (hours of operation, fuel consumption rate). Equipment population and operation estimates were derived from surveys of on-dock terminal, off-dock terminal, and railyard activity conducted by the Port in late 2017 and early 2018.

The types of equipment were used to categorize CHE consistent with CARB guidance (California Air Resources Board 2011d) include cranes (including rubber-tired gantry cranes), forklifts, container handling equipment (top or side handlers), and yard trucks (or yard tractors). Annual emissions from CHE were calculated using the following equation:

$$E_i = [EF_i + (dr \cdot T_C)] \cdot e \cdot FCF \cdot LF \cdot CF \cdot T_O \cdot N$$

where

$E_i$ = emissions of pollutant $i$ (g)
$EF_i$ = zero-hour emission factor of equipment [g/(bhp h)]

$dr$ = deterioration rate or increase in zero-hour emissions as the equipment is used [g/(bhp h)/h]
$T_C$ = cumulative hours of equipment use (h)
$e$ = engine brake horsepower rating (bhp)
$FCF$ = fuel correction factor (percent reduction) used to adjust the base emission factor to account for use of California diesel fuel (unitless)
$LF$ = weighted load factor (average load expressed as a percent of rated power) (unitless)
$CF$ = control factor (percent reduction) associated with use of emission control technologies (unitless)
$T_O$ = annual operating hours of the equipment (h)
$N$ = number of pieces of the equipment

The Port sent confidential surveys regarding equipment make and model to all tenants on-dock and off-dock of the BNSF railyard. When information was missing from the survey, default values were assumed based on similar make and model of equipment, along with a default number of hours of operation.

For diesel-powdered CHE, zero-hour emission factors, deterioration rates, fuel correction factors, and emission control factors were obtained from CARB’s 2011 Cargo Handling Equipment Inventory (CHEI) model (California Air Resources Board 2012a). Because the current version of the CHEI model does not support emission estimates for non-diesel equipment, emission factors for gasoline and propane powered equipment were obtained from CARB’s 2011 CHE Calculator (California Air Resources Board 2011d), following the methodology described in the 2005 original rulemaking for CHE operating at ports and intermodal railyards (California Air Resources Board 2005a).

Of the 386 total pieces of CHE, 345 were diesel-powered, 39 were gasoline-powered, and 2 were liquid petroleum gas-powered (**Table 2-21**). A summary of the average horsepower, annual operating hours by equipment and power range can be found in the 2017 Port Inventory.

**Table 2-21.** CHE equipment types used at the Port, based on survey results.

| Equipment | Equipment Population | % Total |
|---:|---:|---:|
| Container handling equipment (top picks and side picks) | 123 | 32 |
| Forklift | 14 | 4 |
| RTG Crane | 24 | 6 |
| Yard Tractor | 105 | 27 |
| Yard Tractor (on-road) | 120 | 31 |
| **Total** | **386** | **100** |

Emissions were split between on-dock and off-dock operations, based on the mix of equipment types used at the marine terminals as compared to the BNSF railyard. Approximately 83% of DPM and $PM_{2.5}$ emissions were associated with the marine terminals, while the remaining 17% were from the BNSF railyard[55] (Till Stoeckenius, Ramboll, personal communication, 22 January, 2019). CHE emissions were further assigned to each terminal based on the proportion of ship calls made to each terminal in 2017 (**Table 2-18**). Emissions from CHE by terminal and yard and the hours of operations are summarized in **Table 2-22** and **Table 2-23**, respectively. All $PM_{10}$ from diesel engines were assumed to be DPM, and $PM_{2.5}$ emissions were calculated as a fraction of $PM_{10}$ based on the fuel type-specific factors provided in California Air Resources Board (2013).

**Table 2-22.** $PM_{2.5}$ and DPM emissions from CHE by location (terminal or railyard).

| Location | Emissions (tpy) | |
|---|---|---|
| | **$PM_{2.5}$** | **DPM** |
| TraPac Terminal | 0.220 | 0.218 |
| Nutter Terminal | 0.126 | 0.124 |
| OICT Terminal | 0.886 | 0.878 |
| Matson Terminal | 0.088 | 0.087 |
| BNSF Railyard | 0.270 | 0.273 |
| **Total** | **1.590** | **1.580** |

**Table 2-23.** Terminal operating hours used to develop temporal activity profiles for CHE. Information as of January 25, 2019.

| Location | Day of week | | | |
|---|---|---|---|---|
| | **Monday - Thursday** | **Friday** | **Saturday** | **Sunday** |
| TraPac Terminal | 07:00 – 12:00<br>13:00 – 16:30<br>18:00 – 02:00 | 07:00 – 12:00<br>13:00 – 16:30 | None | None |
| Nutter Terminal | 07:00 – 16:15 | 07:00 – 16:15 | None | None |
| OICT Terminal | 00:00 – 03:00<br>07:00 – 00:00 | 07:00 – 18:00 | None | None |
| Matson Terminal | 08:00 – 11:45<br>13:00 – 16:45 | 08:00 – 11:45<br>13:00 – 16:45 | None | None |
| BNSF Railyard | 06:00 – 18:00 | 06:00 – 18:00 | 07:00 – 16:00 | None |

55 CHE emissions at BNSF include emissions during transload to the railyard (i.e., it includes emissions that are not necessarily physically located within the railyard, but are due to the operations of the railyard).

## 2.8 Port Trucks at Terminals

Port Trucks, or "drayage trucks," transport containers between marine terminals, freeway interchanges, and nearby railyards. Port Trucks travel along truck routes between marine terminals, three nearby freeway interchanges, and two railyards (UP and BNSF). Trucks can only arrive or depart from the Port area via three freeway access points: Maritime Street/West Grand Street, 7th Street, and Adeline Street (via the Adeline Street and Market Street on/off-ramps to I-880).

To calculate total emissions from Port Trucks operating at terminals, vehicle operating modes were separated into four categories: (1) idling inside marine terminals, (2) idling at gate queues, (3) driving within marine terminals, and (4) driving on surface streets between terminals and freeways interchanges or railyards. For each of these modes, the average time and travel speed determine the emissions for each trip. Emissions per trip were calculated by multiplying the appropriate emission factor (idling or by speed bin) by the activity level indicator (idling time or travel distance). For running exhaust, emissions are calculated as:

$$E_i = N \cdot L \cdot EF_i$$

where

$E_i$ = emissions of pollutant *i* (g)
$EF$ = emission factor of pollutant *i* (g/mi)
$N$ = number of vehicles (unitless)
$L$ = travel distance (mi)

For idling exhaust, emissions were calculated in the same manner as presented in **Section 2.4**.

Details regarding the method used to estimate each of the emissions parameters are provided in the 2017 Port Inventory. The 2017 truck trip counts at the marine terminals were derived from gate counts (as provided by the Port or the terminal operators) and container lift counts (i.e., the number of containers moved on or off a ship). In the railyards, the reported number of lifts was doubled to estimate the sum of inbound and outbound truck trips. However, trucks may move a container in and out on a single terminal entry or reposition an empty chassis so that the gate counts do not exactly match the number of container lifts. The counts do not include trips to truck parking areas in the Port (such as the former Ports America Outer Harbor terminal and Howard Terminal) since the trucks were already counted when they entered at one of the three access points.

VMT within marine and rail terminals is limited to driving between the terminal gates and container storage areas. Previous surveys of terminal operators conducted by the Port was used to estimate 2017 activity including truck speed, travel distance, and idling time (**Table 2-24**).

**Table 2-24.** Average activity level for Port Trucks at terminals. Values are estimated from surveys conducted in 2005 and 2012 and terminal trip activity in 2017.

| Mode | Average value |
|---|---|
| Idling at gate (h) | 0.14 |
| Idling in terminal (h) | 0.34 |
| Distance traveled (mi) | 2.54 |
| Speed (mph) | 13.5 |

Emission factors for truck running exhaust, extended idling, tire wear, and brake ware were taken from EMFAC2017. Emission factors from on-road trucks depend on the age distribution of the trucks and site conditions such as temperature, humidity, fuel sulfur, and average speeds. Port Truck hours of operation were assumed to be the same as those for CHE (**Table 2-23**).

In 2017, all Port Trucks used diesel fuel; $PM_{10}$ running exhaust emissions are therefore DPM emissions, but total $PM_{10}$ and total $PM_{2.5}$ also include (non-diesel) PM from brake wear, tire wear, re-entrained road dust. DPM emissions by terminal were back-calculated from total DPM emissions associated with Port Truck trips and the fraction of activity based on ship calls by terminal. Total $PM_{2.5}$ emissions in the 2017 Port Inventory do not include road dust emissions; to estimate these emissions, the District first separated idling exhaust emissions from "driving emissions" (running exhaust, tire wear, brake wear) based on the fraction of emissions by activity by terminal (provided by Till Stoeckenius, Ramboll, personal communication, 12 June, 2019). Using emission inventories developed for Port Trucks on roadways within the Port area (**Section 2.3**), an average ratio of 4.76 (across all roadways links) of road dust emissions to "driving emissions" was obtained. This ratio was then applied to the "driving emissions" within the Port terminals to obtain $PM_{2.5}$ road dust emissions.

The spatial allocation of Port Truck emissions was based on the percentage of emissions between marine terminals and the railyards (**Table 2-25**). Port Truck emissions were further assigned to each terminal based on the proportion of ship calls made to each terminal in 2017 (**Table 2-18**). Consistent with the 2017 Port Inventory, it was assumed that two-thirds of Port Truck travelling to railyards went to the UP railyard, while the remaining one-third went to the BNSF railyard. The emissions by terminal are reported in **Table 2-26**.

**Table 2-25.** Emissions allocated by Port Truck terminal type trip destination. Information provided by Ramboll (Till Stoeckenius, Ramboll, personal communication, 25 February, 2019).

| Terminal type | Emissions (%) | |
|---|---|---|
| | $PM_{2.5}$ | DPM |
| Marine | 87 | 88 |
| Railyard | 13 | 12 |

**Table 2-26.** $PM_{2.5}$ and DPM emissions from Port Trucks operating at Port terminals. $PM_{2.5}$ emissions include all operational and road dust emissions. Total values are consistent with Ramboll (2018), with the exception of added $PM_{2.5}$ road dust emissions.

| Terminal type | Location | Emissions (tpy) | |
|---|---|---|---|
| | | **$PM_{2.5}$** | **DPM** |
| Marine | TraPac | 0.398 | 0.038 |
| | Nutter | 0.227 | 0.022 |
| | OICT | 1.602 | 0.154 |
| | Matson | 0.158 | 0.015 |
| Railyard | BNSF | 0.115 | 0.011 |
| | UP | 0.230 | 0.021 |
| | **Total** | **2.730** | **0.261** |

## 2.9 Locomotives (Rail Lines)

The geographical locations of rail lines in the Bay Area was available in a shapefile from the Topographically Integrated Geographic Encoding and Referencing (TIGER) Line spatial database.[56] When the shapefile was transposed onto recent satellite imagery (as viewed in Google Earth), the locations of the lines did not align with visible rail lines; in some cases, they were misaligned up to ~90 m. The rail lines in the shapefile were then manually re-aligned to match the satellite imagery.

In the shapefile, each rail line is made up of many smaller segments that span short distances (0.81–3.8 mi) along each track. In the Bay Area, passenger and freight services may run along a single track (i.e., the track is shared by both services), or along parallel tracks. To determine the cumulative impacts from all rail services on West Oakland, emissions from parallel tracks were consolidated onto a single track (see **Figure 3-15**). In addition, emissions from locomotives that perform switching operations (referred to as “switchers”, which move individual or a small number of rail cars to assemble trains) were evenly distributed along the length of the subdivision line.

In total, emissions were estimated on six rail segments within West Oakland Source Domain. Emissions along each segment represent the combined emissions from all services, though in the following sections (**Section 2.9.1** and **Section 2.9.2**), emission estimates are presented by service.

Because of the limited data available, the District was not able to include emissions from rail sidings. Emissions from railyard activity were evaluated separately (see **Section 2.10**).

### 2.9.1 Freight Haul Lines

Only rail lines within the Source Domain were included in this analysis (**Table 2-27**). There are two freight rail carriers in the Bay Area: BNSF, and UP. Both freight lines transport goods to and

[56] https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-line-file.html.

from the Bay Area to San Joaquin Valley (east), Sacramento (north), and down the Peninsula (south).

**Table 2-27.** Freight subdivision lines in Alameda County.

| Subdivision | Start Location | End Location |
|---:|---|---|
| Martinez | 10th Street, Oakland | Alameda County Line |
| Niles | 10th Street, Oakland | Newark |

BNSF and UP provided the District with the average diesel fuel consumption and miles traveled in 2017 along each county subdivision line in the Bay Area, and EPA fuel-based emission factors (g/gal) for converting fuel consumption to emissions. The railroad companies provided combined fuel consumptions along rail lines that are shared by both carriers. Emissions from switchers were included in the fuel-based emissions estimates and distributed uniformly across specific subdivision lines. The total emissions from freight haul lines was 0.454 tpy of DPM and 0.426 tpy of $PM_{2.5}$ (assuming a size fraction of 0.94).

### 2.9.2 Passenger Rail Lines

There are several intercity passenger rail lines within the Source Domain, which are serviced by Amtrak along the Capital Corridor, California Zephyr, Coastal Starlight, and San Joaquin passenger lines. Emissions by link were estimated based on latest available schedule for 2017 or 2018 (where available). For each link, emissions were estimated as the sum of emissions associated with exhaust from the locomotive, and idling emissions while loading passengers at stations.

To estimate the emissions, the number of locomotives per day that run along each link, as well as the activity along each line, are required. The activity along each Amtrak route is a function of the estimated average speed of the train and the frequency of the stops. To determine the number of stops, the District used the latest posted timetable and schedule by Amtrak.[57] The timetables provide the number of train stops at each station, and the times and frequency of the train stops. These were used to determine the following:

- The daily number of trains was calculated as the number of weekday and weekend trains weighted by 5/7 and 2/7, respectively.
- The idling times varied from 2 – 10 min at certain stations to accommodate timed connections to other public transportation; the average idling time at a station (to pick up and drop off passengers) was approximately 90 s at most stations. Trains can also spend up to 20 min idling to power on (power down) the engine at the beginning (end) of a run.

Based on the timetable, the number of daily trips along each route is presented in **Table 2-28**. The level of service and number of trains was assumed to remain constant.

[57] In most cases, the most recent timetable was posted in 2017 or 2018. Timetables were obtained from http://www.amtrak.com/train-schedules-timetables (accessed January 2019).

**Table 2-28.** Amtrak activity by route.

| Routes | Destinations | Weekday trains per day | Weekend trains per day |
|---|---|---|---|
| Capital Corridor | Fairfield – Oakland | 30 | 22 |
| | Oakland – Coliseum | 18 | 15 |
| | Coliseum – San Jose | 14 | 14 |
| California Zephyr | Emeryville – Fairfield | 2 | 2 |
| Coastal Starlight | Gilroy – Fairfield | 2 | 2 |
| San Joaquin | Antioch – Oakland | 5 | 0 |

Locomotives operate under a series of load modes (notches) that, combined with idling, determine the operating mode and the corresponding emission factors. The throttle notch is based on the load expected at each station, as well as the average speed. Emission factors and speeds that were used for each passenger line are presented in **Table 2-29**. The average speed was estimated using the distance traveled by the train on a route (or a portion thereof) divided by the elapsed travel time (based on the scheduled departure and arrival times) of the train between stations. An average throttle notch of three was used for the Capital Corridor because of the frequent stops, while for all remaining routes (which have fewer stops), a throttle notch of four was used.

**Table 2-29.** DPM emission factor (EF) and average speeds by Amtrak service/route.

| Train service | Mode/ Throttle notch | EF (g/h) | Average speed (mph) |
|---|---|---|---|
| All passenger service | Idling | 47.9 | 0.0 |
| Capitol Corridor | 3 | 210.9 | 35.0 |
| California Zephyr | 4 | 226.4 | 36.8 |
| Coastal Starlight | 4 | 226.4 | 40.0 |
| San Joaquin | 4 | 226.4 | 44.4 |

DPM emission factors were derived from the Port of Oakland 2005 Seaport Air Emissions Inventory (Environ International Corporation 2008), adjusted for fuel sulfur content of 15 ppm by weight in compliance with CARB's Marine and Locomotive Diesel Fuel regulation (adopted November 2004; California Environmental Protection Agency 2014). All passenger rail services were assumed to have a fleet mix based on GP4x and Dash 9 locomotives with respective certification levels being pre-controlled and achieving Tier 1 emissions.

Emissions were estimated for locomotives based on idling at stations or turnarounds and running exhaust between stations. Daily running exhaust emissions of DPM on each link were estimated as:

$$E_{DPM} = \frac{1}{S} \left( EF_{DPM} \cdot N \cdot L \right)$$

where

| | | |
|---|---|---|
| $E_{DPM}$ | = | emissions of DPM per rail link per day (g) |
| $s$ | = | average speed (mph) (**Table 2-29**) |
| $EF_{DPM}$ | = | emission factor by rail link (g/h) (**Table 2-29**) |
| $N$ | = | number of locomotives that travel on the rail link per day (unitless) |
| $L$ | = | length of rail link (mi) |

Running exhaust emissions were assumed to occur along each link except within 1,000 ft (0.189 mi) of a station. To be conservative, idling emission factors were used to estimate emissions within 500 ft before and after a station (equivalent to 1,000 ft). Idling emissions were used exclusively if the link was less than 0.189 mi and a station was situated on the link. Idling emissions were estimated by multiplying the emission factor by the number of stops on each link and the length of time of each stop, which varied by rail service and link:

$$E_{DPM} = EF_{DPM} \sum_{i} N_i \cdot T_i$$

where

| | | |
|---|---|---|
| $E_{DPM}$ | = | emissions of DPM per rail link per day (g) |
| $EF_{DPM}$ | = | emission factor for DPM by rail link (g/h) (**Table 2-29**) |
| $N$ | = | number of locomotives that travel on the rail link $i$ per day |
| $T$ | = | idling time for each stop or turnaround on rail link $i$ per day (h) |

Even though activity levels varied per hour for each train route, the diurnal profile (fraction of total daily emissions that are produced per hour) for emissions from passenger rail were assumed to be evenly distributed over a 24 h period. The total emissions from passenger rail lines was 0.634 tpy of DPM and 0.596 tpy of $PM_{2.5}$ (assuming a size fraction of 0.94).

## 2.10 Railyards

There are three railyards in the West Oakland Source Domain. The Port has two railyards on its property: Oakland International Gateway railyard, which is leased by the BNSF railway, and Outer Harbor Intermodal Terminal, which is operated by the OGRE. BNSF is a Class I interstate railroad, while OGRE is a small regional Class III railroad serving portions of the former Oakland Army Base. The Union Pacific (UP) railyard is also located within the Port area, but it is privately owned and operated. It serves as an intermodal yard for freight movements through the Port as well as a yard for handling domestic non-Port freight.

### 2.10.1 BNSF

The BNSF railyard is a near-dock transfer point that handles Port cargo containers. Locomotives are used for line-haul operations (movement of long-haul trains into and out of California) and switching operations (switchers). Line-haul locomotives move into and out of the railyard and idle after arrival and prior to departure. Switching engines operate in the railyard, with idling periods interspersed throughout the day. Locomotives and trains enter the Port area from the north via the UP main line and leave in the same direction via tracks going north through Richmond, and then onto BNSF lines leading out of the Bay Area.

To characterize emissions from switchers, BNSF provided the Port with a sample of engines used in 2017. Switchers assigned to BNSF rotate in and out of service, but a GP25 or GP60 model were typically used (**Table 2-30**).

**Table 2-30.** Locomotive engine characteristics at the BNSF railyard.

| Model | Certification Tier | hp | Number of Engines | Engine Surrogate |
|---|---|---|---|---|
| GP25 | Precontrolled | 2500 | 1 | Average of GP-3x (2000 hp) and GP-4x (3000 hp) |
| GP60 | Precontrolled | 3600 – 3800 | 2 | GP60 (3600 hp) |

Locomotives and switchers operate using a series of load/power modes called “notches.” The operating profile for a locomotive is defined by the notch settings and idling periods. Following CARB’s guidance on rail yard emission modeling (California Air Resources Board 2006), emissions were estimated using emission rates per engine model and per mode, with average activity (time in mode) profiles for each visit multiplied by the number of engines visiting the railyard. The relative time per mode for switcher engine activity was taken from the 2006 Port of Oakland inventory (Environ International Corporation 2008; **Table 2-31**). Switching activity consists of one engine operating for 7.5 h per day (365 days per year); however, for consistency with the locomotive line-haul operations (see **Section 2.9.1**), the District assumed activity would occur over the entire day (24 h).

**Table 2-31.** Percentage of time in mode of locomotives at the BNSF railyard.

| Mode/ Throttle notch | Time (%) |
|---|---|
| Dynamic Braking | 1.4 |
| Idle | 59.8 |
| 1 | 6.6 |
| 2 | 15.0 |
| 3 | 9.5 |
| 4 | 4.4 |
| 5 | 1.9 |
| 6 | 0.3 |
| 7 | 0.0 |
| 8 | 1.0 |

Activities of line-haul engines include arriving with a train, separating from the train, potentially moving to the ready area where the engines are assigned to a train, moving to an assigned train, and leaving the yard. Twelve locomotive models and engine tiers were used at the BNSF yard for these operations. A sample of the line-haul engine activity was used to develop the average time in mode for line-haul locomotive arriving and departing from the yard. Because almost all line-haul locomotives have automatic idling-reduction devices (beginning with model year 2001), and idling is restricted to 15 min per event (per CARB agreement; California Air Resources Board 2005b), the idle time was adjusted to 1 h, assuming four in-yard movements per arrival and departure. The average time in mode for line-haul locomotives is summarized in **Table 2-32**.

**Table 2-32.** Average time in mode of locomotives at the BNSF railyard. Idling time is based on assuming 0.5 h per arrival and departure.

| Mode/ Throttle notch | Time (h) |
|---|---|
| Dynamic Braking | 0.2963 |
| Idle | 1.0 |
| 1 | 0.1726 |
| 2 | 0.0758 |
| 3 | 0.0340 |
| 4 | 0.0049 |
| 5 | 0.0059 |
| 6 | 0.0004 |
| 7 | 0.0036 |
| 8 | 0.0017 |

Emission factors and fuel consumption by notch are consistent with previous Port inventories with adjustments to account for the idling-reduction devices and in-use fuel characteristics of no more than 15 ppm fuel sulfur content. Using California diesel fuel also reduces PM emissions by 7%; a factor of 0.93 was applied in the emissions estimates (Ramboll 2018). The combined emissions from line-haul and switcher activities at the BNSF railyard was 0.182 tpy of DPM and 0.168 tpy of $PM_{2.5}$ (as exhaust only).

### 2.10.2 OGRE

OGRE is a Class III, Surface Transportation Board-certified short line rail company created in 2014 that is currently operating at the former Oakland Army Base. In 2017, OGRE exclusively served non-marine facilities located on Army Base. Switching engine fleet characteristics and annual activity were provided by OGRE. Emission factors for locomotives at OGRE were estimated using locomotive engine surrogates of similar power (**Table 2-33**).

**Table 2-33.** Locomotive engine characteristics at the OGRE railyard.

| Model | Certification Tier | hp | Number of Engines | Engine Surrogate |
|---|---|---|---|---|
| EMD GP9/16 | Precontrolled | 1500/1600 | 2 | EMD 12-645E (1500 hp) |
| EMD MP15 | Precontrolled | 1500/1600 | 2 | EMD 12-645E (1500 hp) |

OGRE estimated the total switching engine activity to occur over 780 h (annually). The time in mode for the switchers at BNSF was used for the switchers at OGRE (**Table 2-31**); the total hours were distributed by notch, then the total emissions were obtained by summing the emissions by notch. The combined emissions at the OGRE railyard from line-haul and switcher activities was 0.077 tpy of DPM and 0.071 tpy of $PM_{2.5}$ (exhaust only).

### 2.10.3 UP

The UP Oakland Railyard is bounded by highway I-880, the Port, and residential, industrial, and commercial properties. The UP railyard is a cargo handling facility where intermodal containers arrive by truck to be loaded onto trains for transport, or arrive by train and unloaded onto chassis for transport by truck. Both cargo containers and chassis are temporarily stored at the yard. The railyard also has facilities for crane and yard hostler maintenance, locomotive service and repair, and on-site wastewater treatment.

Rail cars on arriving and departing line haul locomotives are moved using switchers. Switchers are used to move sections of inbound locomotives to appropriate areas within the railyard (e.g., intermodal rail cars go to the intermodal ramp for unloading and loading), and to move sections of outbound locomotives to tracks from which they will depart. Switchers are remote controlled in the UP railyard; while some are operated exclusively in the railyard, others are operated in the railyard at other outside facilities.

Emissions from the UP railyard were provided to the District by UP, and estimated using annual fuel consumption of eight switcher locomotives operating on the Niles Subdivision operating 8–12 h per day for every day of the year (365 days), as well as other equipment operating in the UP railyard (CHE, TRUs, and service/repair operations). The total emissions thus reflect the total activity at the UP railyard in 2017, estimated as 1.1098 tpy of DPM, and 1.0210 tpy of $PM_{2.5}$.

## 2.11 Commuter Ferries and Excursion Vessels

PM emissions from ferry and excursion vessel operations within the Source Domain were estimated based on information gathered from CARB, the San Francisco Bay Area Water Emergency Transportation Authority (WETA), ferry and excursion vessel schedules, and field studies.

WETA operates the San Francisco Ferry fleet, composed of 14 high speed passenger-only ferry vessels.[58] There are two commuter ferry terminals inside the West Oakland Source Domain: the Oakland Jack London Square ferry terminal (in Oakland), and the Alameda Main Street ferry terminal (in Alameda). A private excursion cruise operator, Commodore Cruises and Events, is also located within the domain.

*(a) Navigating*

$PM_{10}$ emissions were estimated using the methods for CHC engines (California Air Resources Board 2012b):

[58] Not all vessels operate at the same time. The WETA San Francisco Bay Fleet information can be found at https://sanfranciscobayferry.com/sites/default/files/SFBFfleet.pdf (accessed December 2018).

$$E_{PM_{10}} = EF_0 \cdot F \cdot \left[1 + D \cdot \frac{A}{UL}\right] \cdot LF \cdot HP \cdot T_O$$

where

$E_{PM_{10}}$ = emissions of $PM_{10}$ (g)
$EF_0$ = zero-hour PM emission factor as a function of model year, horsepower, and engine use (propulsion or auxiliary) [g/(hp h)]
$F$ = fuel correction factor (to account for emission reductions from burning cleaner fuel) (unitless)
$D$ = engine deterioration factor (percentage increase of emissions when the engine is at the end of its useful life) as a function of horsepower (unitless)
$A$ = current age of engine (y)
$UL$ = engine useful life as a function of vessel type and engine use (y)
$LF$ = engine load factor as a function of vessel type and engine use (unitless)
$HP$ = engine horsepower rating (hp)
$T_O$ = operating hours for activity (h)

Emission factors specific to the main propulsion and auxiliary engine by model year are required, in addition to a deterioration rate and a fuel correction factor. As vessel-specific data was not always available, state-wide and Bay Area average emission factors and parameters were used based on data from CARB and WETA (**Table 2-34**). Specifically:

- For commuter ferries, state-average emission factors, load factor, deterioration factor, number of engines per vessel, engine useful life, and fuel correction factors were taken from California Air Resources Board (2012b).
- Ferry-specific engine counts, engine age, engine horsepower, and load factor on commuter ferries used at the two ferry terminals were provided by WETA.[59]
- For excursion vessels, Bay Area-specific data for excursion vessels for main and auxiliary engines were obtained from CARB based on their 2017 Statewide CHC survey (personal communication, August, 2018).

To obtain in-transit operating activity, information from ferry schedules were reviewed for each ferry route. Based on departure and arrival times, the duration of travel time was estimated for the Oakland–Alameda route and for runs directly from ferry terminals to the extents of the Source Domain. Operating activity for excursion vessels was taken from the CARB 2017 Statewide CHC survey. In-transit emissions estimates for each route are presented in **Table 2-35**, where DPM emissions were assumed to equal $PM_{10}$ emissions, and $PM_{2.5}$ emissions were obtained by multiplying the DPM emissions by a size fraction factor of 0.97 (consistent with similar vessels in the 2017 Port Inventory).

[59] Obtained from K. Stahnke, San Francisco Water Emergency Transportation Authority, personal communication, September, 2018.

**Table 2-34.** Commuter ferry and excursion vessel operating parameters. Values obtained from CARB (2012b and personal communication, August, 2018), except number of vessels (n), vessel age (A), horsepower (HP), and load factor (LF) obtained from WETA. EF, F, and D are specific to $PM_{10}$ (DPM). Values reported for excursion vessels are averages over the operating fleet.

| Vessel type | Engine | n | EF [g/(hp h)] | F | D | A (y) | UL (y) | LF | HP (hp) |
|---|---|---|---|---|---|---|---|---|---|
| Ferry | Main | 2 | 0.10 | 0.80 | 0.67 | 3 | 20 | 0.38 | 1950 |
| | Auxiliary | 1 | 0.09 | 0.80 | 0.44 | 3 | 20 | 0.38 | 162 |
| Excursion | Main | 2.01 | 0.15 | 0.50 | 0.75 | 0.67 | 20 | 0.42 | 1473 |
| | Auxiliary | 1.23 | 0.22 | 0.71 | 0.75 | 0.44 | 20 | 0.43 | 116 |

**Table 2-35.** $PM_{2.5}$ and DPM emissions from commuter ferry and excursion vessel in-transit activity.

| Vessel type | Route | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|---|
| Ferry | Oakland – Alameda | 0.074 | 0.076 |
| | Oakland – San Francisco | 0.278 | 0.287 |
| | Oakland – South San Francisco | 0.088 | 0.091 |
| | Alameda – San Francisco | 0.294 | 0.303 |
| | Alameda – South San Francisco | 0.062 | 0.064 |
| Excursion | Commodore Events and Cruises (to San Francisco) | 0.039 | 0.040 |
| **Total** | – | **0.835** | **0.861** |

*(b) Berthing*

As aforementioned, there are two commuter ferry terminals inside the West Oakland Source Domain (one in Oakland, and the other in Alameda), and a berth associated with a privately-operated excursion vessel company (Commodore Cruises and Events).

To estimate the $PM_{2.5}$ emissions from berthing, the number of trip visits at each terminal was determined based on ferry schedules. For excursion vessels, since there was no daily schedule and operating hours vary by event, berthing activity was based on operator data taken from the CARB 2017 Statewide CHC survey. Commuter ferry berthing time was based on a sample of observations taken by District staff in 2018 at the two ferry terminals, where the average berthing time to load and unload commuters at a terminal was approximately 10 min. Both the main and auxiliary engines were observed to run the entire time during this berthing process. Emissions were calculated as described above and are summarized in **Table 2-36**.

**Table 2-36.** $PM_{2.5}$ and DPM emissions from commuter ferry and excursion vessel berthing.

| Vessel type | Berth | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|---|
| Ferry | Oakland (Jack London Square terminal) | 0.006 | 0.006 |
| | Alameda (Main Street terminal) | 0.006 | 0.006 |
| Excursion | Commodore Cruise and Events terminal | 0.058 | 0.060 |
| **Total** | **–** | **0.070** | **0.072** |

# 3. Air Dispersion Modeling

The dispersion model applied in the technical assessment for West Oakland was the American Meteorological Society/EPA Regulatory Model Improvement Committee Regulatory Model (AERMOD). AERMOD was used to perform dispersion modeling using unit emission rates to represent the emissions from emissions sources in the community-scale bottom-up emissions inventory (**Section 2**): permitted stationary sources, on-road mobile sources, truck-related businesses, OGVs, CHCs, CHE, Port Trucks at Port terminals, locomotives, railyard activity, and commuter ferries and excursion vessels. Meteorological data (**Section 3.2**) are used to simulate dispersion using AERMOD (**Section 3.3**), where the emissions from sources with specific temporal and spatial allocations (**Section 3.4**) are dispersed, and concentrations are sampled downwind at receptors (**Section 3.5**). Source contributions at each receptor can then be summed to evaluate total $PM_{2.5}$ concentrations and cancer risk (**Section 4**).

## 3.1 Modeling Approach

The AERMOD modeling system is comprised of three modules: (1) AERMET, a preprocessor for making compatible meteorological data sets, (2) AERMAP, a processor for digital terrain data, and (3) AERMOD, an air dispersion model. Data generated from AERMET and AERMAP are used by AERMOD to estimate downwind concentrations. AERMOD (Cimorelli *et al.* 2004) is a steady-state Gaussian-based plume dispersion model based on planetary boundary layer turbulence structure and scaling concepts. AERMOD can model dispersion from both surface and elevated sources, in simple and complex terrain, and in rural and urban areas.

In AERMOD, emissions are dispersed from a *source*, and concentrations are sampled at a *receptor*. A source is defined by entering its location, physical characteristics (e.g., width, height), and emissions characteristics (i.e., emission rate, and changes of that rate over time). In AERMOD, a source can be defined by using different source types: point, area, and volume sources. Different sources types are better suited for representing different types of emission sources; for example, point sources are typically used to model dispersion from single facility stacks. A receptor is a location where air pollutant concentrations are estimated by the model. Receptors could correspond to the locations of monitoring sites or specific locations of interest (e.g., sensitive receptors). Many receptors must be placed within a modeling domain to adequately sample the spatial extent and gradients of pollutants near emission sources.

Because of its ability to handle multiple source types, the AERMOD modeling system was used to model dispersion from all emissions sources in community-scale bottom-up emissions inventory for West Oakland. The AERMOD FORTRAN source code (version 18081, dated March 22, 2018) was downloaded from the U.S. EPA Support Center for Regulatory Air Models (SCRAM) web site.[60] The source code was compiled on the District's Linux clusters using the Portland Group, Inc. FORTRAN 90/95 compiler (pgf95 v8.0-6 64 bit). AERMET (version 18081) and AERMAP (version 18081) were installed on the District's Microsoft Windows computers via AERMOD View (provided by Lakes Environmental).

[60] http://www.epa.gov/scram001/dispersion_prefrec.htm.

Modeling a large number of sources requires a large amount of computing time, especially when there are many receptors (see **Section 3.5**). To reduce the wall time required to complete the analysis, model runs by individual source were distributed across a large number of computer processors.[61] And, as the dispersion from each source was modeled separately, individual source contributions could be tracked and assessed.

Dispersion modeling requires many input parameters to characterize emission sources, including an emission rate, which may vary over the modeling period (e.g., by hour of day, by day of week, etc.). For a single source, emission rates also vary by pollutant; ordinarily, in a multi-pollutant analysis, the number of model runs required is equal to the number of pollutants. However, the number of model runs can be reduced by using a *unit emission rate*[62] (1 g/s for point and volume sources, 1 g/(s $m^2$) for area sources) for each source. Temporal changes in the unit emission rate are scaled using the emissions or activity profile (e.g., hours of operation) of the source. AERMOD output are then *dispersion factors* with units of concentration per unit emissions ([$\mu g/m^3$]/[g/s] for point and volume sources, or [$\mu g/m^3$]/[g/(s $m^2$)] for area sources) at each receptor. Following this approach, average concentrations can be calculated by multiplying the dispersion factor by an average emission rate in a post-processing step (see **Section 4.1.2**). Using this method holds so long as (a) the emission rates for different pollutants are related to the same changes in source activity, and (b) the dispersion factor and emission rate are averaged over the same time scales.[63] This method does not account for any chemical transformations.

## 3.2 Meteorological Data

### 3.2.1 Surface meteorology

The District operates a meteorological monitoring network of stations within the nine Bay Area counties that provide measurements of ambient meteorological parameters to support many air quality-related programs. Several of these stations are near West Oakland. The Oakland Sewage Treatment Plant (OST) station is operating in the current network (**Figure 3-1**). The National Oceanic and Atmospheric Administration (NOAA) operates a network of buoy and land-based weather stations in the Bay as part of the National Ocean Service's Center for Operational Oceanographic Products and Services (CO-OPS) network that monitors atmospheric and ocean/bay surface conditions. Three land-based stations (Oakland Berth 34 [OKXC1], Oakland Middle Harbor Met [OMHC1], and Oakland Berth 67 [LNDC1]) are also located near West Oakland (**Figure 3-1**). All these stations measure wind speed, wind direction and temperature, which are required parameters for the AERMOD model. The OST data are reported as hourly averaged, while the CO-OPS data are two-minute averages reported every six minutes.

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[61] Two computer platforms were used: (1) a 14 node Linux cluster, each with eight Intel® Xeon® E5335 2 GHz processors; and (2) a 12 node Linux cluster, each with 20 Xeon E5-2640 Broadwell 2.4 GHz processors. Processors were used as they became available to complete modeling runs using a job queuing system.

[62] Using unit emissions is sometimes referred to as the $\chi$/Q ("chi over q") method. The origin of this reference stems from the conventional use of $\chi$ to represent average concentration, and Q to represent an emission rate.

[63] For example, in this analysis, for on-road mobile sources, dispersion factors and emission rates were developed separately by day type (weekend and weekday), and then summed to obtain an annual average concentration. All other sources were modeled as annual averages.

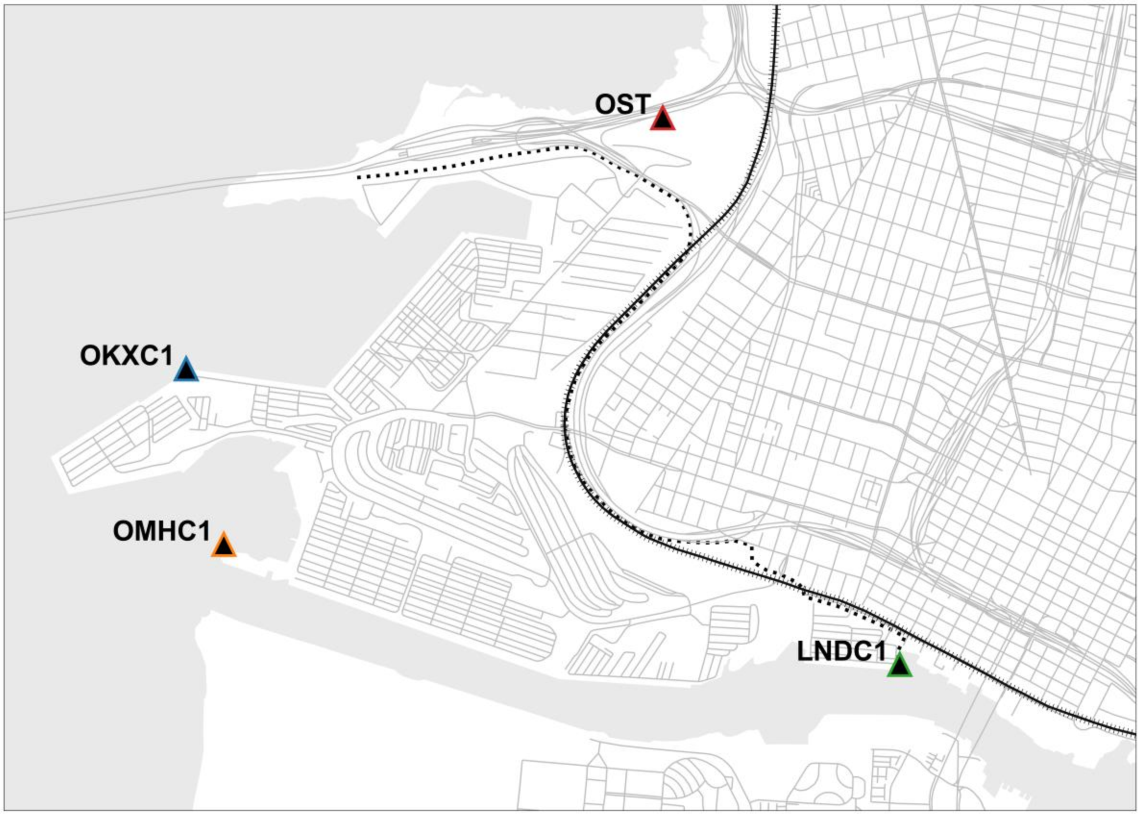


**Figure 3-1.** Surface meteorological monitoring stations considered for this analysis: OST (Oakland Sewage Treatment Plant), Oakland Berth 34 (OKXC1), Oakland Middle Harbor Met (OMHC1), and Oakland Berth 67 (LNDC1).

Of the four meteorological stations, only OST was sited to meet EPA modeling guidelines. The CO-OPS station sitings were meant to aid in the docking of container ships and in navigating the Oakland inner harbor. The wind vanes on all three CO-OPS stations are well below the recommended 10 m installation height (7.6 m at OKXC1 and LNDC1, and 6.7 m at OMHC1). OKXC1 and OMHC1 are also located at the land/water interface, with open water to the west, which is the dominant wind direction in West Oakland. The smooth upwind water surface could lead to lower mechanical mixing (lower dispersion) when modeled in AERMOD. LNDC1 is also sited in a location that is not ideal to support AERMOD modeling, as the surrounding surface roughness can vary depending on the placement of shipping containers and the movement of the shipping cranes, which can in turn affect measurements at the site. OST wind sensors were installed higher (16.3 m) than the minimum recommended height (10 m) to compensate for the heights of nearby structures. For these reasons, OST meteorological data was selected for the West Oakland AERMOD modeling.

OST data for year 2014 were selected for the AERMOD modeling as subsequent years had significant periods of missing data. In 2014, winds were most frequent from the west and west-northwest at speeds of 2.0–6.0 m/s (4.5–13.4 mph) (**Figure 3-2**). The OST data were processed through AERMET to create meteorological inputs used in subsequent dispersion modeling using AERMOD.

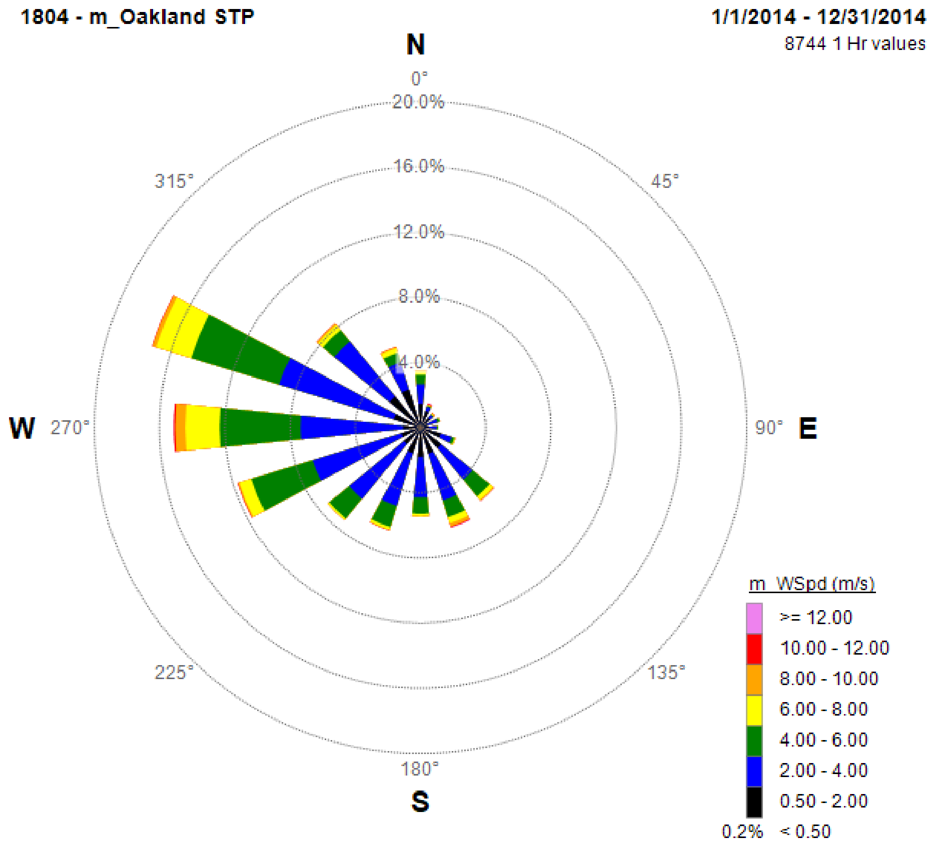


**Figure 3-2.** Annual windrose at the Oakland Sewage Treatment Plant (OST) in 2014. Compass sectors indicate the direction from which the wind is blowing. The percentage of calm winds (WSpd < 0.5 m/s) are also indicated.

### 3.2.2 Upper-air meteorology

The twice-daily (4:00 AM LST and 4:00 PM LST) upper air sounding data from the Oakland International Airport (KOAK; +37.744408° N, –122.223510° W) were also processed through AERMET to create input data for AERMOD dispersion modeling. The KOAK sounding is the only National Weather Service (NWS) upper air station in Northern California. Data from these soundings are namely used to calculate the convective mixing height during daylight hours.

## 3.3 AERMOD Model Configuration

Dispersion factors were modeled using default regulatory model options, including: stack-tip downwash, accounting for elevated terrain, calms processing routine,[64] missing data processing routine,[65] and an urban roughness length of 1.0 m. Additionally, no dry or wet deposition was included. Building downwash effects were not incorporated since individual building heights were not generally available. All sources were classified as urban sources, which is representative of land cover in West Oakland. The urban population (used as a surrogate to define the magnitude of the nighttime urban heat island, which enhances dispersion in the stable boundary layer) used was 650,000.[66] The height of each receptor was set to 1.8 m agl (referred to as "flagpole receptors"), which represents the breathing height of an average adult.

Dispersion factors were output as a daily average over the entire modeling period. Modeling was based on a meteorological dataset from 2014 (see **Section 3.2**). For on-road mobile sources, two modeling periods were used: all weekdays (261 days), and all weekend days (104 days). Otherwise, the period was defined as the entire year (January 1, 2014, through December 31, 2014).

The geographic coordinate system used throughout the modeling was a Universal Transverse Mercator (UTM) projection for zone 10 North with the North American Datum of 1983 (NAD83). Unless otherwise stated, for simplicity, the base elevation of each source was assigned by taking the elevation of the closest receptor as generated using AERMAP (see **Section 3.5**).

All sources in this analysis were located within the Source Domain, which encompassed the entire West Oakland community and Port of Oakland, and includes all emission sources discussed in Section 2 (**Figure 2-2**). A smaller "Receptor Domain" (**Figure 3-3**), embedded within the Source Domain, was used to define the extents of where receptors should be placed in AERMOD (see **Section 3.5**). The location of receptors is more spatially constrained so that they are located in areas where the population could be exposed (i.e., receptors were not placed over the Oakland harbor).

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[64] In the calms processing routine, the concentration for a given hour is set to zero if the wind speed of that hour is calm. The (zero) concentration is then excluded when longer term (period) average concentrations are calculated (U.S. Environmental Protection Agency 2018b).

[65] In the missing data processing routine, hours with missing meteorological data are treated the same way as in the calms processing routine (U.S. Environmental Protection Agency 2018b).

[66] This is the total population of Berkeley, Piedmont, Emeryville, Oakland, and Alameda, based on the U.S. Census Bureau July 1 2017 (V2017) dataset (available via https://www.census.gov/quickfacts). The total population from these areas was rounded to the nearest thousand (U.S. Environmental Protection Agency 2015a). A slight over- or under-estimate of the population will not adversely affect modeling results since the urban algorithms in AERMOD depend on the population to the one-fourth power (Cimorelli *et al.* 2004).

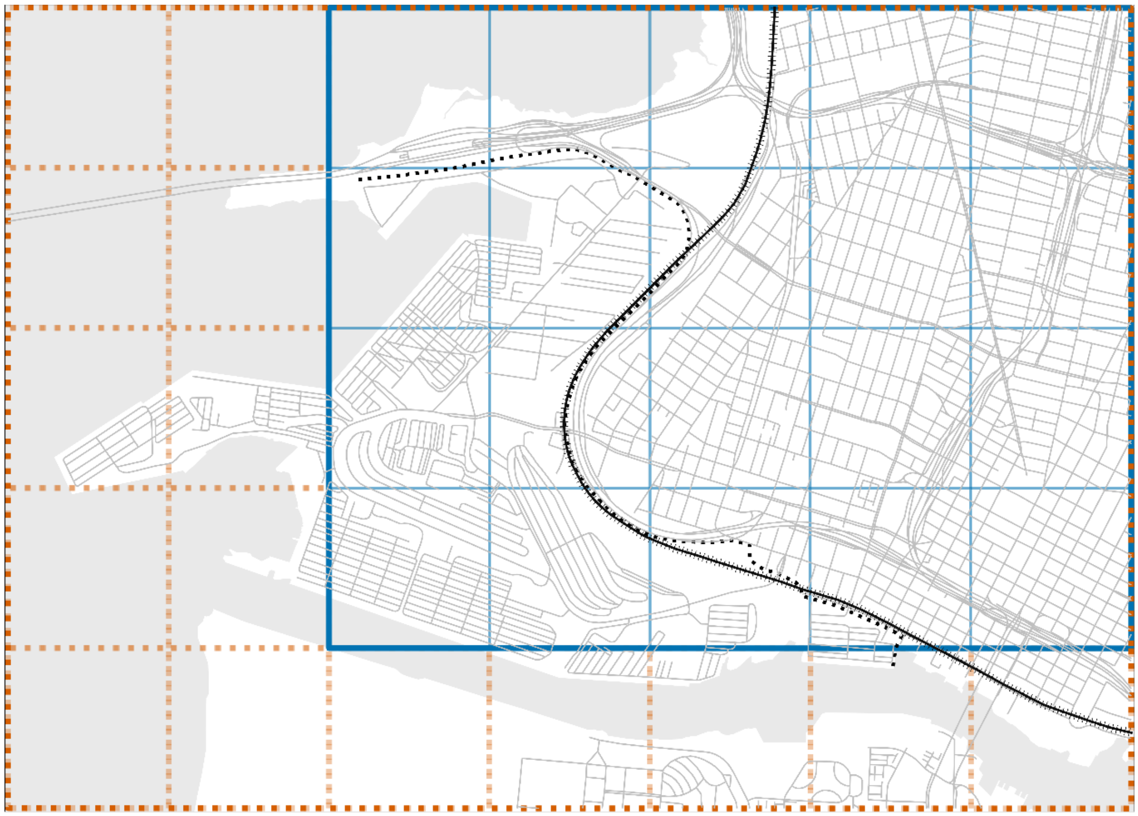

**Figure 3-3.** Extents of the Source Domain (red dotted lines) and Receptor Domain (blue solid lines) used in AERMOD modeling. The inner tiles represent the 1 km × 1 km grid cells of the regional modeling.

## 3.4 Sources

### 3.4.1 Overview

Source-specific modeling parameters used for the emission sources in West Oakland (**Section 2**) are described in this section. In AERMOD, the user (modeler) must identify how each emissions source will be modeled (i.e., as a point, area, or volume), and input the location and associated modeling parameters. Location information includes the *x* coordinate (longitude), *y* coordinate (latitude), and *z* coordinate or base elevation (m asl). For point and volume sources, the *x* and *y* coordinates correspond to the center of the source. Multiple *x* and *y* coordinates are required for area sources when represented as polygons. In general, the parameters required by source type are:

- **Point**: emission rate (g/s), stack height (m agl), stack gas exit temperature (K), stack gas exit velocity (m/s), and interior stack diameter (m).
- **Area**: emission rate [g/(s $m^2$)], release height ($Relhgt$, m agl), and initial vertical dispersion coefficient ($Szinit$, m).
- **Volume**: emission rate (g/s), release height (center of volume) ($Relhgt$, m agl), initial lateral dispersion coefficient ($Syinit$, m), and initial vertical dispersion coefficient ($Szinit$, m).

These modeling parameters are important for determining plume rise and how emissions are transported downwind of the source. As aforementioned, the emission rate for all source types was set to a unit emission rate. An optional modeling parameter to vary the emission rate was applied to sources when the diurnal activity profile was available.

The type of source used to model emission sources in West Oakland depended on the source category (**Table 3-1**). The general process used to determine the location (*x* and *y* coordinates) of sources for each source type in described below, while specific parameters by category are summarized in the sections that follow.

**Table 3-1.** AERMOD source types used by source category for emissions sources in West Oakland. Point sources include point, capped, and horizontal emission releases.

| | | AERMOD Source Type | | | |
|---|---|---|---|---|---|
| | | | | Volume | |
| **Section** | **Source Category** | **Point** | **Area** | **Single** | **Adjacent** |
| 3.4.2 | Permitted stationary sources | × | | × | |
| 3.4.3 | On-road mobile sources | | | | × |
| 3.4.4 | Truck-related businesses | | × | | |
| 3.4.5 | OGVs (maneuvering, berthing) | | × | | |
| 3.4.6 | CHCs | | × | | |
| 3.4.7 | CHE | | × | | |
| 3.4.8 | Port Trucks at terminals (transiting, idling) | | × | | |
| 3.4.9 | Locomotives | | | | × |
| 3.4.10 | Railyards | | × | | |
| 3.4.11 | Commuter ferries and excursion vessels – navigating | | | | × |
| 3.4.11 | Commuter ferries and excursion vessels – berthing | | × | | |

*(a) Point Source and Single Volume Source Locations*

The only point and single volume sources in this analysis were permitted stationary sources. The District maintains a database of these sources and their locations, from which the location of each stack was obtained after QA (**Section 2.2**).

*(b) Area Source Locations*

Area sources were manually traced using Google Earth. The polygons were then saved as a shapefile, and an automated program was used to extract the *x* and *y* coordinate values of the vertices and create AERMOD-ready input files.

### *(c) Adjacent Volume Source Locations*

In this analysis, mobile sources were modeled following much of EPA's current guidance for PM hot-spot analyses for transportation projects (U.S. Environmental Protection Agency 2015b, 2015c).[67] On-road mobile sources were modeled using adjacent volume sources. Both adjacent area and volume sources can be used to represent emissions from on-road mobile sources in AERMOD, though adjacent area sources are usually favored since they "may be easier to characterize correctly compared to [adjacent] volume sources" (U.S. Environmental Protection Agency 2015b, p. 105). This is because adjacent volume sources must be placed so that the volume centroids are equidistant from each other along the length of the emissions source (e.g., roadway), resulting in up to thousands of individual volume sources to characterize a single emissions source. Common errors made when configuring adjacent volume sources include incorrect volume centroid spacing (so that volumes are no longer adjacent), and using an inappropriate source width (e.g., street width) (Desser 2014). Typically, the initial lateral dispersion coefficient, $Syinit$, is calculated as the source width divided by 2.15. For volume sources, the exclusion zone (EZ) is an area around each volume source where AERMOD does not calculate results,[68] and no receptors should be placed. The radius of the EZ ($r_{EZ}$) from the centroid of the volume is calculated as:

$$r_{EZ} = (2.15 \cdot Syinit) + 1.0\ \mathrm{m}$$

As receptors are to be placed as close at 5.0 m to roadways to adequately sample spatial concentration gradients, the maximum width of a roadway in AERMOD should be 8.0 m (U.S. Environmental Protection Agency 2015c); roadways that exceed this width should be modeled as several series of adjacent volume sources, such as to represent different travel lanes.

Because of the complexity of configuring adjacent volume sources, commercial software can help simplify this task by using a graphical user interface. Though, the process remains arduous if many emissions sources need to be included, such as in this analysis, where all roadways in West Oakland were modeled. For this reason, the District created an internal software package designed to automate the process of configuring adjacent volume sources for all emissions sources that are linear in nature – on-road mobile sources, locomotives on rail lines, and commuter ferries and excursion vessel travel routes.

In this process, the required inputs are a shapefile containing a network of line geometries representing the centerline of the emissions sources (roadway, ferry track, rail line), with a source width assigned to each segment (for roadways, the number of lanes can also be supplied). As a first pass, the number of volumes per line segment is determined by dividing the total length of the segment by its width, and each volume centroid is placed a distance of a width apart.[69] For roadways, if the total width exceeds a maximum width threshold (8.0 m), then the number of lanes is used to create a new series of roadway (lane) 'centerlines' parallel to the input centerline, and

[67] That being said, as this analysis is not a formal PM hot-spot analysis, some aspects to the modeling approach differed.

[68] Suppose there is a receptor $A$ within the EZ of volume source $a$; AERMOD will not calculate results (output is 0.0) at $A$. However, if the model is configured with multiple volume sources – $a$, $b$, $c$ – and receptor $A$ is only within the EZ of volume source $a$, then the results at receptor $A$ only represents the contributions from volume sources $b$ and $c$, which is an underestimate of the expected results.

[69] Only a whole number (integer) of volumes can be placed along segment. The first volume centroid is located at a position whose distance is half the width of the source from the starting coordinate of the segment.

the new width is equal to the total width divided by the number of lanes. Multiple iterations are performed to minimize the number of overlapping volume sources at network nodes, as the overlaps can cause spurious small-scale "hot spots" of emissions.

### 3.4.2 Permitted Stationary Sources

Depending on the specific source category, emissions from permitted stationary sources were modeled as either point or volume sources in AERMOD. Modeling parameters were based on the most recent data available. All point and volume centroid locations were based on the coordinates available in the 2017 CEIDARS report (see **Figure 2-5**). The District also promulgates the release parameters as part of the CEIDARS report (by individual source at each facility). However, more recent release parameters may be provided by facilities in permit applications (in health risk assessments [HRAs] or in prevention of significant deterioration [PSD] analyses) is conducted as part of a permit application and are therefore not available through CEIDARS. The District therefore collected permit applications (available up to November 2018) and manually updated the 2017 CEIDARS modeling parameters for each permitted source in West Oakland. Increasing the accuracy of the release parameters should result in higher confidence in dispersion model performance and therefore higher confidence in the estimated downwind concentrations.

*(a) GDFs*

Emissions from GDFs were modeled as volume sources in AERMOD, where the initial release parameters were determined by the number of gasoline dispensers at the facility. When the number of dispensers at the facility was known, $Syinit$ was estimated using the equation:

$$Syinit = -0.00393\ \text{m} \cdot n^2 + 0.3292\ \text{m} \cdot n + 0.7285\ \text{m}$$

where $n$ is the number of gasoline dispensers (based on Sonoma Technology Inc. 2011). $Relhgt$ was always set to 1.03 m (see **Table 3-2** for a summary of these parameters).

*(b) All other permitted stationary sources*

Emissions from permitted stationary sources were modeled as point sources when stack release parameters or default parameters were available. Otherwise, the emissions were modeled as volume sources. Default parameters (used when information was not available) for point and volume sources are listed in **Table 3-2**.

**Table 3-2.** Default modeling parameters for permitted stationary sources. These values were applied when no other modeling information was available. The source type indicates the type of source in AERMOD that was used for dispersion modeling. The following variables are used: $Relhgt$ (release height), $Syinit$ (initial lateral dispersion coefficient), $Szinit$ (initial vertical dispersion coefficient). For gasoline dispensing facilities, $n$ is the number of dispensers at the facility.

| Source Description | Source Type | Default | |
|---|---|---|---|
| | | **Parameter** | **Value** |
| Prime or Standby Generator | Point | Stack height | 3.66 m (12 ft) |
| | | Stack diameter | 1.83 m (0.6 ft) |
| | | Exit temperature | 739.8 °C (872 °F) |
| | | Exit velocity | 45.3 m/sec (8,923 ft/min) |
| Sources that have incomplete modeling information | Point | Stack height | 6.1 m (20 ft) |
| | | Stack diameter | 3.05 m (1 ft) |
| | | Exit temperature | 644 °C (700 °F) |
| | | Exit velocity | 17.8 m/s (3,500 ft/min) |
| No information available | Volume | $Relhgt$ | 1.8 m |
| | | $Syinit$ | 10 m |
| | | $Szinit$ | 1.0 m |
| Gasoline Dispensing Facility (Gas Station) | Volume | $n$ | 4 |
| | | $Relhgt$ | 1.03 m (3.4 ft) |
| | | $Syinit$ | 1.98 m if $n$ = 4; otherwise use equation in **Section 3.4.2** |

### 3.4.3 On-Road Mobile Sources

The approach for modeling emissions from on-road mobile sources depended on location: those from roadways within terminals at the Port, and those within the rest of the Port area and West Oakland community. This section presents the modeling approach for the latter group; emissions from on-road mobile sources on roadways within terminals are discussed in **Section 3.4.7**.

On-road mobile source emissions were modeled in AERMOD as adjacent volume sources. The location of the volumes (centroids) was developed using a roadway network obtained from Citilabs, and the elevation (expressed as an adjusted release height) was determined from a lidar dataset. Other emissions characteristics were based on current EPA PM hot-spot guidance.

*(a) Location (x, y, and z coordinates)*

A shapefile containing the geographic location of roadways and roadway attributes in Alameda County was obtained from Citilabs (Streetlytics platform) to develop the locations and extents (widths) of adjacent volume sources. A description of this data set and the filtering and QA process applied by the District is described in **Section 2.3**. While the accuracy of volume source locations is dependent on the accuracy of the roadway network obtained from Citilabs, the District did not directly QA the roadway segment centerline locations.

While roadway (source) width is not a readily available parameter, it is needed to determine $Syinit$ of each volume; a combination of the roadway functional class and the number of lanes was used to approximate the roadway width, where the total width was taken as the number of lanes times the width per lane. The width per lane was based on guidance for roadways in urban areas as classified by FHWA (**Table 2-8**): 3.6 m for freeways, 3.0 m for arterials, and 2.7 m for local roads (American Association of State Highway and Transportation Officials 2018).[70]

Adjacent volume source locations were generated using the algorithm described in **Section 3.4.1**(c) (**Figure 3-4**). Volume source locations were identical for Non-Trucks and Trucks. Once the *x* and *y* coordinates of each volume source were determined, the *z* coordinate (base elevation) was taken from the nearest receptor (**Section 3.5**).

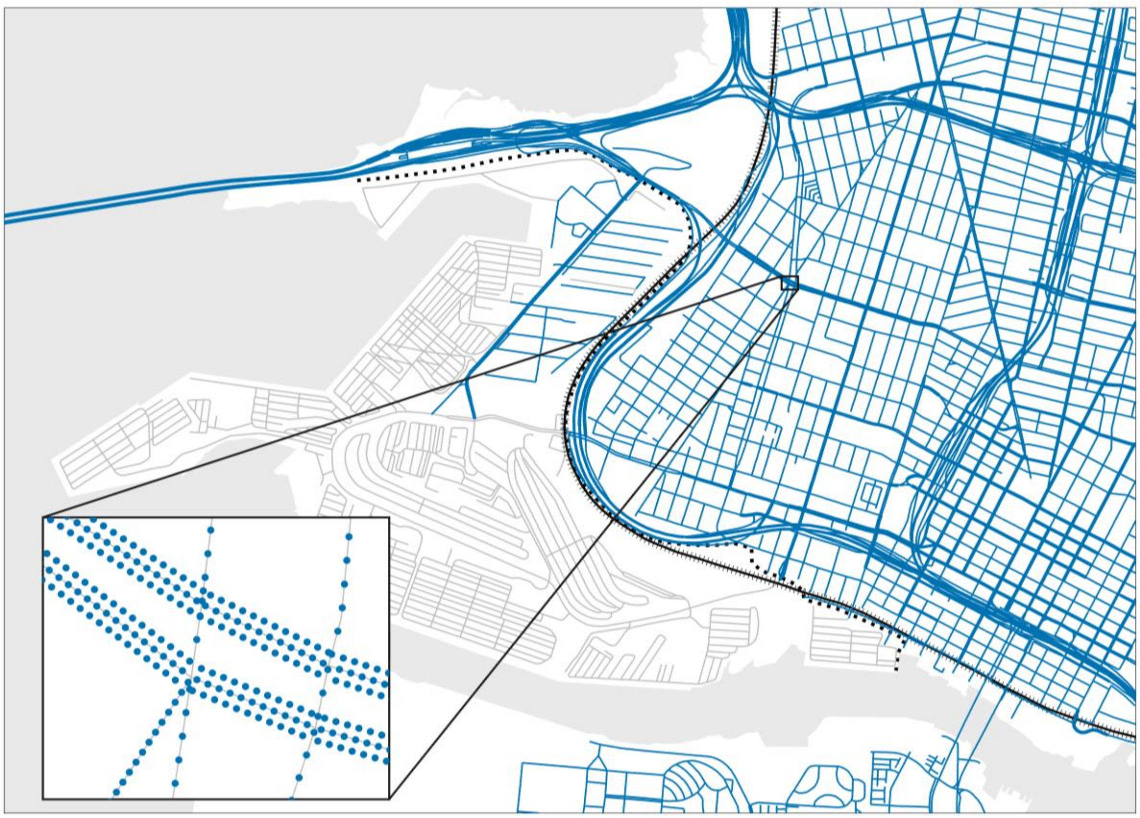

**Figure 3-4.** Locations of adjacent volume sources used to model emissions from on-road mobile sources. In the inset, the grey lines represent the location of roadways centerlines. The location of the marker represents the centroid of the volume source; the size of the marker does not reflect the dimensions of the volume source.

[70] Based on the Citilabs network, on- and off-ramps were assigned to both arterial and local road categories.

*(b) Elevation (Adjusted release height)*

In West Oakland, there are many roadways segments that are elevated, i.e., where the road surface is above grade, such as freeway overpasses. In this analysis, the elevated roadway structure heights were added to the emissions release heights (see (c)) to obtain an adjusted release height. The roadway surface heights were developed from two lidar raster datasets obtained from the U.S. Geological Survey (USGS), downloaded via the National Oceanic and Atmospheric Administration (NOAA) Data Access Viewer:[71] *2010 USGS San Francisco Coastal Lidar* (1 m resolution), and *2006 USGS Topographic Lidar: Alameda County* (2 m resolution). Both datasets were available in UTM zone 10 North projection (NAD83). The 2006 dataset was needed to increase the spatial coverage of elevation information so that elevation data would be available for the entire Source Domain. Roadway surface structure heights were developed as follows:

(1) The ground elevation ($Z_{Ground}$, m asl) and Unclassified (Class 1) elevation ($Z_{Unclassified}$, m asl) data channels were obtained. Unclassified includes the elevation of vegetation, buildings, and other structures (such as roadways). For each channel:
   a. The 2006 dataset was resampled to the resolution of the 2010 dataset.
   b. The 2010 dataset was filled with the 2006 dataset where there was missing data within the Source Domain.
   c. Remaining missing pixel values were filled using an inverse distance weighted (IDW) interpolation.

(2) The resulting absolute structure height, $Z_s$, was calculated as:

$$Z_s = Z_{Unclassified} - Z_{Ground}$$

To reduce some noise in the data, all values ≤ 1.8 m were coerced to 0.0 m.

(3) The average absolute structure height, $\overline{Z_s}$, was added to the release height of each volume source. Given the area of the volume defined as a circle from the volume centroid (*x*, *y*) with a radius of $Syinit$ (which may vary by roadway link):
   a. For non-overlapping volumes, $\overline{Z_s}$ was taken as the average of all pixel values within the circular area.
   b. For overlapping volumes, which can occur at roadway intersections or for roadways overpasses, the release height was calculated by linear interpolation of $\overline{Z_s}$ values from adjacent volumes along the same roadway link.

Given the input datasets and algorithm, this process may not always determine the correct roadway heights due to channel noise, confounding data (e.g., vegetation overhanging roadways, which results in a higher interpreted structure height), or because of nearly-parallel overlapping roadways resulting in a significant number of overlapping volumes (e.g., an overpass over a street). Some freeway segments[72] (n = 12) with incorrect $\overline{Z_s}$ assignments were manually identified and corrected using an IDW interpolation between the known $\overline{Z_s}$ values start and end of the segment. The resulting values of $\overline{Z_s}$ at each volume centroid are shown in **Figure 3-5**; these results could be further improved with additional QA and filtering techniques in the future (see **Section 6.2.2**).

[71] https://coast.noaa.gov/dataviewer/.
[72] Freeway segments were prioritized since they will have the highest AADT and therefore highest emissions.

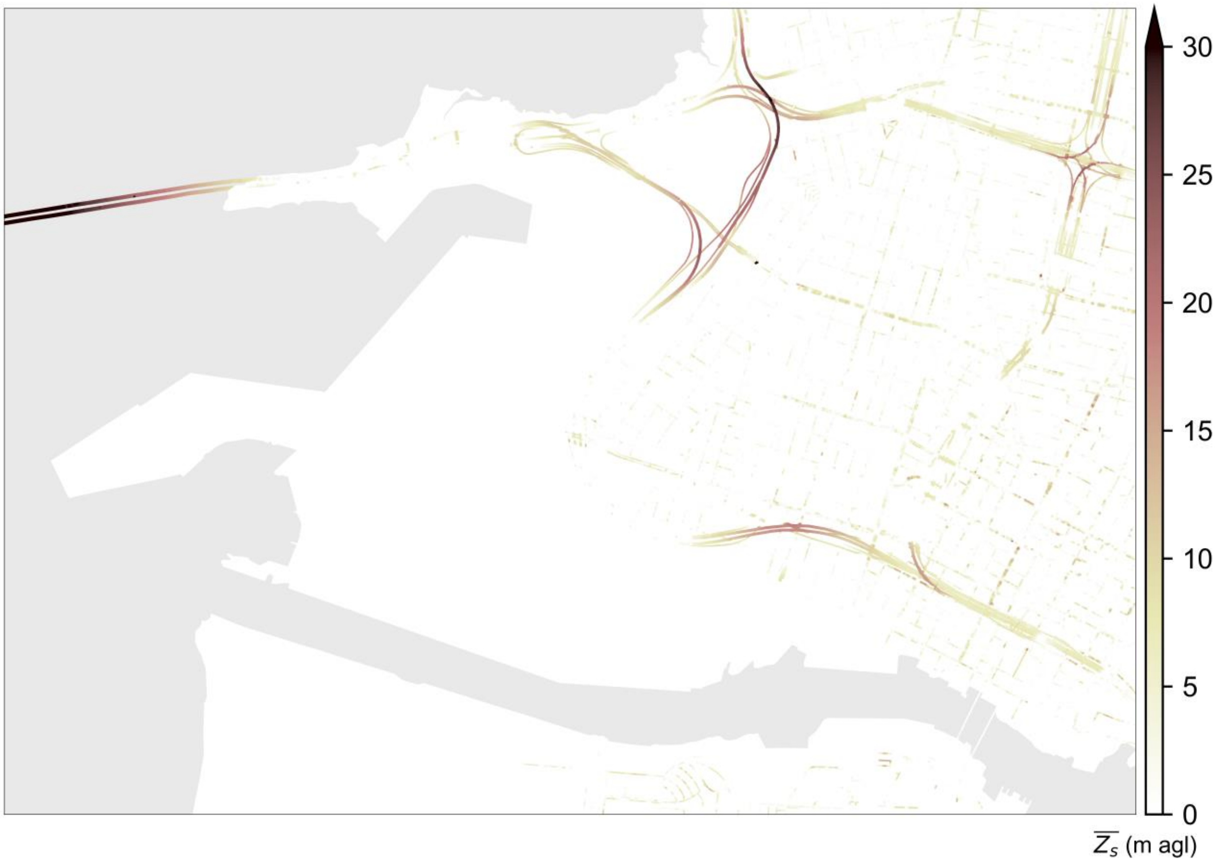


**Figure 3-5.** Average absolute structure heights of roadways at volume source centroids derived from lidar datasets. A $\overline{Z_s}$ value of 0 m agl indicates (white, not visible) that the volume source is at ground level and the roadway is at grade.

*(c) Emissions characteristics*

Though the location of volume sources by vehicle categories (Non-Trucks and Trucks), were identical,[73] they were modeled separately to track individual contributions to concentrations at receptors. While dispersion release parameters differ between Non-Trucks and Trucks, diurnal emission (activity) profiles also differ by day of week. This resulted in a four AERMOD dispersion modeling runs for on-road mobile sources for a given roadway segment: (a) WD Non-Trucks, (b) WE Non-Trucks, (c) WD Trucks, and (d) WE Trucks. For roadways located in the Port but that were not within active terminals, only Truck-configured runs were performed but used to characterize the emissions from all vehicle types.[74]

[73] As suggested by EPA, "overlapping versions" of each roadway segment can be used to represent the total emissions, treated each version with appropriate parameters to represent different vehicle categories (U.S. Environmental Protection Agency 2015c).

[74] This was done for convenience, but also because it is assumed that there is a low percentage of Non-Trucks on roads within the Port.

For all adjacent volume sources, the initial horizontal and vertical dispersion coefficients were based on the AERMOD User's Guide for surface-based sources (U.S. Environmental Protection Agency 2018b):

$$Syinit = W / 2.15$$

$$\begin{aligned} Szinit &= PH / 2.15 \\ &= (H \cdot \gamma) / 2.15 \end{aligned}$$

where $W$ is the source width, $PH$ is the initial vertical dimension of the source plume (plume height), $H$ is the average source (vehicle) height, $\gamma$ is a parameter to account for the effects of vehicle-induced turbulence, which equals 1 when vehicles are not moving, or 1.7 when vehicles are in motion (U.S. Environmental Protection Agency 2015c). $H$ depends on the vehicle category, and was taken as 1.53 m for Non-Trucks, 4.0 m for Trucks. Therefore, $Szinit$ was set to 1.2098 m for Non-Trucks and 3.1628 m for Trucks.

Finally, the release height was estimated as the midpoint of the initial vertical dimension, i.e., $Relhgt = 0.5 \cdot PH$. Therefore, $Relhgt$ was initially set to 1.3 m for Non-Trucks, and 3.4 m for Trucks. For volumes that were not at-grade, $Relhgt$ was then adjusted by $\overline{Z_s}$ to obtain an adjusted release height.

To facilitate a unit emissions modeling approach, diurnal emission profiles for each roadway segment by vehicle category and day type were developed based on activity data (as described in **Section 2.3**). The diurnal activity profiles are comprised of ratios derived from hourly traffic volume normalized by the average daily traffic volume. These values are then used to scale the unit emission rate during the AERMOD run so that the hourly unit emission rate reflect the actual emission rates. For roadway segments located in the West Oakland community, diurnal profiles were link-specific for Non-Trucks, and road type-specific for Trucks (**Figure 3-6**). For roadway segments in the Port, diurnal profiles for Non-Trucks and Trucks were identical (since only one set of runs was performed, as noted above; **Figure 3-7**).

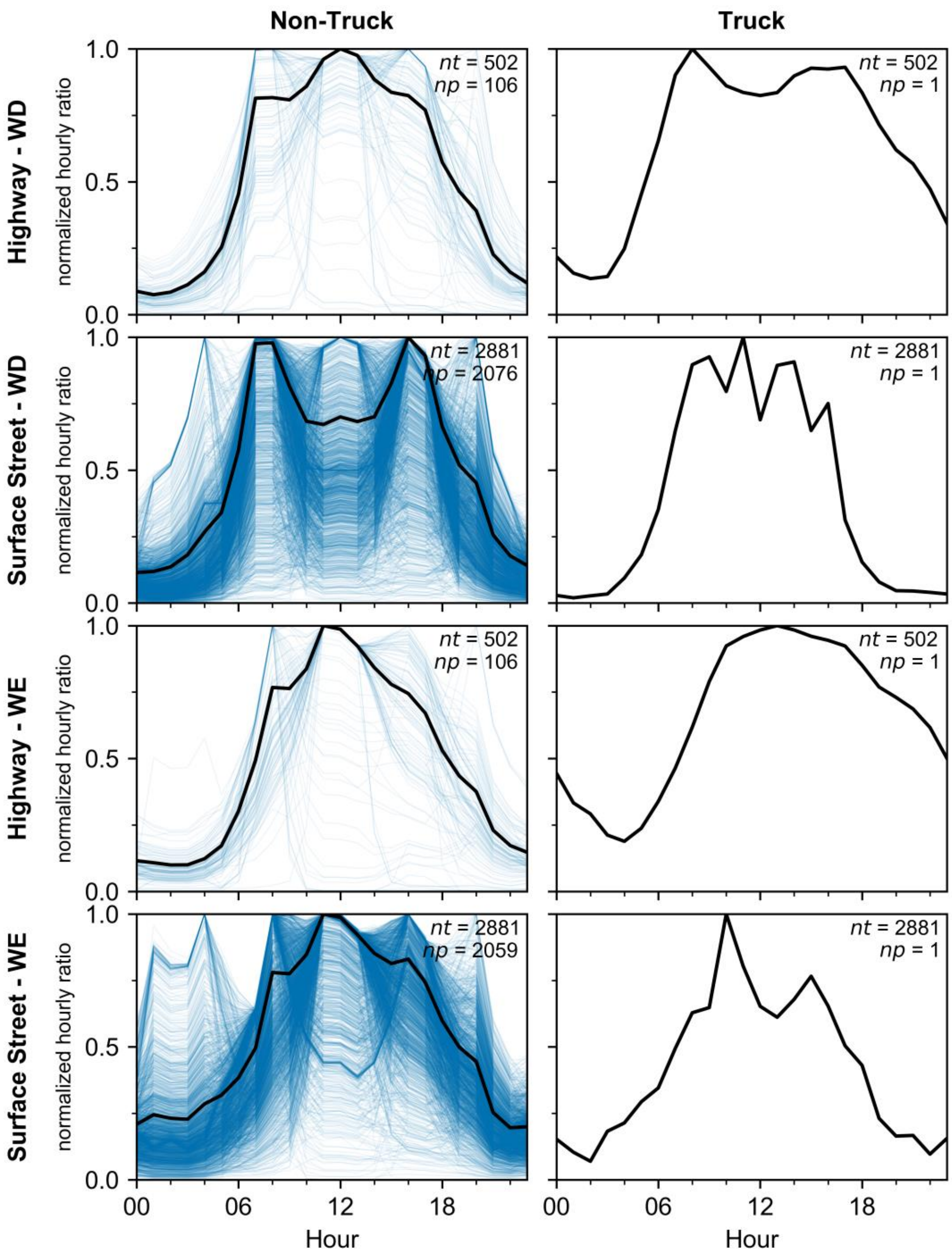


**Figure 3-6.** Diurnal emission profiles used for individual roadway segments in the West Oakland community normalized by maximum hourly volume. Profiles differ by road type (Highway, Surface Street) and day type (WD, WE) (rows), and vehicle category (Non-Truck, Truck) (columns). The number of unique profiles ($np$) and total number of roadway segments ($nt$) is annotated for each case. Individual profiles by roadway segment are plotted (thin blue lines), as well as the average profile (thick black lines); in cases where $np > 1$, the average profile is for illustrative purposes only. For unit emissions modeling, profiles normalized to the average daily traffic volume were used.

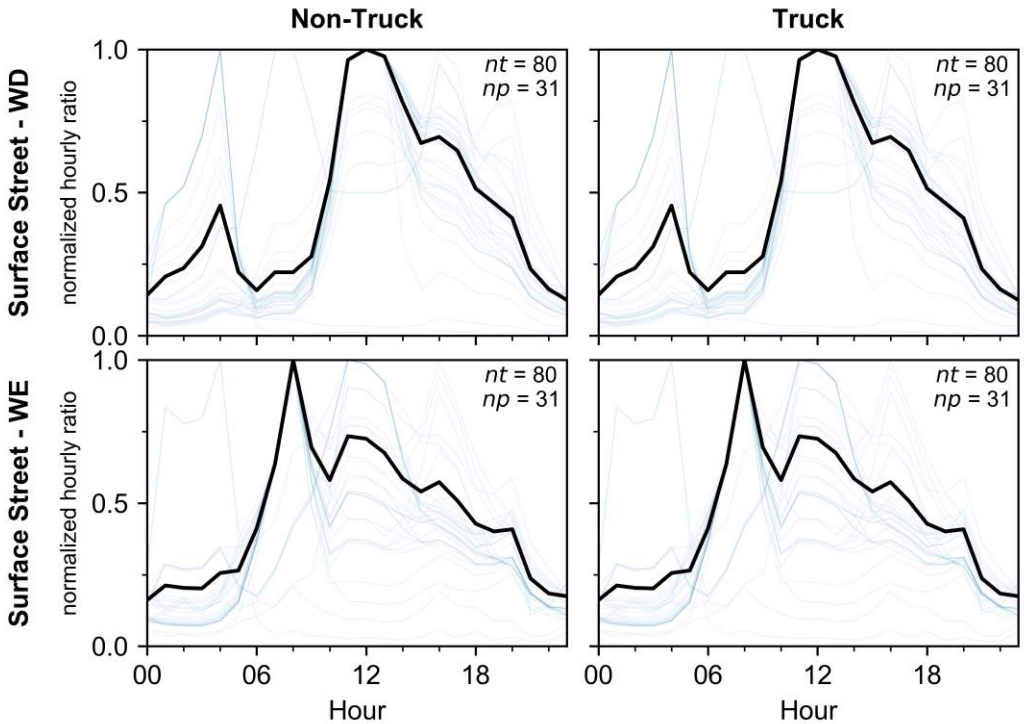


**Figure 3-7.** As in **Figure 3-6**, but for roadway segments in the Port area.

### 3.4.4 Truck-Related Businesses

Groups of idling vehicles in the same location can be modeled as an area source (U.S. Environmental Protection Agency 2015c). Emissions from truck activity at businesses with truck fleets (**Attachment 3**) were modeled as area sources (**Figure 3-8**). The areas were manually developed using satellite imagery, and then verified using Google Street View. The activity within these areas was associated with idling only; therefore, dispersion parameters were calculated as in **Section 3.4.3**, but with $\gamma$ = 1 (no vehicle-induced turbulence, which aligns with modeling guidance provided in U.S. Environmental Protection Agency (2015c)). The height of all trucks was assumed to be 4.0 m, which results in $Szinit$ = 1.86 m, and $Relhgt$ = 2.0 m. Emissions from truck-related businesses were assumed to be evenly distributed from 8:00 AM to 5:00 PM on Monday through Saturday (no activity on Sunday).

Emissions from truck activity at Schnitzer Steel was also modeled as an area source (**Figure 3-8**); this includes emissions from all emission processes (running exhaust, idling exhaust, tire wear, brake wear, and road dust). The area was determined from satellite imagery so that it would not encompass the buildings or stockpiles. A release height of 5.5 m and an initial vertical dispersion coefficient of 2.558 m was used, consistent with modeling performed in California Air Resources Board (2008a). Emissions were evenly distributed over the hours of operation: 4:00 AM to 3:30 PM for Monday through Friday, and 5:00 AM to 12:00 PM on Saturday, with no activity on Sunday.


**Figure 3-8.** Area source polygons used to model emissions from truck-related businesses. The "S" indicates the location of Schnitzer Steel.

### 3.4.5 Ocean-Going Vessels

Emissions from maneuvering and berthing OGVs were modeled as two-dimensional area sources that were associated with specific terminal operators. Based on information provided by Ramboll (2018), Port-related OGV emissions were spatially allocated based on AIS records of ship positions in 2017 (2017 NOAA Cadastre AIS dataset). AIS relies on satellite positioning to track locations of commercial marine harbor crafts and large ships, which is required since 2016.[75] The AIS ship position records for ships headed to and from all Port berths were plotted, and the polygons were drawn around the bulk of the data points. For maneuvering and berthing, the positions of ships that headed to and from the four Port terminals were plotted to provide a guide to normal operating zones (by terminal). Spatial allocations according to operating mode were made as follows:

- OGV maneuvering emissions were assigned to polygons extending from the Inner and Outer Harbor channels and towards the entrance to these channels and the Bay Bridge (**Figure 3-9**). These polygons were defined to represent the most likely maneuvering areas applicable to each terminal operating during 2017 (TraPac, Nutter, OICT, and Matson).

[75] https://www.navcen.uscg.gov/?pageName=AISRequirementsRev.

- OGV berthing emissions were assigned to polygons at each terminal berth (**Figure 3-10**). Emissions were allocated between terminals based on the vessel call data from the 2017 SFMX Berth Report.

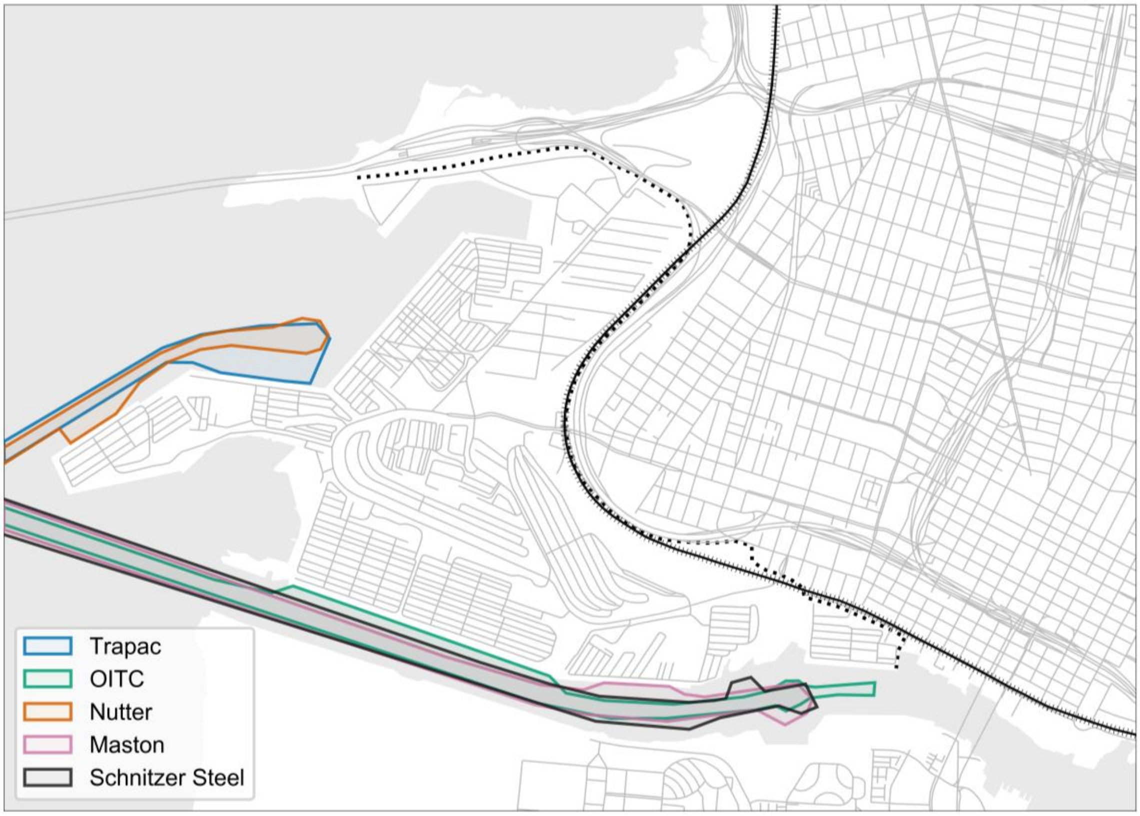


**Figure 3-9.** Area source polygons used to model emissions from OGV maneuvering.

An initial release height of 50 m was used for both OGV maneuvering and berthing activities. Emissions by activity were then temporally allocated by hour of day (ship call and twenty-foot equivalent unit [TEU] cargo volume throughput data showed little seasonal variation). A diurnal profile was developed for OGV maneuvering activity based on an analysis of hourly vessel movements (**Figure 3-11**). The highest frequency of arrival and departure times occurred near the start of labor shifts;[76] therefore, maneuvering emissions were assigned hour-specific allocation factors based on the arrival/departure frequency pattern. OGV berthing emissions at the Port were assigned a constant diurnal profile.

Emissions from OGV transiting, maneuvering, and berthing for ships to Schnitzer Steel were also modeled as an area source, which was approximated based on the spatial coverage of OGVs transiting to the Port (**Figure 3-9**, **Figure 3-10**). All OGV activities from Schnitzer Steel (transiting, maneuvering, hoteling) were modeled with a release height of 37.5 m, and emissions were assumed to be constant in time.

[76] Based on AIS records, a median of 23 min before ship arrival (denoted by 'first line on' time stamp in the SFMX berth report) and 19 min after departure ('last line off') was used to estimate the relative number of events by time of day for this mode within the Source Domain.

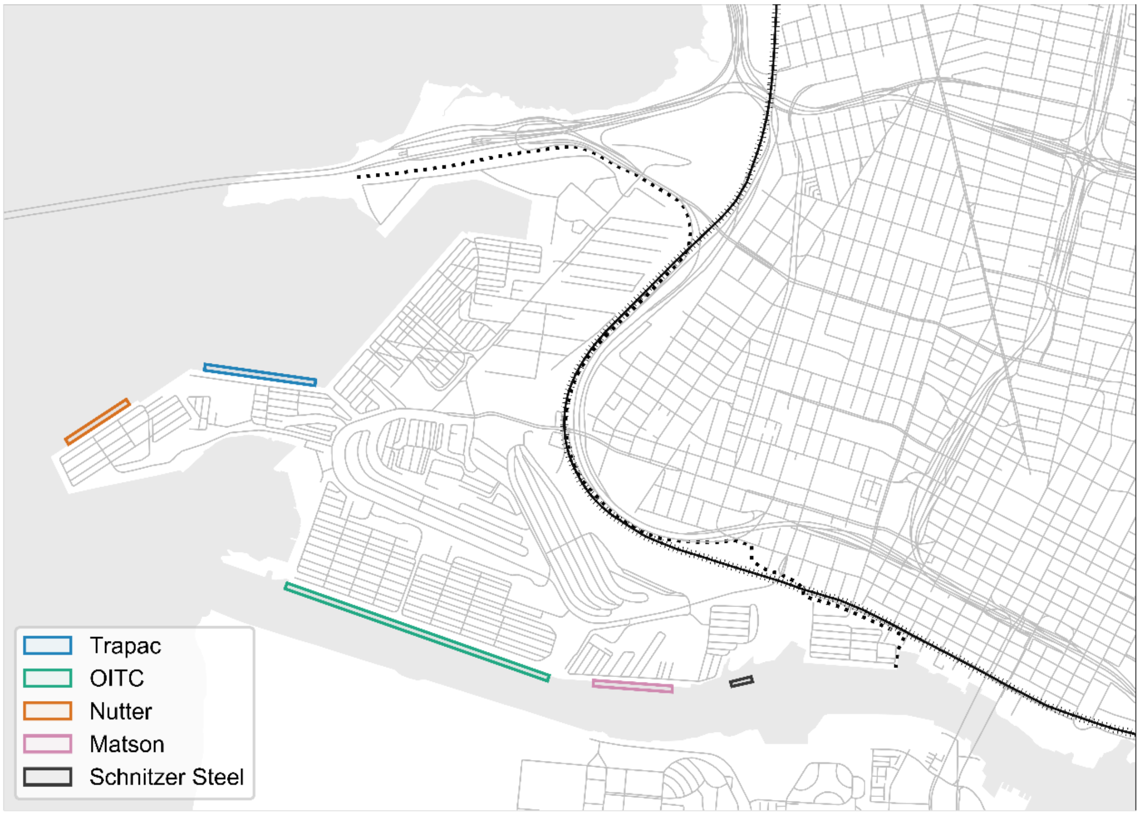


**Figure 3-10.** Area source polygons used to model emissions from OGVs at berths.

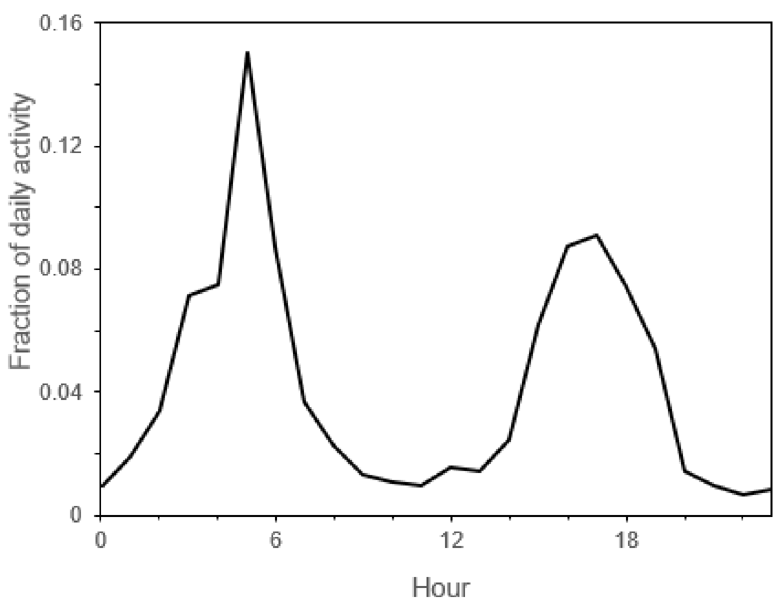


**Figure 3-11.** Diurnal emissions profile of Port OGV maneuvering. The profile is based on activity data from the 2017 Port Inventory.

### 3.4.6 Commercial Harbor Crafts

Emissions from all types of CHCs were modeled as area sources, while the spatial and temporal allocations of emissions varied by vessel type.

Dredging operations were assigned to two separate ship channels and berthing areas where these activities occurred (**Figure 3-12**). The area of the activity was created based on OGV AIS ship positioning information, which occurred near the main channel areas and berths that were dredged in 2017; the area was then extended to include unused Berths 23 and 24 in the Outer Harbor, and exclude the Berths 67 and 68 (which are rarely used).[77] Emissions were then allocated temporally based on the dredging schedule in 2017; dredging only occurred on 153 days (from January – February, and from August – December), and during daylight hours (8 AM – 6 PM). A release height of 6 m was used, with $Szinit$ = 4.744 m (consistent with California Air Resources Board (2008a)).

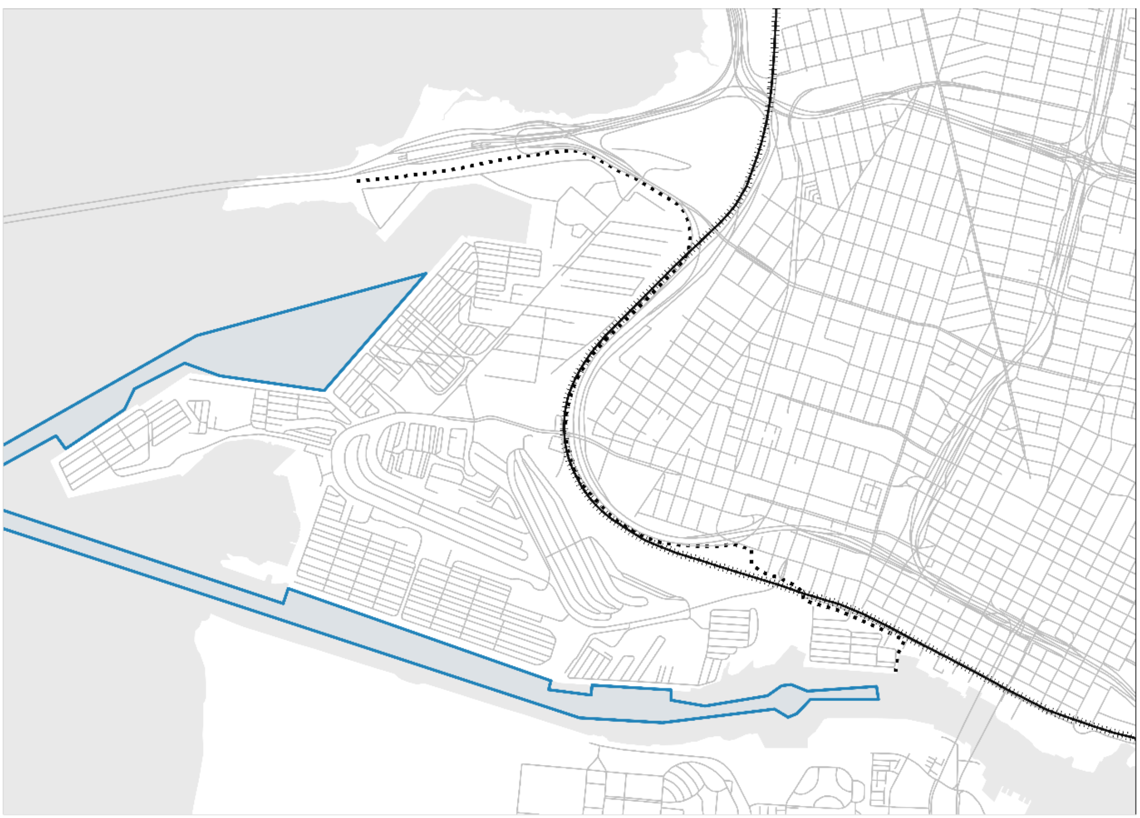

**Figure 3-12.** Area source polygons used to model emissions from dredgers.

Two areas sources were defined for assist tug operations, with one area representing tugs from the companies AMNAV Maritime Services, BayDelta, Crowley, and Foss Maritime, and the other representing tugs from Starlight Marine Services (**Figure 3-13**). Areas were derived based on AIS vessel position records during maneuvering and transit between the companies' base locations

[77] Based on communication with the company who performed the dredging.

(**Table 2-18**) to the Port. Emissions from assist tugs were temporally allocated in the same manner as OGV maneuvering (**Section 3.4.5**). A release height of 6 m was used, with $Szinit$ = 4.744 m (consistent with California Air Resources Board (2008a)).

Bunkering barges and bunkering pumps by terminal operator were assumed to operate in the same areas previously defined for OGV maneuvering and berthing, respectively (see **Figure 3-9** and **Figure 3-10**). Based on monthly bunkering events in 2017 (provided by Ramboll), emissions from bunkering varied by 6.4% to 9.6% on a monthly basis; for simplicity, emissions from bunkering activities were then assumed to be constant over the entire year. Emissions from bunkering barges were temporally allocated in the same manner as those from OGV maneuvering (**Figure 3-11**), whereas emissions from bunkering pumps were assumed constant.

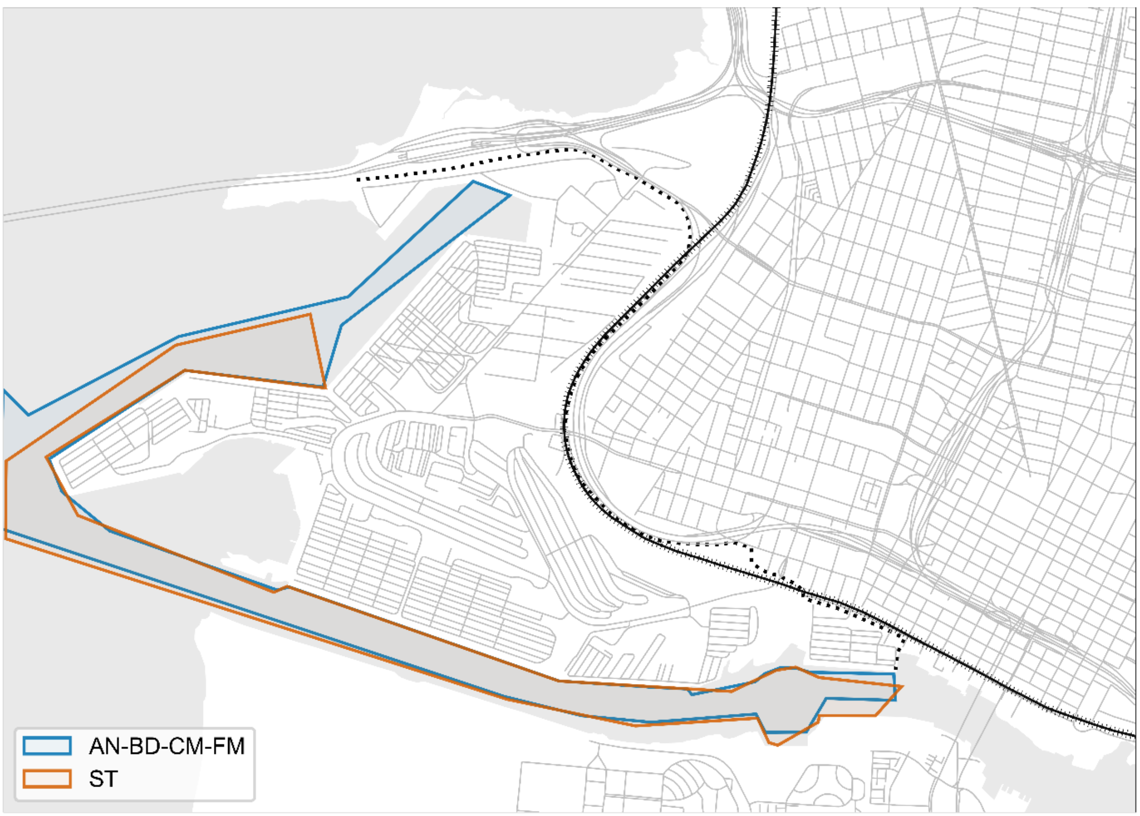


**Figure 3-13.** Area source polygons used to model emissions from assist tugs. Activity from AMNAV Maritime Services, BayDelta, Crowley, and Foss Maritime (AN-BD-CM-FM), and Starlight Marine Services (ST) were modeled separately.

### 3.4.7 Cargo handling equipment

Emissions from CHE were assigned to areas encompassing four terminals at the Port operating in 2017 (**Figure 3-14**). Emissions from CHE in the BNSF railyard were also accounted for. Based on California Air Resources Board (2008a), a release height of 5.5 m and an initial vertical dispersion coefficient of 2.558 m was used. The operating hours (**Table 2-23**) were used to develop temporal profiles for AERMOD dispersion modeling.

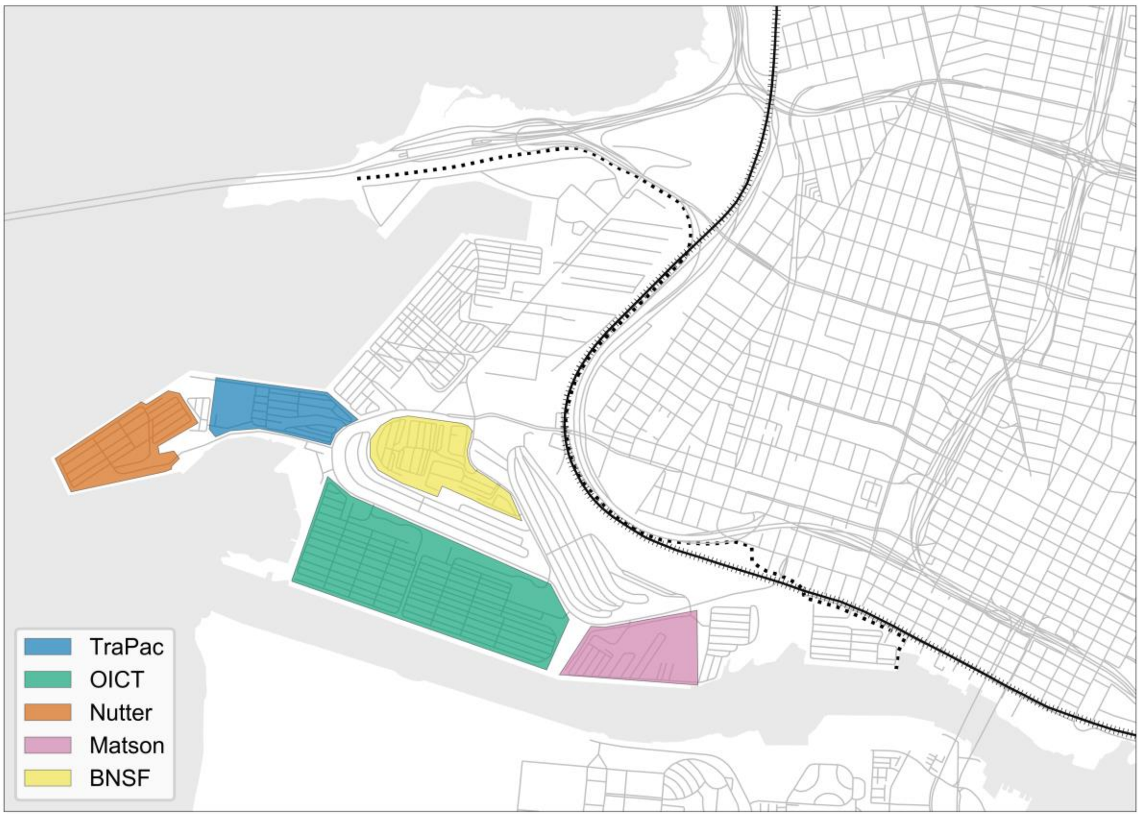


**Figure 3-14.** Area source polygons used to model emissions from CHE.

### 3.4.8 Port Trucks at Terminals

Emissions from Port Trucks operating within port terminals were assigned to source areas defined for BNSF Railyard (see **Figure 3-16**) and the same source areas defined for CHE (**Figure 3-14**). The same dispersion modeling parameters as CHE were used for Port Trucks ($Relhgt$ = 5.500 m, $Szinit$ = 2.558 m), as well as the same operating hours to temporally distribute the emissions (**Table 2-23**).

### 3.4.9 Locomotives (Rail Lines)

Emissions from locomotives on consolidated rail lines[78] in West Oakland were modeled as adjacent volume sources. A shapefile containing the geographic location of six rail lines in the West Oakland was used, which includes rail line segments with activity from BNSF and Amtrak. Volume source locations were developed using the algorithm described in **Section 3.4.1**(c), with a width of 6.25 m (width of locomotives plus wake effects). The release height of the locomotives was assumed to be 4.78 m (locomotive stack height). $Syinit$ and $Szinit$ were determined based on the equations used for on-road mobile sources (**Section 3.4.3**): $Syinit$ = 2.9070 m, and $Szinit$ = 3.7795 m. Emissions were assumed to be constant in time.

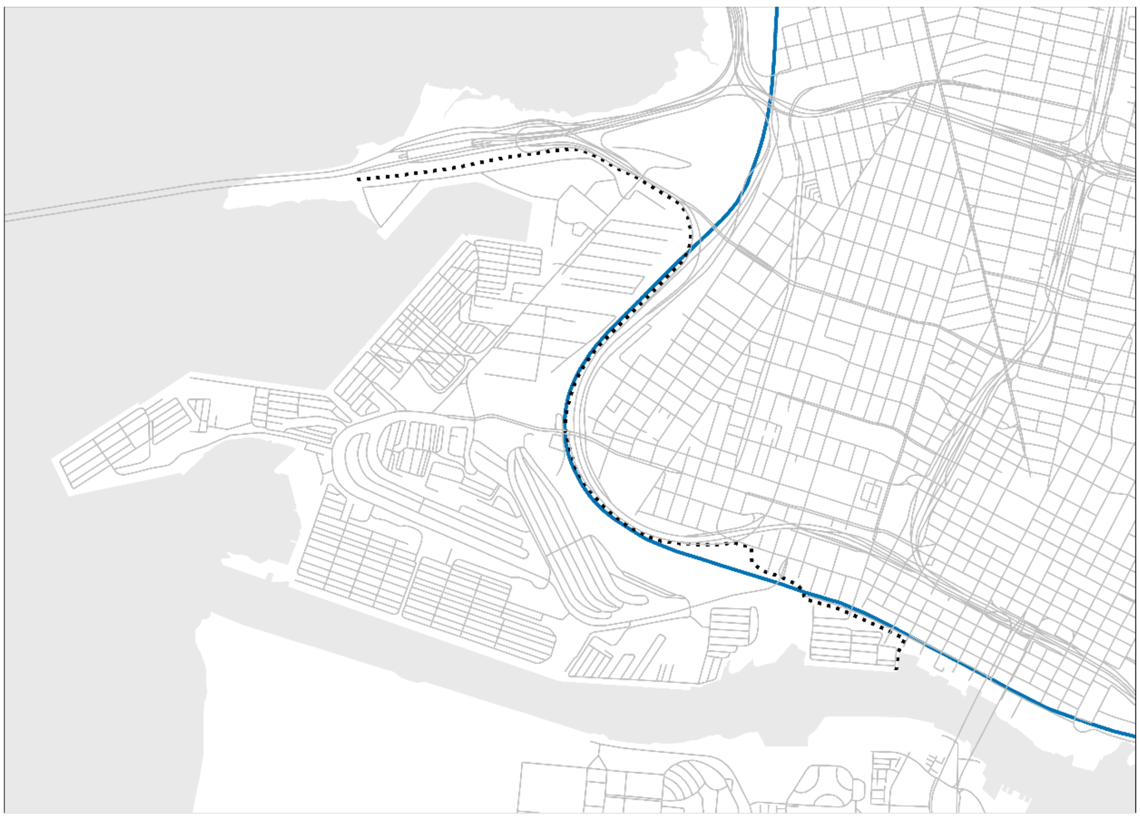

**Figure 3-15.** Locations of adjacent volume sources used to model emissions from locomotives. The size of the markers does not reflect the dimensions of the volume sources.

[78] For simplicity, emissions from all rail services (passenger, freight) were consolidated to single rail lines, which were then modeled in AERMOD. See **Section 2.9** for further information.

### 3.4.10 Railyards

Emissions from three railyards were modeled as area sources (**Figure 3-16**). The BNSF and OGRE railyards are considered part of the Port, while the Union Pacific (UP) railyard is a separate entity. A release height of 4.78 m was used for locomotives operating at each of the railyards. $Szinit$ was set to 3.7795 m, based on the equations for on-road mobile sources (**Section 3.4.3**). Emissions were assumed to be constant in time.

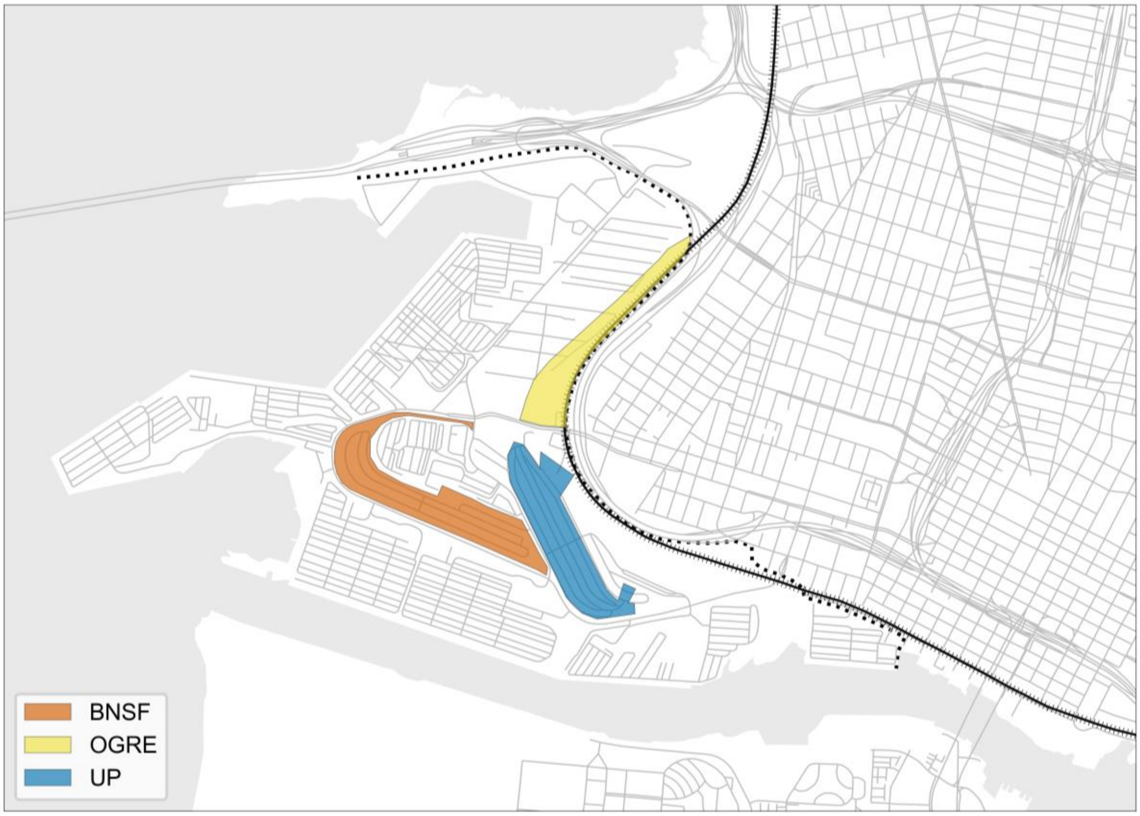


**Figure 3-16.** Area source polygons used to model emissions from locomotives in railyards.

### 3.4.11 Commuter Ferries and Excursion Vessels

Emissions from commuter ferries and excursion vessels were modeled using adjacent volume sources; all parameters were the same for both types of vessels. A network of ferry routes was developed using satellite imagery (**Figure 3-17**), and volume source locations were determined using the algorithm described in **Section 3.4.1**(c). Guidance used for on-road mobile source emissions (**Section 3.4.3**) were also used to determine modeling dispersion parameters for commuter ferries and excursion vessels. A width of 10.56 m was used, based on the weighted average beam of the vessels in the commuter ferry fleet.[79] The release height was calculated as 9.0695 m, based on a stack height of 10.67 m (35 ft).[80] The resulting dispersion parameters were:

[79] Obtained from the WETA San Francisco Bay Fleet information at https://sanfranciscobayferry.com/sites/default/files/SFBFfleet.pdf (accessed December 2018).

[80] In 2017, the exhaust stacks on the types of commuter ferries operating from Oakland and Alameda were above passenger decks.

$Syinit$ = 4.9209 m, and $Szinit$ = 8.4367 m. Emissions for commuter ferries were temporally allocated based on their operating schedules by day of week;[81] this reflects only the operating hours of the ferries and not necessarily the level of activity by hour. Because of the variable schedule of excursion vessels, emissions were assumed to be constant in time.

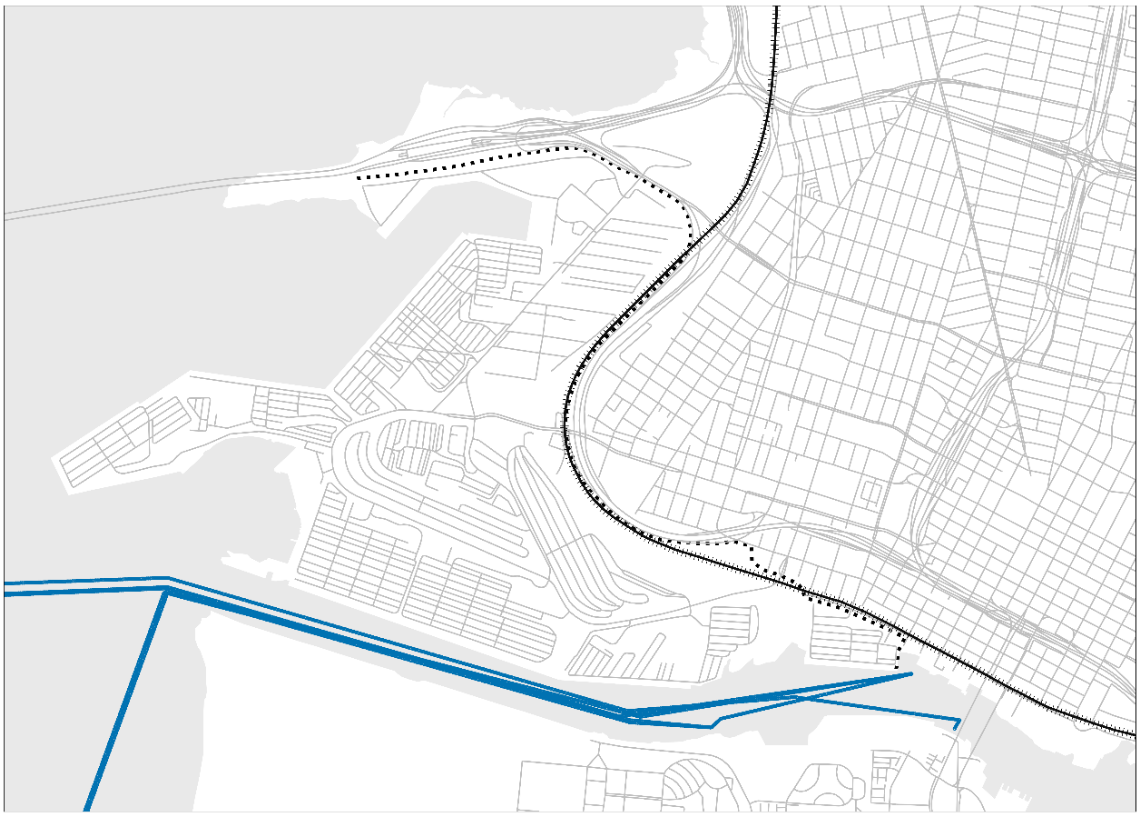

**Figure 3-17.** Locations of adjacent volume sources used to model emissions from commuter ferries and excursion vessels. The size of the markers does not reflect the dimensions of the volume sources.

Within the Source Domain, there are berths for both commuter ferries and excursion vessels. Emissions from ferry berths were modeled as area sources for AERMOD dispersion modeling (**Figure 3-18**). Because of the orientation of the exhaust stacks on some vessels, the release height was set to the physical height of the stack ($Relhgt$ = 10.67 m). Since berthing vessels are stationary, the initial vertical dispersion coefficient was calculated using $\gamma$ = 1 (i.e., there is no motion-induced turbulence that will increase initial dispersion), resulting in $Szinit$ = 4.9620 m.

[81] Based on the WETA San Francisco Bay ferry schedule (effective January 7, 2019) https://sanfranciscobayferry.com/sites/sfbf/files/masterschedule010719.pdf (accessed February 2019). The temporal allocation is based on operating hours; it was assumed that the operating hours were similar to those in 2017–2018.

**Figure 3-18.** Area source polygons used to model emissions from ferries and excursion vessels at berths.

## 3.5 Receptors

A master receptor grid was generated with receptors spaced every 20 m in the *x* and *y* directions within the Receptor Domain (**Figure 3-3**), resulting in 52,671 discrete cartesian receptors.[82] A spacing of 20 m was deemed sufficient to resolve the spatial concentration gradients around small emissions sources (e.g., roadways) and the spacing of city blocks, which are on the scale of tens of meters; it is also consistent with the "dense" spacing suggested for a PM hot-spot analysis around roadways (U.S. Environmental Protection Agency 2015b).

As mentioned, the height of each receptor was set to 1.8 m agl. AERMAP was run to assign terrain elevations (m asl) and hill height scales to each receptor from Shuttle Radar Topography Mission (SRTM) digital terrain data (with an approximate resolution of 30 m × 30 m within 1° × 1° tiles), which are used to determine the dispersion of plumes in the vicinity of topographic features. The West Oakland area is relatively flat, where elevation is near sea level close to the Bay, and slopes upward gently towards the East (**Figure 3-19**).

[82] While the Source and Receptor Domains must align between models, the projections used are different (UTM in AERMOD, and Lambert conformal conic in CMAQ). Additional receptors were initially modeled (totaling 56,658 receptors), and then filtered so that only those within the Receptor Domain were used in subsequent analyses.


**Figure 3-19.** Elevation based on SRTM digital terrain data processed through AERMAP. Elevations are assigned to receptor locations only within the West Oakland Receptor Domain (blue polygon).

For emission sources modeled as point or area sources, the entire master receptor grid was used. For emission sources modeled as volume sources, individual receptors were removed from the master grid where they intersected a volume source EZ (**Section 3.4.1**(c)); results were imputed to these locations in a post-processing step (see **Section 4.4.1**).

## 3.6 Background Concentrations

AERMOD provides estimates of pollutant concentrations associated with local sources in West Oakland. However, total pollutant concentrations in the community are also impacted by regional emissions sources that are located in other parts of Alameda County, the Bay Area, and beyond. To account for the impact of these regional emission sources on air pollutant concentrations in West Oakland, the U.S. EPA's Community Multi-scale Air Quality (CMAQ) model was applied at a 1-km grid resolution over the entire Bay Area (**Figure 3-20**). CMAQ is a complex photochemical grid model that simulates physical and chemical processes in the atmosphere to predict the airborne concentration of gases and particles, as well as the deposition of these pollutants to Earth's surface. CMAQ requires two primary types of input data: (1) meteorological information such as temperature, wind speeds, and precipitation rates; and (2) emissions estimates for all anthropogenic and natural emission sources in the modeling domain.

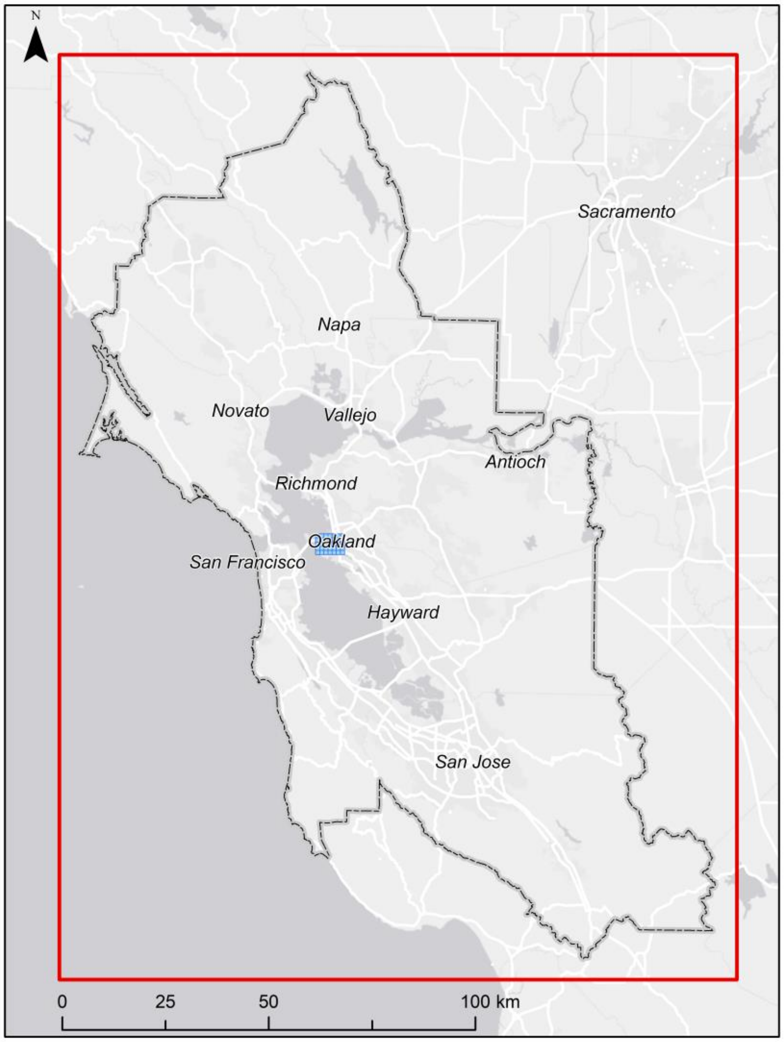


**Figure 3-20.** Regional-scale modeling domain (red rectangle). The subset of grid cells that comprise the community-scale (AERMOD) modeling are indicated by blue squares. The extents of the BAAQMD are also outlined (grey dashed line).

Meteorological inputs for CMAQ were prepared using the Weather Research and Forecasting (WRF) model version 3.8 (Skamarock *et al.* 2008). The WRF model configuration was tested using available physics options, including planetary boundary layer processes, strategies for assimilating meteorological measurement data into the simulations, horizontal and vertical diffusion parameters, and advection schemes. The final choice of options was the one that proved to best characterize meteorology in the domain based on a statistical evaluation. WRF model performance was evaluated by comparing model outputs to available meteorological data from the EPA's Air Quality System (AQS), the District's meteorological network, and the National Centers for Environmental Information (NCEI, formerly the National Climate Data Center [NCDC]). These comparisons were conducted by using the METSTAT program[83] to statistically evaluate the performance of WRF using established metrics such as bias, gross error, root mean square error

[83] version dated December 9, 2013; retrieved from Ramboll Environ: http://www.camx.com/download/support-software.aspx

(RMSE) and index of agreement (IOA). WRF's performance was determined to be within established criteria for these metrics for every day of 2016.

Emissions inputs for CMAQ were assembled from a variety of data sources, including the District's estimates, emissions data from CARB, outputs from CARB's EMFAC2017 model, and outputs from EPA's Biogenic Emission Inventory System (BEIS) version 3.61. These emissions data were processed through the Sparse Matrix Operator Kernel Emissions (SMOKE) processor (Houyoux and Vukovich 1999) version 4.5[84] to develop CMAQ-ready emissions inputs for each day of 2016. SMOKE uses a variety of processing steps to convert "raw" emissions data to the spatial, temporal, and chemical resolution required by air quality models, such as CMAQ. For example, SMOKE disaggregates TOG and $PM_{2.5}$ emissions into a series of model species that CMAQ uses to represent atmospheric chemistry.

For the Bay Area regional modeling, speciation profiles developed for the SAPRC-07 chemical mechanism were applied to TOG emissions from all sources, and profiles developed for the AERO6 aerosol module (AE6) were applied to $PM_{2.5}$ emissions from all sources. The SAPRC-07 mechanism treats some toxic species explicitly, including acetaldehyde, benzene, and formaldehyde, while others are lumped into model species that act as surrogates for multiple compounds with similar mass and reactivity. Therefore, existing SAPRC-07 speciation profiles were modified to treat additional air toxics (acrolein and 1,3-butadiene) explicitly. In addition, AE6 profiles were modified to track DPM emissions separately from other PM emissions. Lastly, emissions estimates for five trace metals that are not included in the AE6 mechanism (cadmium, hexavalent chromium, lead, mercury, and nickel) were taken from EPA's 2014 National Air Toxics Assessment (NATA) inventory.

Once all inputs were prepared, CMAQ version 5.2 (U.S. Environmental Protection Agency 1999) was run to simulate $PM_{2.5}$ and TAC concentrations for the Bay Area for 2016. CMAQ model performance was evaluated by comparing model outputs to available ambient data from the District's Data Management System and the EPA's AQS. Various statistical metrics were used to evaluate the performance of CMAQ, in keeping with EPA's latest modeling guidance (U.S. Environmental Protection Agency 2018a). The CMAQ model performed reasonably well, meeting the performance goals proposed by Boylan and Russell (2006) and criteria by Emery *et al.* (2017), two well-known references for PM model evaluation. The model also showed reasonable agreement with the limited air toxics observations that were available for comparison.

The modeling framework was run (a) with emissions in the West Oakland Source Domain to obtain the total concentrations over the community and perform the model evaluation, and then (b) without emissions to provide an estimate of background pollutant levels in West Oakland. From (b), CMAQ results for the 1-km grid cells in the West Oakland Receptor Domain were extracted and analyzed to develop average background concentration values for the community. The background values for $PM_{2.5}$, DPM, and cancer risk, which represent expected levels in the absence of any local emissions in West Oakland, are summarized in **Table 3-3**.

[84] For further information and technical documentation, see https://www.cmascenter.org/smoke/documentation/4.5/manual_smokev45.pdf

**Table 3-3.** Background pollutant concentrations and cancer risk for West Oakland. Values are derived as an annual average across all grid cells in the Receptor Domain.

| **Parameter** | **Value** | **Units** |
|---|---|---|
| $PM_{2.5}$ concentration | 6.9 | µg/m$^3$ |
| DPM concentration | 0.46 | µg/m$^3$ |
| Cancer risk | 421 | Additional cancer cases per million people |

Additional information on the CMAQ simulations are available in separate reports on the District's 2016 $PM_{2.5}$ modeling (Tanrikulu *et al.* 2019a) and air toxics modeling (Tanrikulu *et al.* 2019b).

# 4. Analysis Methods

In this section, the methods applied to determine pollutant concentrations and cancer risk from emission sources that were identified, quantified, and provided as inputs to dispersion models are outlined. The approach used to aggregate and display the results are also described.

## 4.1 Estimating Pollutant Concentration and Cancer Risk

### 4.1.1 Totals at Receptors

The total of a quantity at a receptor can be calculated by summing the contributions from all sources; based on the community-scale (AERMOD) dispersion modeling, this represents the local contribution to a total quantity, as in **Figure 1-2**. This can also be expressed mathematically; that is, the *incremental contribution* from a specific emissions source $s_j$ (where $j$ is the index of any individual source modeled in AERMOD) to the total of quantity $Y$ (which may a dispersion factor, $F$; pollutant concentration, $C_p$; or cancer risk, $risk$) at a receptor $r_i$ (where $i$ is a location index, and $r_i$ is located at coordinates $(x_i, y_i, z_i)$, and $z_i = 1.8$ m at all receptors in this analysis) can be denoted as: $Y_{ij} \equiv Y(r_i,\ s_j)$. The total quantity of $Y_i$ is then the sum over all contributions from all sources:

$$Y_i = \sum_j Y_{ij}$$

However, as previously explained, individual receptors were removed from the master "grid" (a set of receptors placed every 20 m) where they intersected a volume source EZ (used for modeling on-road mobile sources, locomotives along rail lines, and commuter ferries and excursion vessels). This means that if using only the direct model outputs, at some receptors, $Y_i$ can only be partially summed over all sources because the incremental contribution from some sources was not sampled at $r_i$. Therefore, dispersion factors were imputed at locations of receptors from the master grid that were removed for AERMOD modeling in these instances. Because the receptors that were removed from EZs are likely in areas of high concentrations (since they are closest to emission sources), values at receptors were imputed using the local maximum dispersion factors from a set of $k_{max} = 8$ closest receptors filtered within a distance (radius) of $d_{max} = 28.78$ m (the maximum diagonal distance between two receptors plus 0.5 m); the final number of receptors is therefore $k \leq k_{max}$. If no receptors were available within $d_{max}$, the value was imputed using the IDW with a power value of two (i.e., inverse distance squared weighting, IDW2) from the $k_{max}$ (or $k \leq k_{max}$ if only $k$ receptors were defined) nearest receptors. The resulting values at receptors could therefore be derived from a mix of local maxima and IDW2 interpolation.

To assess the air quality at receptors, the total pollutant concentrations of $PM_{2.5}$ and DPM were calculated, as well as cancer risk. While the summation technique is identical, calculating the values of each quantity at each receptor requires additional information with respect to emission rates and toxicity, as detailed in the following sections.

### 4.1.2 Pollutant Concentration

The concentration of a pollutant at each receptor location was calculated for a modeled source by multiplying annual average emission rate of a pollutant from a source by the dispersion factor from the source. At each receptor $r_i$ from each source $s_j$, the concentration of pollutant $p$ is then:

$$C_{pij} = ER_{pj} \cdot F_i$$

where

| | | |
|---|---|---|
| $C_p$ | = | annual average concentration for pollutant $p$ (µg/m$^3$) |
| $ER_p$ | = | annual average emission rate for pollutant $p$ [g/(s m$^2$) for area sources, g/s for point and volume sources] |
| $F$ | = | dispersion factor, concentration per unit emission rate [(µg/m$^3$)/(g/(s m$^2$)) for area sources, (µg/m$^3$)/(g/s) for point and volume sources] |

The concentration contributions can then be summed over all sources at a receptor to obtain the total concentration from local sources.

### 4.1.3 Cancer Risk

Cancer risk is the incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens from anthropogenic sources. The estimated risk is a unitless probability, often expressed as the number of people who might experience cancer per million people who are similarly exposed (a value “in-a-million”). Chemical species included in the dose calculate include acrolein, benzene, DPM, ethylbenzene, hexane, naphthalene, toluene, and xylene, among others (see **Attachment 1**); the type of TAC emitted depends on the emissions source.

The risk assessment method used here follows guidelines from the California EPA (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA) and the risk management guidance for stationary sources adopted by the CARB and the California Air Pollution Control Officers Association (CAPCOA). Cancer risk was calculated over an assumed 70-year lifetime by multiplying the annual average chemical concentrations of TACs by the chemical intakes and chemical-specific cancer potency factors (CPFs)[85] (**Attachment 1**). The chemical concentrations were modeled from the emission sources to the exposure point at the downwind locations (receptors). Contributions from all emissions sources (**Section 2**) were aggregated to determine the cumulative risk. The District assumed that all emissions sources would remain operational for 30 years at the same level of emissions (the District has previously adjusted emissions for certain source categories where operations will be phased out); the District also assumed that emission factors for on-road mobile sources do not change in future years. The resulting analysis therefore represents a ‘snapshot’ of the level of cancer risk that would result from the base year emissions.

[85] A CPF is a chemical-specific “theoretical upper bound probability of extra cancer cases occurring in an exposed population assuming a lifetime exposure to the chemical” (Office of Environmental Health Hazard Assessment 2015).

The chemical intake or *dose* describes the frequency and duration of the exposure, estimated using the breathing rates, exposure durations, and exposure frequencies. In accordance with OEHHA's revised health risk assessment guidelines (Office of Environmental Health Hazard Assessment 2015), the intake methodology was updated to address children's greater sensitivity and health impacts from early exposure to carcinogenic compounds. The updated calculation procedures include the use of age-specific weighting factors, breathing rates, fraction of time at home, and reduced exposure durations. Each factor is described below:

- Age Sensitivity Factors (ASFs) account for the heighted sensitivity of children to carcinogens during fetal development and early childhood. Consistent with OEHHA, the District uses ASF values as listed in **Table 4-1**. The District has incorporated ASFs in its air permits since 2010.
- Daily Breathing Rate (DBR) is the age-specific daily air intake. OEHHA developed a range of rates for four age groups: last trimester to newborn, newborn to two years of age, two years to 16 years of age, and older than 16 years of age. CAPCOA and CARB recently recommended the use of 95th percentile breathing rates for the most sensitive age group (less than two years of age) and 80th percentile for all other age groups.
- Fraction of Time at Home (FAH) refers to the estimated amount of time residents stay at home. In past HRAs, the District assumed that residents are home 24 hours per day, 7 days per week. In the 2015 Risk Assessment Guidance, OEHHA recommends less than 100% of time to be used as a FAH based on population and activity statistics. Consistent with OEHHA, this analysis incorporates a FAH of 0.73 for individuals ≥ 16 years old and 1.0 for individuals < 16 years old to address exposures at local schools in close proximity to emitting facilities.
- Exposure Duration (ED) is the length of time an individual is continuous exposed to air toxics. Previously, the District used a 70-year lifetime exposure duration for residents over a 70-year lifespan. Based on updated demographic data, the District follows the OEHHA recommendation of a 30-year exposure duration, consistent with US EPA, for residents.

The values of these factors are summarized in Table 4-1.

**Table 4-1.** Factors used to calculate chemical intake, based on a 30-year average. Age intervals are left-bounded.

| Factor | Unit | Age Groups | | | |
|---|---|---|---|---|---|
| | | **Last Trimester to Newborn** | **0 – 2 years old** | **2 – 16 years old** | **16 – 30 years old** |
| **DBR** | L/(kg day) | 361 | 1090 | 572 | 261 |
| **ASF** | unitless | 10 | 10 | 3 | 1 |
| **FAH** | unitless | 1 | 1 | 1 | 0.73 |
| **ED** | years | 0.25 | 2 | 14 | 14 |

The equation used to calculate the dose for the inhalation pathway of a pollutant $p$ is as follows:

$$dose_{pij} = \frac{1}{AT}\left[c \cdot ef \cdot \sum_{y}^{30\,years} C_{pijy} \cdot DBR_y \cdot FAH_y \cdot ED_y \cdot ASF_y\right]$$

where

| | | |
|---|---|---|
| $dose_p$ | = | accumulated dose for an individual breathing pollutant $p$ for 30 continuous years [mg/(kg day)] |
| $AT$ | = | averaging time [25,550 days, equivalent to 70 year lifespan] |
| $c$ | = | conversion factor [$10^{-6}$ (mg/L)/(µg/m$^3$)] |
| $ef$ | = | exposure frequency (350 days per year[86]) |
| $C_{py}$ | = | annual average concentration of pollutant $p$ during year $y$ [µg/m$^3$] |
| $DBR_y$ | = | daily breathing rate during year $y$ [L/(kg day)] |
| $FAH_y$ | = | fraction of time at home during year $y$ [unitless] |
| $ED_y$ | = | exposure duration of year $y$ [years] |
| $ASF_y$ | = | age sensitivity factor for year $y$ [unitless] |

The cancer risk from a pollutant ($p$) at a receptor ($i$) from a specific source ($j$) is equal to the dose multiplied by the chemical-specific inhalation CPF (**Attachment 1**):

$$risk_{pij} = CPF_p \cdot dose_{pij}$$

In most cases, CPF specific for the inhalation pathways were used. However, some chemicals, in addition to being inhaled, can deposit on the ground in particulate form and contribute to risk through ingestion of soil or through other routes. To account for the additional risks from exposure to non-inhalation pathways, multi-pathway CPFs were used where available from OEHHA. Risks were not estimated for chemicals lacking OEHHA approved toxicity values.

When the pollutant concentration term is dropped from the dose equation, the remaining terms represent a constant cancer risk weighting factor of $WF = 677$ [m$^3$/µg]/[mg/(kg day)], irrespective of pollutant. Because the pollutant concentration term is calculated by multiplying the annual average emission rate of a pollutant from an emissions source by the dispersion factor of that source (**Section 4.1.2**), the cancer risk equation becomes:

$$risk_{pij} = CPF_p \cdot WF \cdot ER_{pj} \cdot F_i$$

The total per-million cancer risk is then the sum of the pollutant-specific risk values ($p$). These can be further summed over all emission sources ($j$).

A similar method was used to calculate cancer risk-weighted emissions (as presented in the Action Plan). In this calculation, the dispersion factor term was dropped from the equation above, and

[86] An $ef$ of 350 days per year was used, which represents the number of days an individual will reside in their home less approximately two weeks of vacation. This value is consistent with current OEHHA and EPA guidance.

annual average emissions (tpy) were multiplied by 677 [mg/(kg day)]/[μg/m$^3$] and pollutant-specific inhalation slope factors (**Attachment 1**). For sources that emit multiple TACs, the total cancer risk-weighted emissions were calculated by summing the cancer risk-weighted emissions for each pollutant. The resulting units are then inverse of the dispersion factor expressed in tpy rather than g/s, which can be thought of as a risk-weighted sum of emissions. For example, given annual DPM emissions from the OGRE railyard (diesel-fueled switchers) are 0.08 tpy, the cancer-risk weighted emissions are then: 0.077 tpy · 677 [mg/(kg day)]/[μg/m$^3$] · 1.1 (mg/kg day)$^{-1}$ ≈ 57 tpy / (μg/m$^3$) ("cancer-risk weighted [CRW] tpy").

## 4.2 Spatial Distributions and Source Apportionment

### 4.2.1 Source Apportionment

As modeling was performed for each emissions source separately (**Section 3.1**), the contributions from each source $s_j$ to the quantity $Y_i$ at each receptor $r_i$ can be tracked and then compared to those contributions from other sources; this is generally termed a *source apportionment*. In this analysis, the results are already apportioned to sources by virtue of running each source individually in AERMOD.

Furthermore, rather than examine the contributions at receptors from each individual source (e.g., a single generator, on-road mobile sources on individual roadways), contribution can be examined from *source categories* (e.g., permitted stationary sources, passenger vehicles on freeways). Sources within a source category may be similar in how they are managed or regulated, their emissions processes, their geographic locations, or are of particular research interest. An individual source can only belong to a single source category. Then, the total of a quantity at a receptor can be expressed as the sum of contributions from different source categories $s_J$, as:

$$Y_{iJ} = \sum_{j \in J} Y_{ij}$$

$$\text{and} \quad Y_i = \sum_J Y_{iJ} = \sum_j Y_{ij}$$

### 4.2.2 Interpreting Map Products

Annual average $PM_{2.5}$, DPM, and cancer risk in West Oakland are presented in a series of maps and map-based products (tables and charts at different locations within the domain). When drawing conclusions from maps, it is important to consider the assumptions used to derive the underlying data.

Specifically, the maps were derived from air dispersion modeling that were used to calculate concentrations and cancer risk estimates from direct emissions. The maps themselves, therefore, portray concentrations associated with directly emitted $PM_{2.5}$ and DPM, as well as cancer risk associated with directly emitted TACs. The results do not reflect regional or long-range transport of air pollutants, nor the effects of the chemical transformation (formation or loss) of pollutants.

However, some discussion of background concentrations resulting from those processes is provided (**Section 3.6**).

Finally, output from AERMOD at receptors represents a value sampled at a single point in space; that is, the values are not averages over grid cell volumes (as output from models such as CMAQ). Therefore, while results at regularly space receptors can be mapped as "grid cells" (raster), the values do not necessarily represent the average value over the area of the "grid cell." The results at receptors also reflect the choice of flagpole receptor height (1.8 m); while some sources may emit a large quantity of pollutants, these pollutants may not necessarily impact receptors near ground-level if the release heights are much higher.

### 4.2.3 Spatial Aggregation

Receptors were placed every 20 m within the Receptor Domain to adequately capture concentration gradients around various sources. Results can be plotted as "grid cells" centered at each receptor. However, results summarized at larger spatial scales can be more useful when examining population exposures or proposed mitigation measures.

In this analysis, spatially aggregated results were generated by computing the arithmetic average within specific polygons, i.e., the sum from all source categories over all receptors within the polygon divided by the number of receptors. If a polygon contains a subset of receptors $n = |I|$ ($r_{i \in I}$), then:

$$Y_{IJ} = \frac{1}{n} \sum_{i \in I} Y_{iJ}$$

$$\text{and} \quad Y_I = \sum_{J} Y_{IJ}$$

Three types of spatial aggregation polygons were used, and further details of how they were defined are discussed below:

(1) **Hexagons** were used to form a complete "hexagon grid" of adjacent regular hexagons with a long diagonal of 100 m (incircle radius of 43.3 m);

(2) **Zone polygons** covering seven areas in the West Oakland community (**Figure 4-1**).[87] Within these zones, results were also presented as pie charts, where source categories were further aggregated for simplicity (Highways, Surface Streets, Port, Rail, Permitted, and Other); and

(3) **Census blocks** within the West Oakland community (**Figure 4-2**) were namely used to obtain a *population-weighted result* (or "*residential impact*"). Population-weighted results can help emphasize how air pollution affects areas where residents live. For this approach, the TIGER polygons from the 2010 Decennial Census were used with

[87] These locations were selected in consultation with project co-leads and generally represent areas where pollutant concentrations are known to be elevated based on previous research and/or sensitive receptors.

corresponding 2010 population (**Figure 4-2**), and results were weighted by the population within the polygon as a proportion of the total population summed across all polygons.[88]

Results based on source category and spatial aggregations were combined into interactive maps, which can be used to represent the spatial variation of pollutant concentrations and cancer risk across West Oakland, and to represent the spatial variation of the incremental contributions from different source categories across West Oakland. Taken together, these results are intended to aid local planning efforts by identifying areas or sources where emission reductions may be needed and by providing information on the sources which are contributing to air quality impacts at specific receptor locations.

[88] Although the absolute population of West Oakland has changed since 2010, the population-weighted results only depend on the relative spatial distribution of population among census blocks. Relative changes in this distribution during inter-decennial years (2011–2019) are difficult to estimate accurately; population data at the block level are not published as part of inter-decennial Census products (e.g., American Community Survey).

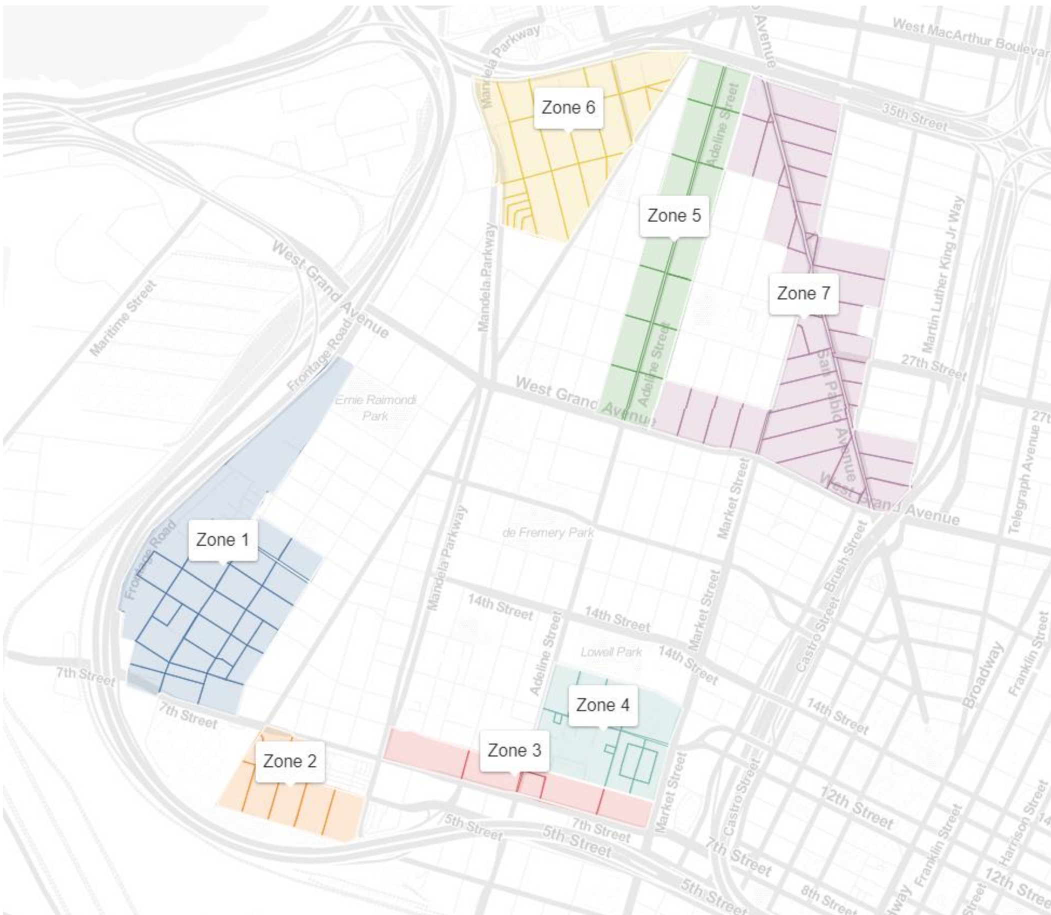


**Figure 4-1.** Zones in the West Oakland community used to assess air quality in this study: 1: Lower Bottoms / West Prescott, 2: 3rd Street, 3: 7th Street, 4: Acorn, 5: Upper Adeline, 6: Clawson, 7: West Grand & San Pablo.


**Figure 4-2.** Percentage of total population by census block in West Oakland, based on 2010 Decennial Census data. Total population for the census blocks examined in West Oakland in 2010 was 33,561 (based on 1,029 census blocks). Only census blocks within the West Oakland community boundary are outlined (blue lines); census blocks with no population are not colored.

# 5. Results

Annual average local $PM_{2.5}$, DPM, and cancer risk results derived from dispersion modeling are presented in this section in a series of maps. Additionally, a source apportionment is performed where information is provided on the relative contributions of the source categories described in previous sections: permitted stationary sources, on-road mobile sources (by road type and vehicle category), Port-related sources (e.g., OGVs, CHE), locomotives on rail lines and at railyards, and other sources (e.g., truck-related businesses). All results are presented with respect to the total emissions represented in the community-scale emissions inventory as noted in **Section 2.1.5**, unless otherwise specified.

## 5.1 $PM_{2.5}$ Concentrations

Based on combined AERMOD results from all sources, the annual average $PM_{2.5}$ concentration associated with local sources in the West Oakland averaged over the community domain[89] was 1.71 µg/m$^3$, with local concentration contributions exceeding 4.0 µg/m$^3$ in areas that are proximate to large emission sources and roadways (**Figure 5-1**). This annualized value reflects an average of all receptors in the domain; when the calculation is weighted by population in Census blocks (i.e., residential areas), the annual average local $PM_{2.5}$ concentration increases slightly to 1.73 µg/m$^3$, largely due to the higher levels of road dust emissions in the residential areas.

The average local $PM_{2.5}$ concentration was 1.71 µg/m$^3$, whereas the background concentration was 6.9 µg/m$^3$ (**Section 3.6**), resulting in a total average $PM_{2.5}$ concentration of 8.61 µg/m$^3$. This value compares well with the annual average $PM_{2.5}$ concentration of 8.7 µg/m$^3$ measured at the West Oakland monitoring site (in 2016). Based on this modeling analysis, local sources account for ~ 20% of the annual average $PM_{2.5}$ concentration in West Oakland.[90]

## 5.2 DPM Concentrations

The annual average DPM concentration associated with local sources in the West Oakland community domain was 0.39 µg/m$^3$, with concentrations exceeding 1.0 µg/m$^3$, namely in areas that are proximate to the Port and railyards (**Figure 5-2**). When the calculation is limited to receptors in residential areas, the annual average local DPM concentration decreases to 0.25 µg/m$^3$, as the highest local DPM concentrations are generally near the Port rather than residential areas.

The average local DPM concentration was 0.39 µg/m$^3$, whereas the background concentration (**Section 3.6**) was estimated as 0.46 µg/m$^3$, resulting in a total average DPM concentration of 0.85 µg/m$^3$ in West Oakland. Based on this modeling analysis, local sources account for about ~ 46% of the annual average DPM concentration in West Oakland.

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[89] Results averaged over the "community domain" include all receptors within the Receptor Domain that intersect the Community Boundary (*c.f.* **Figure 1-1**, **Figure 5-1**). The Receptor Domain does not completely cover the Community Boundary; the areas that are excluded are mainly in the Port and over the Bay Bridge.

[90] This local contribution only accounts for directly emitted $PM_{2.5}$ emissions. However, it is likely that the secondary formation of $PM_{2.5}$ from precursor emissions in the West Oakland domain will largely occur beyond the boundaries of the domain.

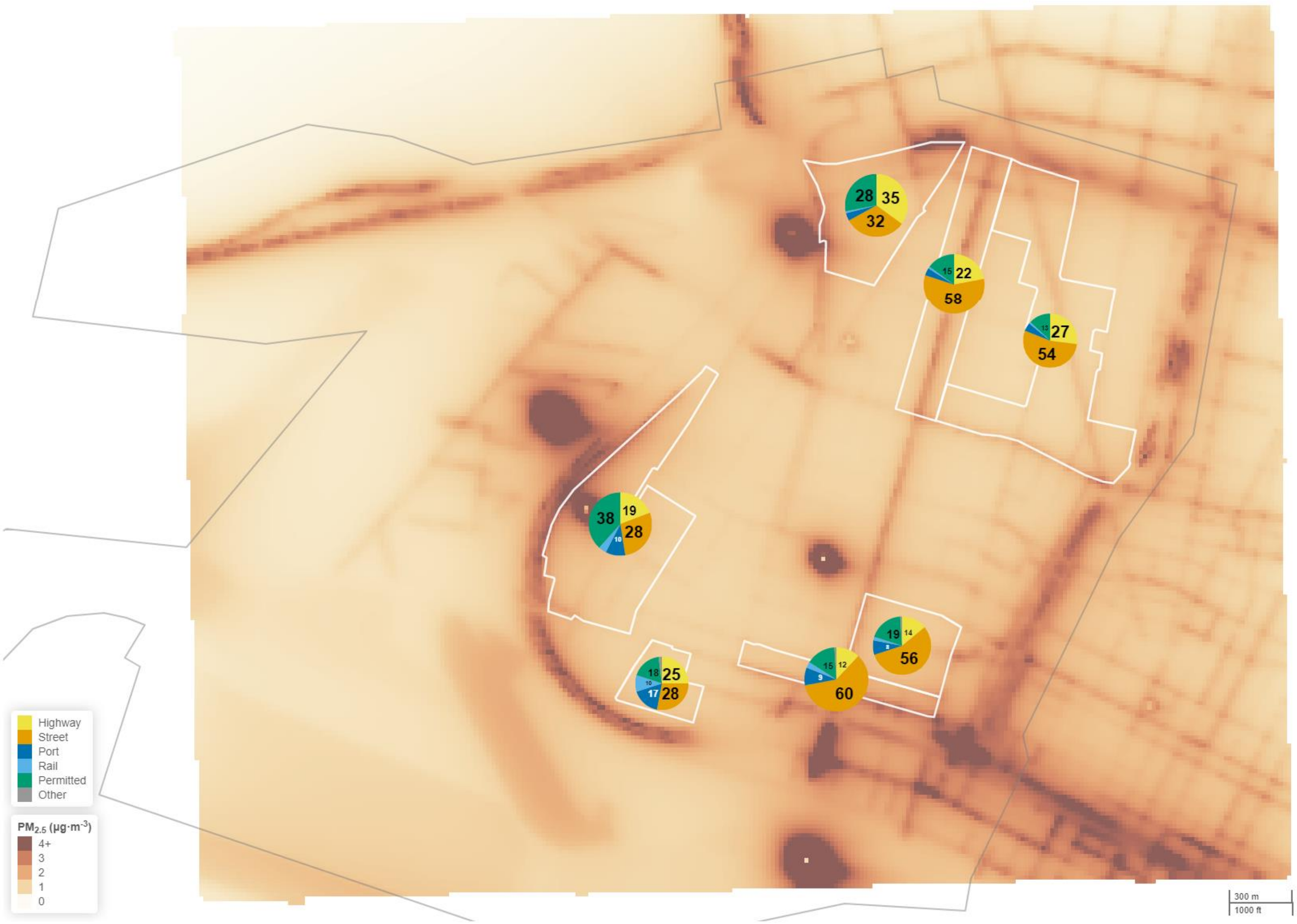


**Figure 5-1.** Annual average $PM_{2.5}$ concentrations associated with modeled local sources in the West Oakland Receptor Domain (colored extents). Pie charts indicate the percentage of concentrations contributed from specific Source Categories in each zone (white polygons, **Figure 4-1**); the size of the pie chart indicates the total magnitude of the concentration. The grey line indicates West Oakland Community Boundary. Outlines of other geographical features (roadways, etc.) are omitted for clarity.

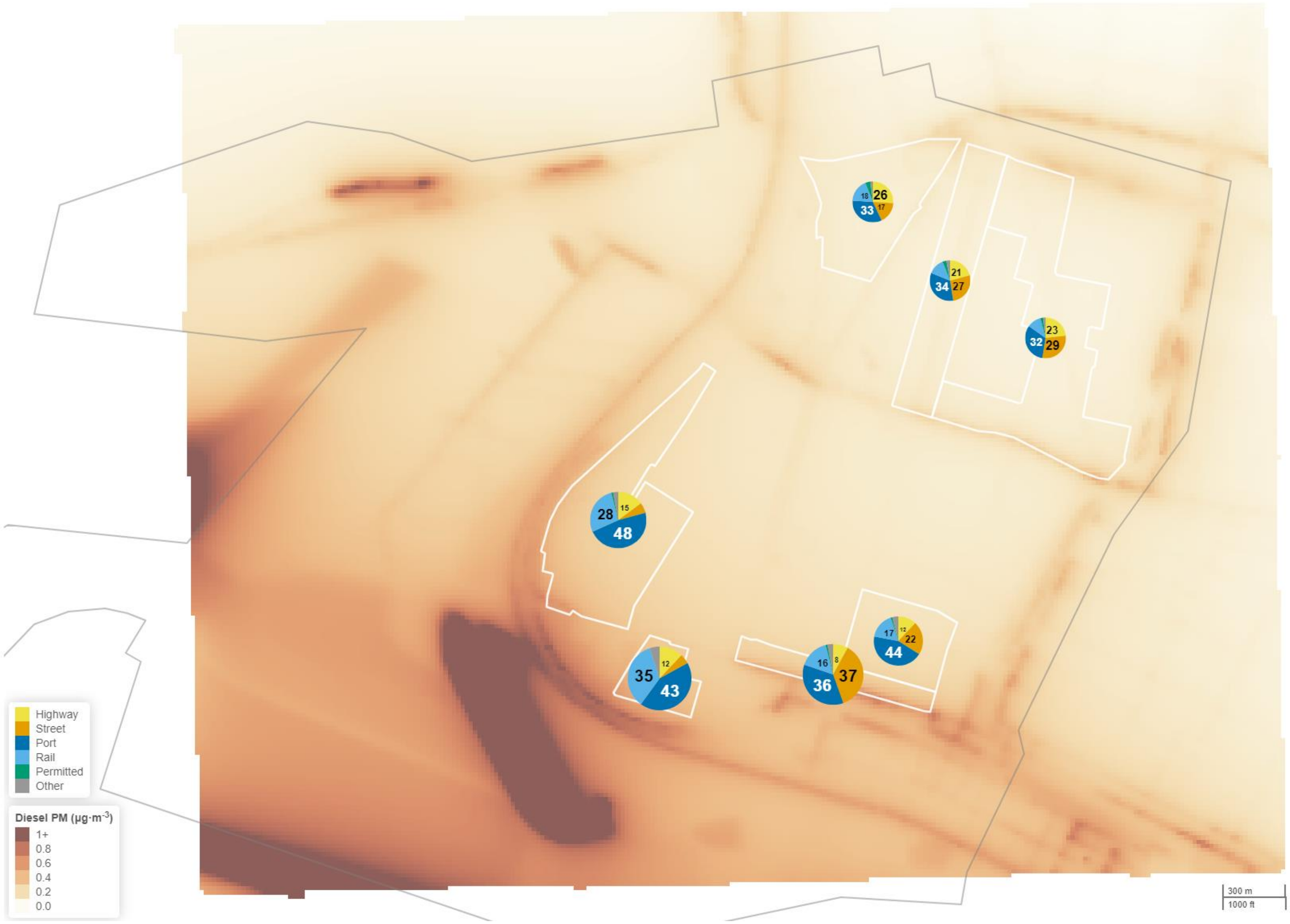


**Figure 5-2.** Annual average DPM concentrations associated with modeled local sources in the West Oakland Receptor Domain (colored extents). Pie charts indicate the percentage of concentrations contributed from specific Source Categories in each zone (white polygons, **Figure 4-1**); the size of the pie chart indicates the total magnitude of the concentration. The grey line indicates West Oakland Community Boundary. Outlines of other geographical features (roadways, etc.) are omitted for clarity.

## 5.3 Cancer Risk

Based on combined AERMOD results from all sources, the excess (local) cancer risk associated with local emissions sources in the West Oakland Source Domain was 303 in-a-million people, with risk values exceeding 1,000 in-a-million in areas that are proximate large emission sources, especially those that emit high levels of DPM (**Figure 5-3**). Furthermore, the annual excess cancer risk decreases to 199 in-a-million when weighted by population, as the highest air toxic concentrations are generally near the Port and the Schnitzer Steel facility rather than residential areas.

The total excess cancer risk in West Oakland is than 724 in-a-million, based on a background value of 421 in-a-million (**Section 3.6**) and a local value of 303 in-a-million. Based on this modeling analysis, local sources account for ~ 42% of the excess cancer risk in West Oakland.

## 5.4 Source Apportionment

To support source apportionment analyses, AERMOD results for all sources were combined in a series of interactive digital maps that allow users to click on a location of interest and view a tabular summary of the contributions of individual local sources to the $PM_{2.5}$ concentration, DPM concentration, and excess cancer risk at that location.[91] The percentage contribution from source categories to the domain-wide averages, and by location or zone were also generated (as depicted by the pie charts in **Figures 5-1**, **5-2**, and **5-3**).

Source contributions to annual average local $PM_{2.5}$ concentration (1.71 $\mu g/m^3$), annual average local DPM concentration (0.39 $\mu g/m^3$), and excess cancer risk (303 in-a-million) are tabulated by emissions source category in **Table 5-1**. For $PM_{2.5}$, the main sources include road dust, passenger vehicles (especially on highways) and MHDT/HHDTs. Some stationary sources (e.g., Pinnacle Ag Services, Schnitzer Steel) also contribute a comparable amount. For DPM and cancer risk, the main source include MHDT/HHDTs, assist tugs, OGVs, and locomotives and railyard activity.

Source contributions to local $PM_{2.5}$ concentrations, DPM concentrations, and excess cancer risk within Zones in the West Oakland domain vary by location, and the interactive maps described above allowed users to investigate those variations. For example, while Zone 2 (3rd Street) and Zone 3 (7th Street) are close to each other (< 1 km), the proportions of difference source categories to the overall excess cancer risk within the zones varies considerably (**Figure 5-3**, **Table 5-1**).[92] Within Zone 2, key sources include those in the Port (especially assist tugs and OGVs) and rail (UP railyard and locomotives on rail lines). In contrast, within Zone 3, key sources include those in the Port (assist tugs and OGVs) and on-road mobile sources on surface streets (especially MHDTs/HHDTs).

[91] See: http://www.baaqmd.gov/ab617woak.
[92] The results within two zones are presented here. Results at other sensitive receptors in West Oakland are available elsewhere.

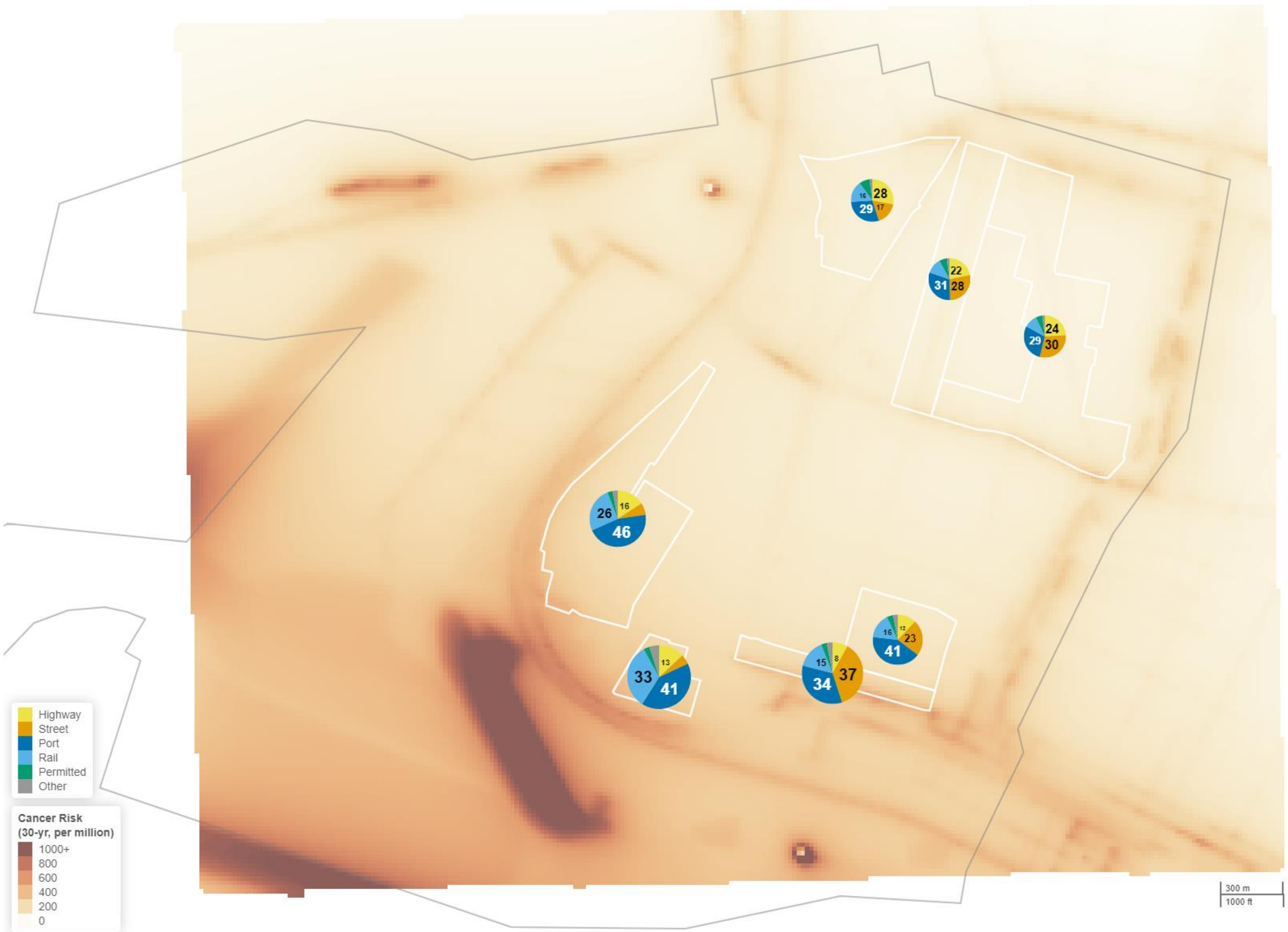


**Figure 5-3.** Annual average excess cancer risk associated with modeled local sources in the West Oakland Receptor Domain (colored extents). Pie charts indicate the percentage of risk contributed from specific Source Categories in each zone (white polygons, **Figure 4-1**); the size of the pie chart indicates the total magnitude of the risk. The grey line indicates West Oakland Community Boundary. Outlines of other geographical features (roadways, etc.) are omitted for clarity.

**Table 5-1.** Source contributions to the annual average $PM_{2.5}$ and DPM concentrations and excess cancer risk across the West Oakland community area. Port Truck contributions represent those from Port Trucks on all roads and within Port terminals.

| Source Category | $PM_{2.5}$ | | DPM | | *risk* | |
|---|---|---|---|---|---|---|
| | **μg/m³** | **% of total** | **μg/m³** | **% of total** | **per million** | **% of total** |
| **Highway** | | | | | | |
| Non-Trucks | 0.242 | 14 | 0.004 | 1 | 7 | 2 |
| LHDT | 0.009 | 1 | 0.002 | 1 | 2 | 1 |
| MHDT/HHDT | 0.058 | 3 | 0.043 | 11 | 33 | 11 |
| Road dust | 0.103 | 6 | – | – | – | – |
| **Surface Streets** | | | | | | |
| Non-Trucks | 0.107 | 6 | 0.002 | 1 | 4 | 1 |
| LHDT | 0.005 | < 1 | 0.001 | < 1 | 1 | < 1 |
| MHDT/HHDT | 0.038 | 2 | 0.029 | 8 | 22 | 7 |
| Road dust | 0.395 | 23 | – | – | – | – |
| **Port** | | | | | | |
| OGV – maneuvering | 0.023 | 1 | 0.023 | 6 | 17 | 6 |
| OGV – berthing | 0.048 | 3 | 0.026 | 7 | 20 | 7 |
| Dredging | 0.020 | 1 | 0.020 | 5 | 15 | 5 |
| Assist Tugs | 0.071 | 4 | 0.073 | 19 | 55 | 18 |
| Bunkering (tugs, pumps) | 0.005 | < 1 | 0.005 | 1 | 4 | 1 |
| CHE | 0.027 | 2 | 0.027 | 7 | 20 | 7 |
| Port Trucks | 0.023 | 1 | 0.012 | 3 | 10 | 3 |
| Road dust | 0.043 | 3 | – | – | – | – |
| Railyard – OGRE | 0.004 | < 1 | 0.005 | 1 | 4 | 1 |
| Railyard – BNSF | 0.009 | 1 | 0.010 | 3 | 8 | 2 |
| **Rail** | | | | | | |
| Locomotives | 0.026 | 2 | 0.028 | 7 | 21 | 7 |
| Railyard – UP | 0.057 | 3 | 0.062 | 16 | 46 | 15 |
| **Permitted** | | | | | | |
| CA Waste (10th Street) | 0.029 | 2 | – | – | – | – |
| California Cereal | 0.034 | 2 | – | – | < 1 | < 1 |
| CASS | 0.005 | < 1 | – | – | < 1 | < 1 |
| Dynegy | 0.001 | < 1 | < 0.001 | < 1 | < 1 | < 1 |
| EBMUD | 0.056 | 3 | 0.002 | 1 | 2 | 1 |
| Pinnacle Ag Services | 0.095 | 6 | – | – | – | – |
| Schnitzer Steel – stationary | 0.090 | 5 | – | – | 5 | 2 |
| Sierra Pacific | 0.054 | 3 | – | – | – | – |
| Other | 0.022 | 1 | < 0.001 | < 1 | 2 | 1 |
| **Other** | | | | | | |
| Ferry/Excursion vessels | 0.006 | < 1 | 0.006 | 2 | 5 | 2 |
| Schnitzer Steel – OGV | 0.002 | < 1 | 0.002 | 1 | 2 | 1 |
| Schnitzer Steel – trucks | 0.001 | < 1 | < 0.001 | < 1 | < 1 | < 1 |
| Truck-related businesses | 0.002 | < 1 | 0.002 | 1 | 2 | 1 |
| **Total** | **1.710** | **100** | **0.385** | **100** | **303** | **100** |

**Table 5-2.** Residential (population-weighted) source contributions to excess cancer risk within Zone 2 (3rd Street) and Zone 3 (7th Street). Values have been rounded and may not necessarily sum to the values indicated in the Total row. Port Truck contributions represent those from Port Trucks on all roads and within Port terminals.

| Source Category | Zone 2 | | Zone 3 | |
|---|---|---|---|---|
| | per million | % of total | per million | % of total |
| **Highway** | | | | |
| Non-Trucks | 5 | 1 | 4 | 1 |
| LHDT | 2 | < 1 | 1 | < 1 |
| MHDT/HHDT | 38 | 11 | 22 | 7 |
| **Surface Streets** | | | | |
| Non-Trucks | 4 | 1 | 8 | 3 |
| LHDT | 1 | < 1 | 3 | 1 |
| MHDT/HHDT | 13 | 4 | 108 | 34 |
| **Port** | | | | |
| OGV – maneuvering | 20 | 6 | 16 | 5 |
| OGV – berthing | 23 | 7 | 17 | 5 |
| Dredging | 14 | 4 | 10 | 3 |
| Assist Tugs | 54 | 16 | 42 | 13 |
| Bunkering (tugs, pumps) | 4 | 1 | 3 | 1 |
| CHE | 11 | 3 | 6 | 2 |
| Port Trucks | 8 | 2 | 13 | 4 |
| Railyard – OGRE | 3 | 1 | 2 | 1 |
| Railyard – BNSF | 5 | 2 | 2 | 1 |
| **Rail** | | | | |
| Locomotives | 37 | 11 | 21 | 7 |
| Railyard – UP | 79 | 23 | 27 | 8 |
| **Permitted** | | | | |
| EBMUD | 1 | < 1 | 1 | < 1 |
| Schnitzer Steel – stationary | 7 | 2 | 8 | 2 |
| Other | 1 | < 1 | 2 | < 1 |
| **Other** | | | | |
| Ferry/Excursion vessels | 6 | 2 | 6 | 2 |
| Schnitzer Steel – OGV | 3 | 1 | 2 | 1 |
| Schnitzer Steel – trucks | < 1 | < 1 | < 1 | < 1 |
| Truck-related businesses | 8 | 2 | 1 | < 1 |
| **Total** | **346** | **100** | **323** | **100** |

# 6. Limitations, Uncertainties, and Future Improvements

In this analysis, the District qualitatively evaluated uncertainties associated with the data and methodologies used to create a bottom-up emissions inventory for the West Oakland community, the community-scale modeling approach using the AERMOD dispersion model, and the approach used to quantify air pollutant exposure, cancer risk, and perform the source apportionment. Such assumptions are inherent in efforts to characterize emissions and associated risk in complex settings and can result in or under- or over-predictions in concentration and risk estimates. While a quantitative analysis of the uncertainties may provide more useful information as to the potential variability of impacts, it was beyond the scope of this analysis,[93] especially given that uncertainties for emissions and modeling parameters are generally not available. A qualitative assessment of uncertainties can be useful as a component of a model evaluation, where the quality of the output information (emissions, dispersion factors, concentration and risk calculations) are determined. The following sections summarize common sources of uncertainty associated with the emissions estimation, air dispersion modeling, and risk estimation components of the risk assessment.

## 6.1 Emissions Inventory

There are several sources of uncertainty associated with the bottom-up estimation of emissions from each of the source categories that may affect the subsequent estimation of exposure concentrations and risk characterization. The District identified several emission sources categories where emissions estimates could be improvement.

### 6.1.1 Permitted Stationary Sources

The emissions inventory for permitted stationary source in West Oakland was developed using the District's 2017 CEIDARS report. Rather than following a traditional calendar or fiscal year, the District issues permits to facilities on a rolling 12-month period, and renews those permits every one to three years. Because of this, the emissions shown in the 2017 CEIDARS report may represent a facility's emissions from either 2015, 2016, or 2017. Uncertainties associated with the emission estimates also stem from throughput information, which varies from year to year, and the use of default emission factors. The District did attempt to correct emissions for the largest emissions sources (such as Schnitzer Steel) to better reflect the latest source test results and facility modifications completed by the end of 2017. The District will continue to make improvements to the stationary source database by incorporating source test results as they become available, and by updating emissions factors as necessary.

### 6.1.2 On-Road Mobile Sources

For on-road mobile emissions, uncertainties are primarily associated with link-specific traffic activity, especially fleet mix, and emission factors for Port Trucks, as well as tire wear, brake wear, and road dust.

[93] The District is performing a quantitative evaluation of AERMOD dispersion modeling results for black carbon in a separate study.

*(a) Fleet Mix*

Estimates of fleet mix by roadway link, represented as the fraction of trucks of the total fleet, have significant uncertainties. On surface streets, truck fraction information relied on traffic counts from only four counters over a limited period (1 week) in 2008; the fleet mix could therefore be outdated, and the data from these counter locations may not be representative of all surface streets. On highways, while truck fractions were derived from PeMS, which has higher spatial and temporal coverage (e.g., based on a full year of continuous measurements at several counter locations on each highway), the method of detection still has inherent uncertainties: single loop detectors were used to estimate truck volume based on lane-by-lane flow and occupancy at 5 min resolution, instead of actual truck counts measured by the Automatic Vehicle Classifiers (AVCs) using technologies such as weigh-in-motion (WIM). WIM-based truck traffic counts were available at a limited number of locations but only in 2010, and were therefore not used in this analysis.

The fraction of Port Trucks within the Truck 2 category (MHDTs and HHDTs) was derived using O-D analysis on the StreetLight platform. Data on this platform is GPS-based, and the District designed 49 gates to best capture Port Truck activity in the West Oakland community. There is uncertainty in both actual traffic counts (as no evaluation was performed) and the limited spatial coverage of gates selected.

For the West Oakland community, the VMT-based overall Port Truck fraction within the Truck 2 category derived from StreetLight for 2017 is about half of that estimated in the 2009 truck survey. The decrease could be largely explained by the truck prohibition regulation the City of West Oakland has implemented since 2010. However, further verification is needed when the direct measurements in more recent years become available. For example, a study using video footage acquired from Automated License Plate Readers (ALPR) to collect vehicle counts and license plates at key locations in West Oakland could be used to better estimate the size and characteristics of the Port Truck fleet. The license plate data would provide the necessary information to link registration data from the Department of Motor Vehicles (DMV) or International Registration Plan (IRP) to a list of Vehicle Identification Numbers (VINs) from the Port of Oakland and the Drayage Truck Registry database, which could be used to obtain import vehicle characteristics (e.g., model year, weight class, emission control technologies, and whether the vehicle is a Port drayage truck or not). These characteristics could then be used to better estimate emission factors and emissions. If implemented, the proposed study would provide ground-truthing to improve our understanding and help validate the fleet mix data used in this analysis.

*(b) Emission Factors*

Emission factors for on-road mobile sources were obtained from EMFAC2017 and CT-EMFAC2017, which were used to estimate emissions from roadways in West Oakland, as well from fleet operating at truck-related businesses and Port Trucks operating within Port terminals.

In the future, brake wear, tire wear and re-entrained road dust emissions will dominate total PM emissions, due to increasingly stringent standards for exhaust emissions (Reid *et al.* 2016). However, uncertainties in the emission factors from these processes is much higher because of their complexity and limited research, as they are currently unregulated processes. The methods used to estimate emission factors are either outdated or based on limited measurements or stringent assumptions. For example, brake wear emissions factors in EMFAC2017 are assumed to be independent of vehicle travelling speed, despite the fact that there are often more braking events during low speed driving. CARB is sponsoring four studies that are expected to be completed next year to improve the emissions factors for brake and tire wear. While road dust emissions are estimated using AP-42 methodology, the empirically-derived equation (see **Section 2.3.3**(b)) does not take into account vehicle speed, which can affect the emission factor (U.S. Environmental Protection Agency 2011), and does not restrict the maximum emissions by the number of vehicles. Silt loading values are inherently site-specific as they vary by road type and geographic locations. In this analysis, the county-average default values were used since values specific to West Oakland roadways are not available. Uncertainty in road dust emissions is further complicated by the mismatch between roadway classification systems of the data available, where freeway on- and off-ramps were assigned to multiple functional classes and thus numerous CARB road types, which are used to determine the silt loading factor by roadway segment. This likely resulted in a slight overestimate of road dust emissions from these roadway segments.

Of critical importance to West Oakland is the estimation of emissions from Port Trucks, which in part relies on the emission factors. Some field studies have suggested that there are uncertainties in the emission factors for Port Trucks for specific model years; for running exhaust emission factors for model years 2007 to 2009, a ~ 50% increase in black carbon and ~ 100% increase in $PM_{2.5}$ between calendar years 2013 and 2015 has been observed, while EMFAC2017 estimates only a ~ 26% increase in $PM_{2.5}$ (Preble *et al.* 2016). The inconsistency is likely due to the underestimates of high emitters caused by deterioration of Diesel Particle Filters (DPFs) in EMFAC2017. Further drayage truck studies conducted near the Port of Los Angeles exhibited a similar increase in emission factor in 2015, but showed emission factors in 2017 were closer to 2013 levels (Bishop and Haugen 2018). This suggests that the underestimate of emission factors did not continue in 2017. As noted in Bishop and Haugen (2018), a potential explanation for fewer high-emitting vehicles in 2017 is that there was increased roadside compliance testing and issuance of statewide citations since 2015 by CARB; this may have encouraged corrective maintenance or relocation for some of the high-emitting trucks observed in 2015.

To develop a better understanding of how DPF failure rates can affect emission factors of Port Trucks, the District conducted a sensitivity analysis for 2017 where EMFAC2017-based emission factors of affected model years were adjusted to reflect the same deteriorations observed by Preble *et al.* (2016). The analysis suggested a < 50% underestimate in Port Truck $PM_{2.5}$ running exhaust emissions, which corresponds to a ~ 1% underestimate in the overall 2017 emissions inventory for West Oakland. For future years 2024 and 2029, there should be no impact as the 2007-2009 model year group will be phased out by January 1, 2023 according to CARB's Truck and Bus Rule.

*(c) Other Emission Processes*

While the inventory developed for this analysis represents the majority of $PM_{2.5}$ and DPM from on-road mobile source activity, emissions generated from other operational processes (e.g., start emissions) may be developed in future emissions inventories and may be included in air dispersion modeling if relevant spatial and temporal data are available.

### 6.1.3 Truck-Related Businesses

Estimating emissions from truck-related businesses is inherently uncertain since business operations, such as activity patterns and fleet mix, are generally unknown. Truck fleet size estimates were based on responses District surveys (2009 or 2019 when available). When the District did not receive a response, a default truck fleet size and mix were assigned to the business. The District also applied a default truck fleet mix based on the 2009 West Oakland Truck Survey since fleet mix was not reported in the 2019 survey. The number of trucks reflects the trucks owned or operated by the business but excludes other trucks that visit the premises for business purposes.

In previous surveys conducted by the District (Bay Area Air Quality Management District 2009), the District found that all trucks complied with the 5 min idling regulation adopted by CARB (California Air Resources Board 2004). To be conservative, the District intentionally used a higher value of 15 min of idling per truck trip for all businesses. The accuracy of this assumption is unknown; this will certainly cause an over-prediction of air pollutant exposure from this source category, but without a more detailed or recent survey, it is difficult to quantify the uncertainties.

The results of this analysis suggest that truck-related businesses are relatively minor contributors to the overall air pollution and cancer risk in West Oakland. However, the District may consider a more detailed survey in the future to ensure the accuracy of the predictions and include any changes in business operations. The District may also incorporate additional truck-related businesses as information becomes available.

### 6.1.4 Port-Related Sources

Emissions for Port related activities were taken from the 2017 Port Inventory, prepared by Ramboll (2018). Because the District relied on data provided by the Port, it is difficult to quantify the uncertainties in the emissions estimates. In general, emission inventories have several sources of uncertainties including emission factors, equipment population and age, equipment activity, load factors, and fuel type and quantity. Most uncertainties are associated with the emission factors and engine load factors that were obtained from previous studies, literature reviews, and emission models developed by CARB. To improve the accuracy of the emissions estimates (and reduce uncertainty), the District only used emissions developed using more accurate data on OGV speeds inside the Bay, more realistic OGV emission factors under low load operations, and inclusion of emissions from bunkering that was not quantified in past inventories.

The 2017 Port Inventory, and therefore the emissions inventory presented herein, excludes emissions from smaller emissions sources within the Port, such as TRUs and gasoline powered light-duty vehicles. However, TRUs plug into shore power at the Port (which means they do not run their own engines, thus reducing emissions), and there are few gasoline powered vehicles compared to diesel-powered trucks operated by the Port. Therefore, emissions from these sources are not considered significant, and the overall effect on the Port emissions inventory is minimal.

### 6.1.5 UP Locomotives and Railyard

Freight activity is not always predictable and annual emissions vary by year depending on regional economics. Although the District used the most accurate emissions available, the District can improve the rail emissions inventory by (1) using Tier-specific emissions factors for locomotives and switchers, (2) including other activities and associated emissions at the railyard, and (3) spatially and temporally allocating activities and emissions along the yard and rail lines.

Using a fuel-based emissions inventory is the preferred method for developing an accurate inventory, as performed for the UP freight locomotives and railyard. The District converted the fuel consumption by rail link provided by UP to emissions using a fuel-based emission factor obtained from EPA, which are based on average operating duty cycles and an estimated average nationwide fleet mix for both switcher and line-haul locomotives. Using locomotive-specific conversion factors would yield better estimate of emissions, as fleet mixes vary from railroad to railroad and can be highly regionalized. And, though the use of Tier-specific emission factors (e.g., as shown in **Table 6-1**) could be used to improve the emissions inventory, it is also recognized that individual engines and thus emission factors are highly variable within Tier categories, depending on the specific locomotive model, operation cycle, and condition of operation (Bergin *et al.* 2012). In this analysis, it is not known whether the use of nationwide fuel-based emission factors may have resulted in under- or overestimates of emissions, given that detailed information on the locomotive characteristics and activity is not available.

**Table 6-1.** Fuel-based $PM_{10}$ emission factors for locomotive engines by Tier. Values from California Air Resources Board (2017c).

| Tier | $PM_{10}$ (g/gal) |
|---|---|
| Pre-Tier | 6.66 |
| Tier 0 | 6.66 |
| Tier 0+ | 4.16 |
| Tier 1 | 6.66 |
| Tier 1+ | 4.16 |
| Tier 2 | 3.74 |
| Tier 2+ | 1.66 |
| Tier 3 | 1.66 |
| Tier 4 | 0.31 |

Another improvement for future modeling efforts is the inclusion of other sources of emissions at the UP railyard. This analysis focused on emissions from line-haul locomotives and switchers, and excluded other sources of emissions at the railyard due to lack of data. In 2008, CARB completed an HRA for the UP railyard in Oakland that evaluated the health impacts associated with TACs emissions (California Air Resources Board 2008b). According to this report, activities in the railyard include receiving inbound trains, switching rail cars, loading and unloading intermodal trains, storing intermodal containers and truck chassis, assembling outbound trains, releasing outbound trains, and repairing freight cars and intermodal containers/chassis. Specific emission sources associated with these activities include locomotives, on-road diesel-fueled trucks, CHE, TRUs and refrigerated rail cars (reefer cars), and fuel storage tanks. DPM emissions from the UP railyard in 2005 inventory from California Air Resources Board (2008b) and the 2017 fuel-based emissions in this Action Plan are presented in **Table 6-2**. Although the District's analysis did include the largest sources of emissions primarily from switcher locomotives moving rail cars, line-hauls, and on-road trucks, the analysis did exclude cargo handling equipment and TRUs/reefer cars which contribute 49% of the emissions in the 2005 inventory. For this analysis, UP confirmed that the District modeled the most significant sources of diesel PM at the railyard and that the excluded sources were minor (James Brannon, UP, personal communication, 4 April, 2019). Additionally, at the time of this analysis, emissions from these other sources were not readily available from UP, and it is unknown whether the current activity levels are consistent with operations in 2005. The decline in switcher and line-haul emissions may be an indication that non-modeled sources would likewise experience a decline due to the introduction of new equipment and fleet turnover, resulting in lower emissions.

**Table 6-2.** UP railyard DPM emissions (tpy) in 2005, from California Air Resources Board (2008), and 2017, based on the West Oakland Action Plan (this document). The percent change from 2005 to 2017. The 2017 emissions from freight haul lines includes emissions from both UP and BNSF locomotives. "n/a" indicates that the source category was not included in the 2017 emissions inventory for UP operations.

| Source Category | 2005 | % total | 2017 | % total | % change |
|---|---|---|---|---|---|
| Locomotives | | | | | |
| Haul lines (freight) | 1.6 | 14 | 0.5044 | 30 | -68.5 |
| Switchers (railyard) | 1.9 | 17 | 1.1098 | 67 | -41.6 |
| Service/testing | 0.5 | 4 | n/a | – | – |
| TRUs, reefers | 3.2 | 28 | n/a | – | – |
| CHE | 2.2 | 19 | n/a | – | – |
| On-road trucks | 1.9 | 17 | 0.0416 | 3 | -97.8 |
| **Total** | **11.3** | **100** | **1.6558** | **100** | |

The last improvement is the spatial and temporal allocation of emissions at specific railyard source locations. At the time the modeling was completed, information regarding locations of specific sources was not known. Instead, switcher engines and on-road trucks emissions were allocated on to an area that encompassed all of the rail lines, intermodal gates, locomotive service, and main yard. In subsequent discussions with UP, they confirmed that individual source locations identified in the 2008 CARB report were valid for 2017 operations (Gary Rubenstein, personal communication, 5 April, 2019; see **Figure 6-1**). The modeling assumed constant activity throughout the year but adjustments can be made in the modeling to account for temporal variations in activity level by season, time of day, or weekly.

UP is in the process of developing a detailed, comprehensive emissions inventory for the Oakland railyard which is expected to be completed by the end of 2019. UP expects to capture individual locomotive characteristics and movements to develop a bottom-up inventory of sources and emissions in the railyard. The District plans to use this detailed inventory in future UP emissions estimates that will address most of the uncertainties identified in this analysis.

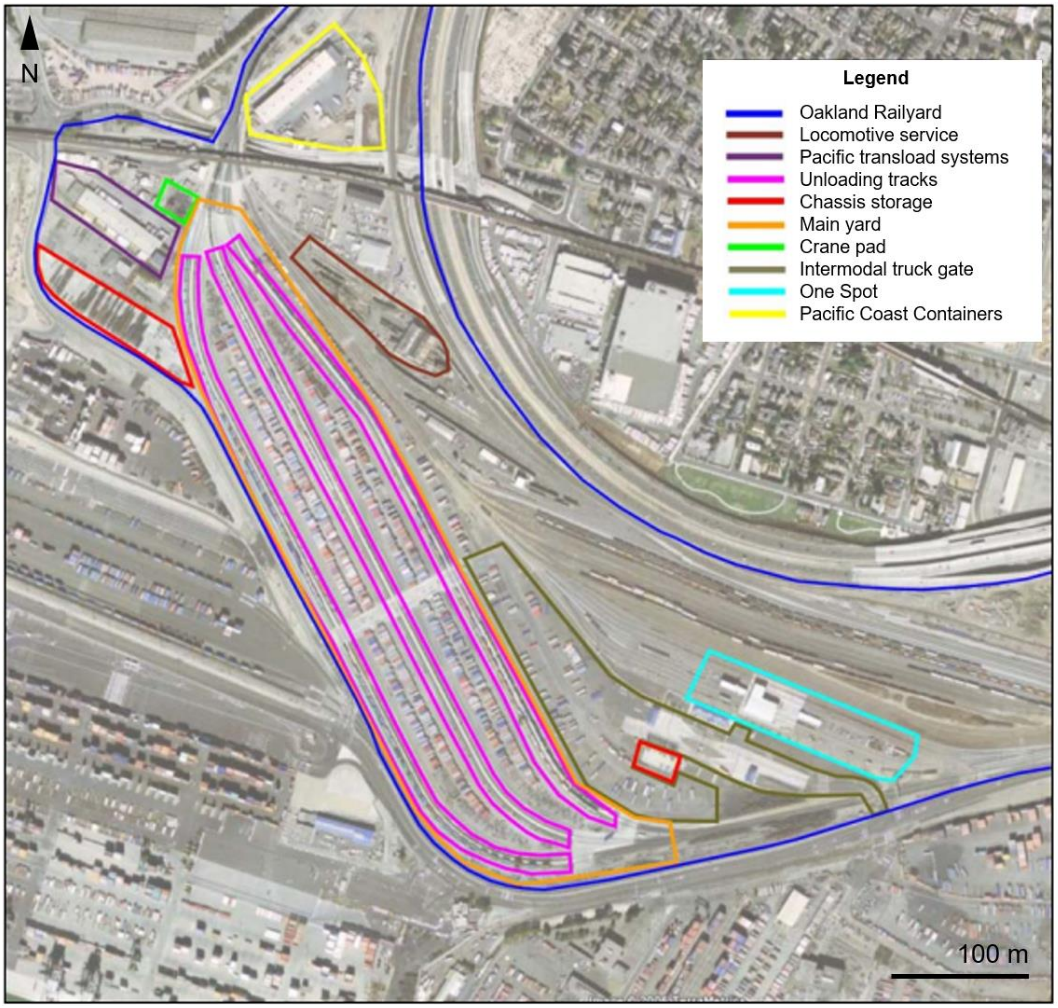


**Figure 6-1.** Layout of operations at the UP railyard in West Oakland. The components delineated represent different emissions sources (obtained from Gary Rubenstein, personal communication, 5 April, 2019).

### 6.1.6 Omitted Emissions Sources from Air Dispersion Modeling

Emissions from other sources that were not included in the community-scale air dispersion modeling were estimated using a top-down approach, as reported in **Table 2-3**. Further refinements to the emissions estimates of these source categories, in addition to their temporal and spatial allocation, would further improve the estimates of community exposure in West Oakland and source apportionment of local concentrations and excess cancer risk as presented in **Section 4**.

*(a) Commercial Cooking*

Commercial cooking emissions for West Oakland were estimated by disaggregating the District's emissions estimates for Alameda County by using spatial surrogate data developed for the regional modeling. The spatial surrogate for commercial cooking was based on the fraction of Alameda

County restaurants that fall within the West Oakland community-scale Source Domain. Approximately 10% of Alameda County restaurants fall within the West Oakland domain, resulting in 20.63 tpy of $PM_{2.5}$ emission in 2017.

To start to refine the District's understanding of commercial cooking emissions at a community-scale in West Oakland, specific restaurant locations were identified from a database purchased from InfoUSA.[94] There are 537 restaurants within the West Oakland Source Domain, where most of the facilities are in Chinatown (south of Downtown), southwest of the West Oakland community (**Figure 6-2**). In fact, only 74 of the restaurants fall within the main residential area of West Oakland, some of which may not use cooking devices that emit $PM_{2.5}$ (e.g., charbroilers, deep fat fryers, or griddles). Additional analyses are underway to evaluate the potential impact of commercial cooking in West Oakland, especially given that the majority of commercial cooking facilities are generally downwind of the West Oakland community.

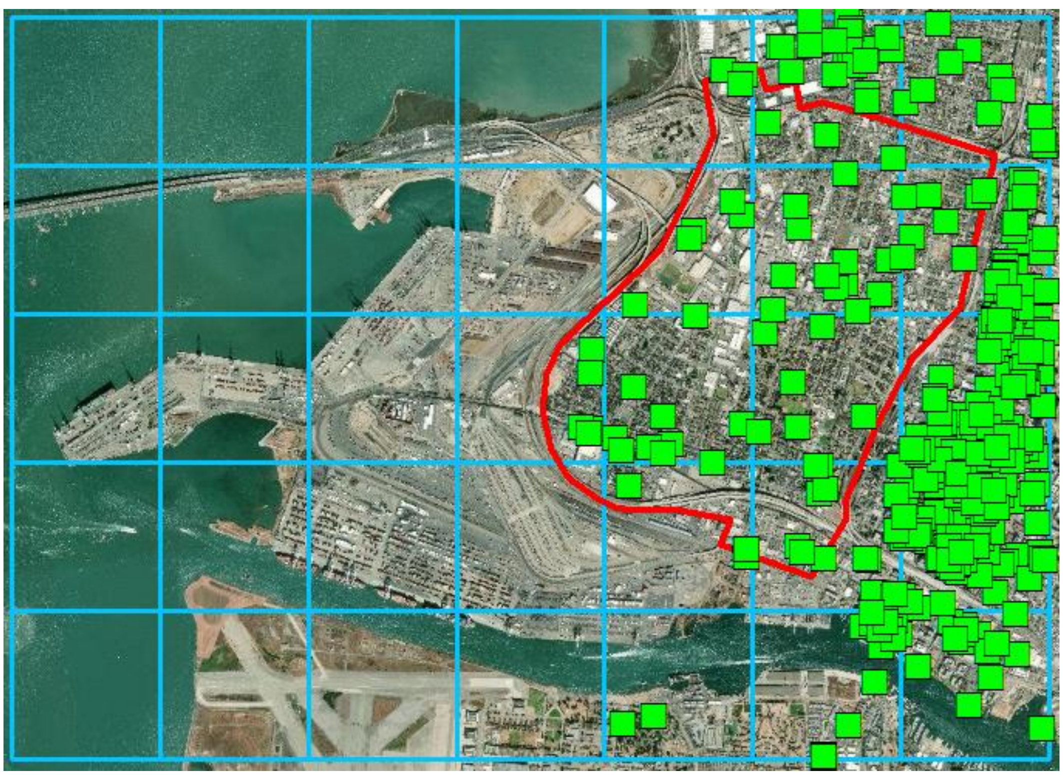

**Figure 6-2.** Restaurant locations (green squares) within the West Oakland Source Domain (blue grid). The major residential area of the West Oakland community is outlined (red line).

[94] https://www.infousa.com/

*(b) Construction*

Emissions from construction equipment and construction dust for West Oakland were estimated by disaggregating CARB's emissions estimates for Alameda County using spatial surrogate data developed for the regional modeling. Alameda County emissions data were obtained from CARB's 2016 SIP Emissions Projections Tool,[95] and the spatial surrogate was developed based on land use data from ABAG. Specifically, ABAG's Existing Land Use Data for 2000 and 2005 were compared to identify land use changes and determine where construction activity likely occurred. This approach leads to high uncertainty in emission estimates for 2017, as construction activity is highly transient, changing in scope and location from year to year. Construction emissions were not included in the community-scale modeling for West Oakland due to uncertainties associated with 2017 emission estimates and the spatial distribution of construction activities in the community. ABAG has not updated the Existing Land Use Data since 2005, and the District is currently exploring other sources of information for recent and projected construction activity in West Oakland.

*(c) Transport Refrigeration Units (TRUs)*

Emissions from TRUs were estimated at the county-level using CARB's OFFROAD model. The District disaggregated Alameda County TRU emissions to West Oakland using an industrial land use spatial surrogate which was derived from ABAG's 2005 Existing Land Use Data. Based on this surrogate, ~ 4% of Alameda County TRU emissions occur in West Oakland.

CARB has also provided the District with estimates for TRU emissions in West Oakland. CARB allocated a portion of Alameda County emissions to West Oakland using a spatial surrogate based on facilities that operate TRUs or are frequented by TRUs.[96] Such facilities include grocery stores, liquor stores, cold storage warehouses, and trans-load facilities. Approximately 80% of West Oakland emissions were classified by CARB as large (> 200,000 $ft^2$) and medium (50,000 – 200,000 $ft^2$) sized facilities. The remaining 20% of TRU emissions were allocated to operation on roadways within West Oakland.

The District's TRU emissions estimate for West Oakland are about half of CARB's estimate (**Table 6-3**). The District plans to investigate this further by contacting the 10 large- and medium-sized facilities in West Oakland identified by CARB to obtain more information regarding their TRU activity. TRU emissions may then be refined and/or included in future community-scale modeling.

**Table 6-3.** 2017 TRU emissions for Alameda County and West Oakland.

| Estimated by | Area | $PM_{2.5}$ (tpy) | DPM (tpy) |
|---|---|---|---|
| CARB | Alameda County | 6.57 | 7.30 |
| | West Oakland | 0.49 | 0.53 |
| District | West Oakland | 0.24 | 0.26 |

95 https://www.arb.ca.gov/app/emsinv/2016ozsip/2016ozsip/.
96 As documented in a memo, *Spatial Allocation Methodology of Transportation Refrigeration Unit (TRU) Emissions for AB617 Communities*, provided to the District by CARB on May 30, 2019.

*(d) Residential Wood Combustion*

The District developed a top-down emission inventory for residential fuel combustion in West Oakland by disaggregating county-level emissions estimates using the proportion of primary heating fuel used by households assigned to wood combustion from the 2010 Census data. This approach results in uncertainties for wood combustion emissions, as some homes may burn wood in fireplaces recreationally, but not report wood as the primary heating fuel.

Past residential wood combustion surveys conducted by the District did not include homes in West Oakland. In addition, community members have reported backyard burning that may not be reflected in the District's residential wood combustion emissions estimates. Due to these uncertainties, and especially given the lack of spatial information, this source category warrants further investigation and was not included in community-scale modeling efforts.

## 6.2 Air Dispersion Modeling

While AERMOD is a state-of-the-art dispersion model for near-field applications, there are still inherent uncertainties associated with the model calculations.

### 6.2.1 Model Formulation

Generally, a model is a (often) simplified representation of a real-world system, where complex processes are parameterized and characterized using equations that are solved by a computer. Some uncertainties in the results are inherent to a model itself, and thus may be referred to as "irreducible" errors or uncertainties. The District used the AERMOD dispersion model to estimate the dispersion factors and consequently pollutant concentrations in West Oakland to which the population could be exposed. AERMOD uses simplified atmospheric physics and scaling concepts to simulate air pollutant dispersion. Some uncertainties in the results arise from the model's inability to represent the complex aerodynamic and dispersion processes.

Specifically, AERMOD is a steady-state plume model; this means that only a single set of temporally averaged (usually 1 h) meteorological parameters are used to represent the atmospheric state over the averaging time at any point in space, i.e., meteorological conditions are spatially homogeneous. This can potentially be problematic in coastal areas or in areas of complex terrain, where wind fields can have high spatiotemporal variability. Given the proximity and orientation of the Bay surrounding the West Oakland community, only using a single meteorological dataset introduces uncertainties to the potential dispersion of pollutants. Wind directions from the meteorological dataset from OST, located to the northwest of the modeling domain, used in AERMOD were predominantly from the northwest (**Figure 3-2**). These winds influence the dispersion from emissions sources at any location within the domain, though winds likely have a more southerly component at locations along the channel and Inner Harbor. As a result, dispersion to locations in the northeastern section of the domain may be slightly underestimated. And, while AERMOD uses a dividing-streamline concept to model dispersion of plumes around topographic features (Cimorelli *et al.* 2004, Snyder *et al.* 1985), the inherent uncertainties in this formulation are likely less important for dispersion modeling in West Oakland, as the area is relatively flat (**Figure 3-19**).

AERMOD also does not account for small-scale flow patterns and dispersion around structures or recirculation and channeling in urban canyons, as is typical in urban areas with multi-story buildings. While AERMOD can include some of the influence of building wakes on plume rise and dispersion (using the Plume Rise Model Enhancements [PRIME] model downwash algorithm [Schulman *et al.* 2000]), this calculation feature can only be used for point sources (Cimorelli *et al.* 2004); most of the emissions sources in this analysis were modeled as area and volume sources.

The performance of the AERMOD modeling system has been evaluated against several observational datasets (Perry *et al.* 2005); the accuracy of the output depends on the pollutant, type of source modeled, terrain (flat or complex), whether or not wake effects are accounted for, and the averaging period of results compared to observations (e.g., 3 h, 24 h). AERMOD tends to perform well, especially in reproducing the highest concentrations of pollutant distributions (Perry *et al.* 2005), which are often used to assess compliance with air quality regulations (e.g., National Ambient Air Quality Standards [NAAQS]) or investigate "worst-case scenarios." However, if there are additional "reducible" uncertainties associated with input data (e.g., wind direction), "composite errors in the highest estimated concentrations of 10 to 40 percent are found to be typical," (U.S. Environmental Protection Agency 2017, paragraph 4.1(e)). AERMOD may also underestimate lower concentrations, which can namely impact annual average estimates (Perry *et al.* 2005). While the overall distribution of pollutant concentrations may be well captured by AERMOD, the exact time and location of the concentrations may be less certain (Cimorelli *et al.* 2004, Perry *et al.* 2005), especially given the steady-state formulation.

That being said, AERMOD is currently the preferred model for near-field (≤ 50 km) dispersion of emissions, as listed in EPA's Guideline on Air Quality Models ("Appendix W" to 40 CFR Part 51; U.S. Environmental Protection Agency 2017). AERMOD is routinely used in research and regulator frameworks, performs better than similar models (e.g., Perry *et al.* 2005), and has been applied to estimate pollutant concentrations in similar studies (e.g., California Air Resources Board 2008b). The District has evaluated and used an appropriate meteorological dataset such that "reducible" uncertainties are limited (see **Section 3.2.1**). As future modeling efforts are implemented, the District will ensure that the latest versions of each model in the AERMOD modeling framework are used to reduce some of the inherent uncertainty.

### 6.2.2 Dispersion Modeling and Emissions Source Parameters

The selection dispersion modeling and emissions source parameters use for AERMOD dispersion modeling also introduce limitations and uncertainties to the results. Some of these are discussed below:

- **Urban surface roughness length**: All sources were modeled as urban sources with a surface roughness length set to 1.0 m. While this is the default value for regulatory applications in AERMOD (U.S. Environmental Protection Agency 2018b), and is considered appropriate for most applications (U.S. Environmental Protection Agency 2015a) as it is representative of centers of large towns and cities or landscapes with regularly-spaced large elements, a more representative value could be derived and used West Oakland. Though, the default value was used in this analysis to be consistent with other permit modeling performed by the District.

- **Building downwash**: The effects of building downwash were not accounted for. The building downwash option in AERMOD, using the PRIME algorithm, accounts for the buildup of air pollution in a building's cavity due to recirculating winds created by nearby buildings; the effects are governed by the building geometry and the wind direction. Typically, building downwash leads to higher concentrations downwind of the (stack) emission source. Parameters required to use this feature include the building height and dimensions; for West Oakland, these parameters could be derived from the lidar dataset used (**Section 3.4.3**(b)) or similar dataset. However, the building downwash algorithms can only be applied to point sources; they do not apply to volume or area sources, which were the primary source types used in this analysis. The District did not apply building downwash to point sources for consistency.

- **AERMOD source type selection**: Source types must be selected by the modeler to represent the physical geometry and emission characteristics of emission sources. In AERMOD, these are generally point, area, or volume sources. While the District selected source types based on general modeling guidance, previous studies, and/or engineering judgements, some AERMOD source types may not adequately capture the emissions characteristics of certain sources, while the District did not have necessary configuration information for others (e.g., see the discussion below for permitted stationary sources).

- **Missing parameters**: When modeling parameters were not known, the District used default model values or values based on general modeling guidance, previous studies, and/or engineering judgements. Modeling parameters were often selected so that the modeling would produce more conservative results.

While there are uncertainties related to dispersion modeling parameters used for all emissions source categories, those that could be improved upon in future modeling analyses are discussed below:

**Permitted Stationary Sources**: Only a limited number of facilities had complete release parameter information (**Table 2-5**). Missing parameters, such as stack height and diameter, were assigned "default" values (**Table 3-2**), which were based on previous modeling studies conducted by the District. Moreover, in spite of significant effort expended to improve the exact location of stacks and emission sources at permitted facilities, errors and uncertainties persist due to the complex arrangement of the facilities. The District also had to use either a single volume source or point source for each permitted stationary source; however, the District recognizes that some sources, particularly fugitives, tanks, and waste piles, may be more accurately modeled as area sources. In future modeling analyses, the District may seek to remove this restriction and include more site-specific emissions release parameters, where available.

**On-road mobile sources**: The main uncertainties in the modeling parameters for on-road mobile sources is related the source (roadway) width ($W$), and the release heights ($Relhgt$) assigned to each volume source. First, the width determines the initial horizontal dispersion coefficient ($Syinit$), the size of the exclusion zone ($r_{EZ}$), and therefore which receptors from the "master grid" must be excluded (**Section 3.4.1**, **3.5**) and where dispersion factors must be imputed (**Section 4.1.1**). In this analysis, the roadway width was based on road type class (originally based on the Citilabs dataset) and FHWA guidance. The highest degree of uncertainty likely applies to on- and off-ramps, since they were distributed among multiple road type classes. Second, since current EPA guidance (U.S. Environmental Protection Agency 2015b) does not include recommendations on how to model on-road mobile source emissions on elevation roadways in AERMOD, the District adjusted the release heights to account for the elevation of roadways. The structure elevation data was based on a lidar dataset (**Section 3.4.3**(b)). The resulting structure heights appeared to be overestimated (and "noisy," with a higher degree of spatial variability than expected) on surface streets (**Figure 3-5**), where it is assumed that roadways are generally at grade. An improvement or further assumption could be that structure elevation data should only be assigned to freeways and on- and off-ramps, since they are the largest source of on-road mobile source emissions, and are most likely to be above grade. This would require further refinement of the road type classes assigned to each roadway segment. Otherwise, an alternative dataset could be used, such as the Caltrans automated pavement condition survey (APCS).[97] This dataset contains the start and end elevations of roadway segments for freeways in California. As such, the elevation along each segment could be interpolated to volume source locations. However, since the primary purpose of the APCS data is to assess pavement conditions, the data is not necessarily well calibrated. Using the dataset would also require more refined geospatial processing techniques to properly match segments from the APCS shapefile to those in the Citilabs dataset. The APCS dataset also does not include all elevated roads and on- and off-ramps in West Oakland. In summary, both the width and release heights of the volume sources used to model emissions form on-road mobile sources could be improved with further refinement of road type classification, especially for on- and off-ramps.

Since there can be discrepancies between real-world emissions characteristics from a source and how they are represented in AERMOD, exposure concentrations derived in this analysis should be taken to represent approximate exposure concentrations.

### 6.2.3 Receptors

Receptors were placed at a height of 1.8 m agl; this parameter is used to conservatively model exposures within an individual's "breathing zone." Using the flagpole receptors may not always capture the highest predicted concentration, especially in cases where both the source and the receptors are elevated above the surface terrain. Concentrations estimated at receptors also only represent those that an individual may be exposed to outdoors (indoor air quality and exposure is not assessed).

[97] Currently, the most recent dataset is the 2016 Elevation APCS dataset ("Elevation2016APCS", created July 27, 2016, by the Caltrans Office of Pavement Management and Performance; available at: http://www.dot.ca.gov/hq/tsip/gis/datalibrary/Metadata/Elevation.html).

## 6.3 Risk Assessment Methodology

A risk assessment is a decision-making tool that can be used to estimate the probability of adverse health effects in humans exposed to pollutants in the environment. Risk assessment methodology uses an estimated level of contamination in the environment (concentration) while assuming a constant rate of intake and length of exposure, combined with chemical effect factors, to produce cancer risks. While mean parameters values derived from scientifically defensible studies are a reasonable estimate of central tendency, the exposure variables used in this assessment are only estimates. Therefore, that is to say, the resulting cancer risk estimated in this analysis is not the expected rate of illness in West Oakland, but is rather an estimate of potential risk that can be used to compared to risk from other sources or in communities if using a similar methodology.

Risk assessments are designed to be overly conservative to ensure that the probability, expressed as the chance of developing cancer for one million people that are exposed at a specific location, are health protective of the most sensitive population. EPA notes that the conservative assumptions used in a risk assessment are intended to assure that the estimated risks do not underestimate the actual risks posed by an emissions source, and that the estimated risks do not necessarily represent actual risks experienced by populations at or near a source (Environmental Protection Agency 1989). The methodology and parameters used in risk assessments have long been established and are accepted practice for comparing exposure and health impacts between sources. The main assumptions within the risk assessment methodology (based on OEHHA's guidance) are:

(1) Ambient pollutant concentrations (estimated from dispersion modeling in this analysis) are constant over the exposure period (30 years), while in reality, average pollutant concentrations vary on many time scales, including daily, seasonally, and inter-annually.
(2) An individual is exposed *in vitro* starting from the last trimester of pregnancy and continues to reside at the same location into adulthood and only nominally absent from the location of exposure.
(3) Some chemical toxicity values are estimated based on *in vivo* studies using animals that are extrapolated to estimate effects on humans. High chemical doses administered to these animals are often much higher than what human are exposed to in the environment.

All of these factors are designed to overestimate exposure, cancer risk, and health effects to humans. Thus, while resulting in conservative cancer risk estimates, each assumption contributes to inherent uncertainties in the results. Further uncertainties lie within the variability of in emissions from different emissions sources (which result in fluctuations of pollutant concentrations over time), changes in daily human activity patterns and therefore location of exposure (i.e., not always at the place of residence), and range of individual responses to chemical exposures (which could depend on genetics, immune system response, metabolism, etc.).

ASF values, as recommended by OEHHA, increase the effective CPF to account for increased sensitivity of younger individuals to cancer-causing pollutants. However, there may be pollutants in the urban environment whose cancer toxicity is amplified due to the presence of other pollutants (synergic effects) or because of pre-existing conditions or sensitivities; these effects are not accounted for. Furthermore, there may be pollutants whose toxicity is not yet recognized or quantified and, as such, is unaccounted for in this analysis.

While the District used CPF values recommended by OEHHA to estimate cancer risk associated with pollutant exposures from the modeled emissions sources, these values are uncertain in both the estimation of response and dose for many pollutants. For example, the level of risk for DPM is uncertain; public health and regulatory organizations, such as the International Agency for Research on Cancer (IARC), World Health Organization (WHO), and EPA, agree that diesel exhaust may cause cancer in humans, though there is uncertainty in the CPF value (see Scientific Review Panel 1998, Office of Environmental Health Hazard Assessment 2011). As such, any adopted changes to CPFs or exposure factors will be incorporated in future risk assessments for West Oakland.

# 7. References

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# Attachment 1. Toxic Air Contaminants

**Table A-1-1.** Inhalation CPF by Chemical Abstract Service (CAS) number. Inhalation CPFs are adjusted to account for multi-pathway slope factor, where applicable (consistent with Regulation 2-5). Chemicals listed are those that were emitted from one or more sources in the West Oakland emissions inventory (Section 2). Only those chemicals with an associated inhalation CPF were modeled and therefore included in the calculation of cancer risk (Section 4).

| CAS number | Chemical name | Inhalation CPF [(mg/(kg day))$^{-1}$] |
|---:|---|---|
| 71-55-6 | 1,1,1-Trichloroethane | – |
| 75-35-4 | 1,1-Dichloroethylene | – |
| 107-06-2 | 1,2-Dichloroethane | 0.072 |
| 106-99-0 | 1,3-Butadiene | 0.6 |
| 542-75-6 | 1,3-Dichloropropene | 0.055 |
| 106-46-7 | 1,4-Dichlorobenzene | 0.04 |
| 12391-1 | 1,4-Dioxane | 0.027 |
| 1746-01-6 | Chlorinated dioxins and furans (2,3,7,8-Tetrachlorodibenzo-p-dioxin and related compounds; California TCDD equivalent) | 650000 |
| 75-07-0 | Acetaldehyde | 0.01 |
| 67-64-1 | Acetone | – |
| 10-702-8 | Acrolein | – |
| 7664-41-7 | Ammonia | – |
| 7440-38-2 | Arsenic | 180 |
| 71-43-2 | Benzene | 0.1 |
| 7440-41-7 | Beryllium | 8.4 |
| 7440-43-9 | Cadmium | 15 |
| 75-15-0 | Carbon Disulfide | – |
| 124-38-9 | Carbon Dioxide ($CO_2$) (non-biogenic) | – |
| 630-08-0 | Carbon Monoxide (CO) | – |
| 67-66-3 | Chloroform | 0.019 |
| 7440-50-8 | Copper and Copper Compounds | – |
| 18540-29-9 | Chromium (hexavalent, 6) | 560 |
| 9-90-1 | DPM (Diesel Exhaust Particulate) | 1.1 |
| 107-21-1 | Ethylene Glycol | – |
| 111-76-2 | Ethylene Glycol Monobutyl Ether | – |
| 100-41-4 | Ethylbenzene | 0.0087 |
| 50-00-0 | Formaldehyde (gas) | 0.021 |
| 7647-01-0 | Hydrogen Chloride | – |
| 7664-39-3 | Hydrogen Fluoride | – |
| 7783-06-4 | Hydrogen Sulfide | – |

| CAS number | Chemical name | Inhalation CPF $[(mg/(kg\ day))^{-1}]$ |
|---|---|---|
| 64742-48-9 | Isoparaffinic solvents C10+ | – |
| 67-63-0 | Isopropyl Alcohol | – |
| 7439-92-1 | Lead and Lead Compounds | 0.98 |
| 7439965 | Manganese & Manganese Compounds | – |
| 7439976 | Mercury (Inorganic) | – |
| 74-82-8 | Methane ($CH_4$) | – |
| 67-56-1 | Methanol | – |
| 74-83-9 | Methyl Bromide | – |
| 78-93-3 | Methyl Ethyl Ketone | – |
| 75-09-2 | Methylene Chloride (Dichloromethane) | 0.0035 |
| 91-20-3 | Naphthalene | 0.12 |
| 7440-02-0 | Nickel and Nickel Compounds | 0.91 |
| 10024-97-2 | Nitrous Oxide ($N_2O$) | – |
| 110-54-3 | n-Hexane | – |
| 98-56-6 | Parachlorobenzotrifluoride (PCBTF) | – |
| 50-32-8 | Polycyclic aromatic hydrocarbons (PAH) (as benzo(a)pyrene equivalent) | 86 |
| 108-95-2 | Phenol | – |
| 1336-36-3 | Polychlorinated Biphenyls (PCB) | 74 |
| 7782-49-2 | Selenium | – |
| 127-18-4 | Tetrachloroethylene (Perchloroethylene) | 0.021 |
| 108-88-3 | Toluene | – |
| 79-01-6 | Trichloroethylene | 0.007 |
| 1330-20-7 | Xylenes (technical mixture of m, o, p-isomers) | – |

# Attachment 2. Permitted Stationary Sources

**Table A-2-1.** Permitted stationary sources in the West Oakland Source Domain. "M" indicates whether the facility was modeled (×) or not (–); facilities were not modeled if either (a) there were no $PM_{2.5}$ or TAC emissions available in the database for the base year, or (b) all TAC emissions were associated with pollutants that did not have associated cancer risk toxicities. The plant number (Plant No.) indicates a unique facility. Cities are abbreviated as "O" for Oakland, "A" for Alameda, and "E" for Emeryville. The SIC code indicates the Standard Industrial Classification code. The values of *x* and *y* are the coordinates of the source centroid in UTM zone 10 North (NAD83).

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 24024 | 2150 Webster Holdings VII | 2150 Webster Street | O | 9631 | 564648.165924 | 4185022.458960 | Generator |
| × | 111616 | AAA San Pablo Fuel Inc. | 3420 San Pablo Ave | O | 5411 | 563549.336623 | 4186746.924690 | Gas station |
| × | 14532 | AC Transit General Office | 1600 Franklin Street | O | 9621 | 564409.165973 | 4184484.458940 | Generator |
| – | 23085 | Acorn Restoration | 2914 Poplar Street | O | 7641 | 562956.166026 | 4186300.458690 | Spray booth |
| × | 16713 | Alameda County Employees Retirement Assn (ACERA) | 475 14th Street | O | 4812 | 564069.166042 | 4184376.458890 | Generator |
| × | 20828 | Alameda County General Services Agency | 1111 Jackson Street | O | 9199 | 564574.165975 | 4183921.459000 | Generator |
| × | 107875 | Alameda County General Services Agency | 165 13th Street | O | 5411 | 564684.165951 | 4183963.459030 | Gas station |
| × | 10997 | Alameda County GSA | 661 Washington St | O | 9199 | 563718.490000 | 4183843.070000 | Generator and boiler |
| × | 10998 | Alameda County GSA | 400 Broadway Avenue | O | 9299 | 563845.760000 | 4183606.200000 | Standby generator |
| × | 13929 | Alameda County GSA | 1106 Madison Street | O | 9199 | 564717.040000 | 4183834.660000 | Standby generator |
| × | 17114 | Alameda County Public Works Agency | 3455 Ettie Street | O | 9532 | 562573.165973 | 4186712.458690 | Generator |
| × | 19321 | Alameda Cremations | 2900 Main Street, Suite 116 | A | 7261 | 562363.166189 | 4182717.459020 | Crematory |
| × | 3676 | Alta Bates Summit Medical Center | 450 30th Street | O | 8062 | 564611.165840 | 4186083.458850 | Generator and boiler |
| – | 22763 | Amber Flooring Inc | 3441 Louise Street | O | 1752 | 562851.080000 | 4186802.130000 | Coatings |
| × | 200693 | Amtrak | 120 Magnolia Street | O | | 562481.166186 | 4183885.458960 | Generator |
| × | 2112 | Aramark Uniform Services | 330 Chestnut Street | O | 7218 | 562723.166109 | 4183993.458910 | Boiler |
| × | 18668 | AT&T Corp | 344 20th Street | O | 4899 | 564670.058785 | 4184834.236440 | Generator |
| – | 200827 | Automotive Collision Repair | 365 26th Street | O | 7532 | 564651.165873 | 4185526.458920 | Autobody |
| – | 3069 | B and T One Hour Cleaners | 190 14th Street | O | 7216 | 564726.165955 | 4184100.459030 | Petroleum dry cleaning |
| × | 200393 | BA1 1330 Broadway LLC | 420 13th Street | O | | 564191.165976 | 4184276.458970 | Generator |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 200620 | BA1 2201 Broadway LLC | 2201 Broadway | O | | 564482.165923 | 4185116.458900 | Generator and boiler |
| × | 112534 | Bart Gas & Food | 1395 7th St | O | 5411 | 562206.166118 | 4184385.458900 | Gas Station |
| × | 20703 | Bay Area Rapid Transit Dist. (BART) | 418 Clay Street | O | 4911 | 563677.166072 | 4183706.459010 | Generator |
| × | 22703 | Bay Area Rapid Transit | 550 W MacArthur Blvd | O | 6512 | 564569.165800 | 4186899.458770 | Generator |
| × | 9684 | Bay Ship and Yacht Co | 2900 Main Street, Suite 2100 | A | 3731 | 562367.166212 | 4182722.458960 | Coatings/blasting |
| × | 12691 | Berkeley Millwork & Furniture Co | 2279 Poplar Street | O | 2511 | 562731.018032 | 4185768.066460 | Finishing with heater |
| – | 17822 | Berkeley Repertory Theatre | 2526 Wood Street | O | 5812 | 562399.166012 | 4186237.458670 | Painting operations |
| × | 21949 | Bicycle Coffee LLC | 364 2nd Street | O | 2043 | 563894.166042 | 4183377.459030 | Coffee roaster |
| × | 21713 | Blue Bottle Coffee Company | 300 Webster Street | O | 2095 | 563994.323692 | 4183422.851580 | Coffee roaster |
| × | 111014 | BNSF Intermodal | 333 Maritime St | O | 5411 | 560377.166300 | 4184470.458710 | Gas station |
| × | 15538 | BNSF Railway Co | 333 Maritime Street | O | 4013 | 562230.166190 | 4184011.458950 | Generator |
| – | 10987 | Bolero Co | 2905 Union Street | O | 7532 | 562984.165983 | 4186288.458700 | Autobody |
| × | 22884 | Broadway Franklin LLC | 1111 Broadway | O | 6512 | 564043.166022 | 4184189.458930 | Generator |
| × | 210258 | Burger King | 1240 Broadway | O | 5812 | 564138.165974 | 4184245.458950 | Charbroiler |
| × | 24153 | Cafe Tartine LLC | 325 Martin Luther King Way | O | 2095 | 563327.1661 | 4183779.459 | Coffee roaster |
| × | 10131 | California Cereal Products Inc. | 1267 14th Street | O | 2043 | 562586.166136 | 4184922.458790 | Grain system |
| – | 20665 | California Finest Body & Frame | 1415 18th St | O | 7532 | 562386.166089 | 4185378.458730 | Spray booth |
| × | 111397 | California Highway Patrol | 3601 Telegraph Ave | O | 5411 | 564529.375244 | 4186675.889090 | Gas station |
| × | 14572 | California Highway Patrol-Telecommunications | 3601 Telegraph Ave | O | 9221 | 564569.885283 | 4186642.089800 | Generator |
| × | 21295 | California Hotel | 3501 San Pablo Ave | O | 6513 | 563493.165960 | 4186770.458660 | Generator |
| × | 15740 | California Waste Solutions - Wood Street | 3300 Wood Street | O | 5093 | 562495.166064 | 4186548.458720 | Recycling |
| × | 15739 | California Waste Solutions-10St Street | 1820 10th Street | O | 5093 | 561475.166213 | 4185141.458710 | Recycling |
| × | 22649 | Caltrans | 200 Burma Road | O | 4111 | 560738.166175 | 4186460.458630 | Generator |
| × | 100210 | Caltrans - East Bay Yard | Burma Road | O | 5411 | 560755.166135 | 4186467.458670 | Gas station |
| × | 200062 | Caltrans SFOBB Maintenance Complex | 200 BURMA RD | O | 5411 | 560733.166177 | 4186456.458660 | Gas station |
| × | 146 | CASS Inc, | 2730 Peralta Street | O | 5093 | 562822.166009 | 4186107.458720 | Furnace |
| × | 21941 | Cathedral Gardens Oakland | 638 21st Street | O | 3679 | 564035.165958 | 4185114.458850 | Generator |
| × | 1253 | Central Concrete Supply A U.S. | 2400 Peralta Street | O | 3273 | 562704.166064 | 4185937.458700 | Cement Silo |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| | | Concrete Company | | | | | | |
| – | 21947 | Chevron Environmental Management Company | 706 Harrison Street | O | 1522 | 564240.166026 | 4183668.459020 | Soil vapor extraction |
| × | 107693 | Chevron SS #9-4800 | 1700 Castro St | O | 5411 | 563781.373230 | 4184857.894450 | Gas station |
| × | 111947 | China Town 76 Unocal #0752 | 800 Harrison St | O | 5411 | 564281.166049 | 4183753.458990 | Gas Station |
| × | 20248 | CIM Group Properties | 1901 Harrison Street | O | 6512 | 564679.140000 | 4184629.770000 | Generator and fire pump |
| × | 20345 | CIM Properties | 1333 Broadway | O | 6512 | 564093.994123 | 4184334.960920 | Generator and boiler |
| × | 23838 | City Center 1300 LLC | 1300 Clay Street | O | 6531 | 563966.165972 | 4184412.458950 | Generator |
| × | 20438 | City of Alameda Northside Pump Station | 1253 Marina Village Parkway | A | 4911 | 563904.166063 | 4182438.459100 | Generator |
| × | 14502 | City of Oakland, Environmental Services Division | 150 Frank Ogawa Plaza | O | 9199 | 564173.165992 | 4184440.458930 | Generator |
| × | 21819 | City of Oakland | 455 27th St, Fire Station 15 | O | 9229 | 564573.165885 | 4185607.458900 | Generator |
| × | 201072 | City of Oakland | 1111 Broadway | O | 9224 | 564046.420000 | 4184190.710000 | Generator |
| × | 14503 | City of Oakland, Environmental Services Division | 1 Frank Ogawa Plaza | O | 9199 | 564064.166028 | 4184463.458910 | Generator |
| × | 14291 | City of Oakland, Public Works Facilities | 455 7th Street | O | 9221 | 563833.166039 | 4183787.459030 | Generator |
| × | 14301 | City of Oakland, Environmental Services Division | 1605 Martin Luther King Jr Way | O | 9224 | 563758.972178 | 4184774.902360 | Generator |
| × | 14302 | City of Oakland, Environmental Services Division | 14th & Mandela Way | O | 9224 | 562266.166084 | 4185050.458770 | Generator |
| × | 109646 | City of Oakland Fire Station 1 | 1605 Martin Luther King Way | O | 5411 | 563796.165984 | 4184760.458890 | Gas station |
| × | 107940 | City of Oakland-Fire Department Drill Tower | 250 Fallon St | O | 5411 | 564794.166029 | 4182969.459090 | Gas Station |
| × | 106473 | City of Oakland-Police Admin Building | 495 6th Street | O | 5411 | 563821.166076 | 4183803.458970 | Gas Station |
| – | 17439 | Clear Channel Outdoor | 2865 Hannah Street | O | 5199 | 562755.165971 | 4186373.458720 | Coatings |
| × | 111913 | Clear Channel Outdoor | 2857 Hannah St | O | 5411 | 562751.166014 | 4186335.458710 | Gas station |
| × | 18641 | Color Folio Design | 1467 Park Avenue | E | 7389 | 562617.166008 | 4187249.458660 | Coatings |
| – | 20821 | ConGlobal Industries | 555A Maritime Street | O | 5085 | 560475.166256 | 4184659.458700 | Roller coater |
| – | 18431 | Continental Auto Body | 1355 Park Ave | E | 7532 | 562817.165947 | 4187280.458640 | Autobody |
| – | 23039 | Cooks Collision | 1900 Martin Luther King Way | O | 7532 | 563928.165958 | 4184901.458940 | Autobody |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| – | 23040 | Cooks Collision | 149 11th St | O | 7532 | 564697.165942 | 4183778.459030 | Spray booth |
| × | 201187 | Coolport LLC | 575 Maritime Street | O | 9224 | 560017.110000 | 4184626.200000 | Generator |
| × | 17190 | County of Alameda | 1221 Oak Street | O | 9229 | 564784.165962 | 4183908.459030 | Generator |
| × | 13908 | County of Alameda - GSA | 1401 Lakeside Drive | O | 9199 | 564725.165954 | 4183831.458990 | Generator and boiler |
| × | 18947 | County of Alameda - Public Works Agency | 8th Ave & Between Fallon St | O | 9229 | 564622.166034 | 4183582.459050 | Generator |
| × | 17739 | Cushman & Wakefield | Jack London Square | O | 6531 | 563565.166106 | 4183351.458960 | Generator |
| – | 20526 | Custom Wood Finishing | 2311 Adeline Street | O | 5712 | 563032.165995 | 4185688.458740 | Generator |
| – | 22272 | Dawit Auto Body | 4101 Martin Luther King Way | O | 7532 | 564365.165829 | 4187302.458680 | Autobody |
| × | 20537 | Department of Transportation | Toll Operations Building, SF Oakland Bay Bridge | O | 4911 | 560392.166186 | 4186542.458540 | Generator |
| × | 20586 | Digital 720 2nd LLC | 720 2nd Street | O | 4813 | 563160.166139 | 4183761.458900 | Generator |
| × | 20802 | Domain Residences, LLC | 1389 Jefferson St | O | 6512 | 563805.166051 | 4184475.458910 | Generator |
| × | 19997 | DWFIU 1999 Harrison, LLC | 1999 Harrison Street | O | 6531 | 564708.984401 | 4184731.933590 | Generator |
| × | 11887 | Dynegy Oakland LLC | 50 Martin Luther King Jr Way | O | 4931 | 563278.166088 | 4183491.458950 | Turbines |
| × | 8001 | East Bay Municipal Utility District | 1200 21st Street | O | 4941 | 562895.166049 | 4185545.458780 | Spray booth |
| × | 13712 | East Bay Municipal Utility District | 1100 21st Street | O | 4941 | 563100.165995 | 4185500.458840 | Generator |
| × | 13728 | East Bay Municipal Utility District | 375 11th Street | O | 4941 | 564204.165985 | 4184024.458980 | Microturbine |
| × | 109891 | East Bay Municipal Utility District | 2144 Poplar St | O | 5411 | 562740.166030 | 4185560.458750 | Gas Station |
| × | 13737 | East Bay Municipal Utility District PSK | 2101 7th Street | O | 4941 | 560669.166256 | 4184799.458780 | Generator |
| × | 591 | East Bay Municipal Utility District | 2020 Wake Avenue | O | 4952 | 562060.166061 | 4186640.458610 | Generator |
| × | 14238 | East Bay Municipal Utility District | 1001 W Red Line Ave | A | 4941 | 561168.166359 | 4182649.458950 | Generator |
| – | 20061 | Englund Studio | 1850 Campbell Street | O | 3369 | 562304.166125 | 4185571.458820 | Spray booth |
| × | 19971 | Essex Portfolio LLC DBA The Grand Apartments | 100 Grand Avenue | O | 1522 | 564718.017588 | 4185172.851520 | Generator |
| × | 20724 | FEMA | 1111 Broadway | O | 9111 | 564046.420000 | 4184190.710000 | Generator |
| × | 24194 | Former Mobil and Ashland Bulk Fuel Terminals | 909 Ferry Street (Port of Oakland, Berth 23) | O | 4953 | 560392.166189 | 4185875.458610 | Soil Vapor Extraction |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 22746 | Fox Television Stations Inc. on behalf of KTVU | 2 Jack London Square | O | 4833 | 564257.166075 | 4182885.459060 | Generator |
| × | 16749 | General Services Administration-East Bay Office | 1301 Clay Street | O | 9199 | 563912.165967 | 4184445.458890 | Generator and boiler |
| – | 3737 | George V Arth & Son | 110 10th St | O | 7532 | 564726.165981 | 4183733.459040 | Spray Booth |
| × | 17588 | Global Power Group, Inc | 3938 Horton Street | E | 5311 | 562750.510967 | 4187105.463270 | Generator |
| × | 111475 | Golden Bay Gas and Food | 2200 Telegraph | O | 5411 | 564367.165953 | 4185153.458910 | Gas station |
| – | 5776 | Harold's Auto Body & Paint Shop | 2126 Market Street | O | 7532 | 563487.166011 | 4185366.458800 | Spray booth |
| – | 10587 | HC Fine Finishes | 1231 24th Street | O | 7641 | 562909.166023 | 4185797.458780 | Spray booth |
| – | 200331 | High End Custom and Collision | 1649 28th Street | O | 7532 | 562714.166025 | 4186218.458670 | Autobody |
| × | 19039 | Hotel Oakland | 270 13th Street | O | 7011 | 564549.987799 | 4184129.882810 | Generator |
| – | 20036 | Hustead's Collision Center Inc | 2915 Market Street | O | 7532 | 563630.165961 | 4186090.458730 | Autobody |
| – | 378 | Ideal Cleaners | 322 14th Street | O | 7216 | 564436.165966 | 4184245.458950 | Petroleum dry cleaning |
| × | 16965 | Ikea US West Inc - 165 Emeryville | 4400 Shellmound Street | E | 5021 | 562311.166002 | 4187352.458640 | Generator |
| × | 112176 | J and O Tire | 2236 Poplar St | O | 5411 | 562850.165989 | 4185865.458780 | Gas Station |
| × | 20823 | Jefferson Oaks Housing | 1424 Jefferson St | O | 9531 | 563894.166034 | 4184557.458880 | Generator |
| × | 21940 | John Hansen & Sons Inc | 327 Clay Street | O | 5149 | 563545.166086 | 4183682.458970 | Coffee roaster |
| × | 3490 | Johnson Plating Works Inc | 2526 Telegraph Ave | O | 3471 | 564430.165947 | 4185542.458900 | Chrome plating and spray booth |
| × | 23430 | Kaiser Permanente | 1950 Franklin Street | O | 8063 | 564555.165907 | 4184744.458970 | Generator |
| × | 23431 | Kaiser Permanente | 1800 Harrison Street | O | 8063 | 564727.165920 | 4184544.459000 | Generator |
| × | 23433 | Kaiser Permanente | 410 19th Street | O | 8063 | 564328.165955 | 4184763.458920 | Generator |
| × | 24068 | KBS SOR II Oakland City Center | 505 14th Street | O | 6512 | 564019.165980 | 4184397.458960 | Generator |
| – | 10397 | Le Magic Cleaners | 1706 Franklin Street | O | 7216 | 564418.165953 | 4184573.458930 | Closed loop dry cleaner |
| × | 18110 | Level 3 Communications LLC | 1330 Broadway | O | 4813 | 564091.979994 | 4184356.933650 | Generator |
| × | 23231 | Level 3 Communications LLC | 1970 Broadway | O | 4813 | 564449.165974 | 4184842.458890 | Generator |
| – | 12569 | Lithograph Reproductions Inc | 4120 Martin Luther King Jr Way | O | 2752 | 564430.165808 | 4187306.458740 | Lithography printing |
| × | 8511 | Madison Street Press | 614 Madison Street | O | 2752 | 564529.166012 | 4183455.459030 | Printing press |
| × | 109725 | Market Street Shell #135692 | 610 Market St | O | 5411 | 563156.166075 | 4184124.458940 | Gas station |
| × | 12765 | MCI,dba Verizon Business | 1330 Broadway | O | 4813 | 564223.165967 | 4184305.458950 | Generator |
| × | 13299 | MetroPCS California/Florida Inc | 720 2nd Street | O | 4911 | 563163.166110 | 4183762.458900 | Generator |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 110209 | Mobile SS#63049 | 3400 San Pablo | O | 5411 | 563557.165952 | 4186699.458730 | Gas station |
| × | 20742 | Modern Coffee Enterprises Inc | 4059 Emery Street | E | 2095 | 563233.165888 | 4187309.458620 | Coffee roaster |
| × | 5133 | Mr. Espresso | 696 3rd Street | O | 2095 | 563275.166087 | 4183767.458960 | Coffee roaster |
| × | 2650 | Nor-Cal Metal Fabricators | 1121 3rd Street | O | 3479 | 562614.166145 | 4183939.458950 | Sandblaster |
| × | 1500 | Northern California Power Agency | 2900 Main Street, Site 1 | A | 4911 | 562350.166214 | 4182722.459010 | Turbines |
| × | 14423 | Oakland 14th Office | 475 14th Street | O | 6512 | 564070.166005 | 4184375.458960 | Generator |
| × | 19514 | Oakland Center 21 | 2101 Webster Street | O | 6512 | 564602.165884 | 4185023.458930 | Generator and boiler |
| × | 111332 | Oakland Marinas | 2 Webster St | O | 5411 | 563852.166087 | 4183149.459000 | Gas Station |
| × | 22781 | Oakland Marriott City Center | 1001 Broadway | O | 7011 | 564012.166045 | 4184110.459010 | Generator |
| × | 22033 | Oakland Museum of California | 1000 Oak Street | O | 9199 | 564818.165994 | 4183721.459080 | Spray Booth |
| × | 20527 | Oakland Unified School District | 1011 Union Street | O | 8211 | 562519.166083 | 4184691.458810 | Generator |
| × | 110551 | Oakland Valero Service Center | 2225 Telegraph Ave | O | 5411 | 564314.165906 | 4185166.458910 | Gas station |
| × | 109903 | OFD Fire Station #2 | 100 Jack London Square | O | 5411 | 563393.166112 | 4183400.458970 | Gas Station |
| × | 109994 | OFD Fire Station #3 | 1445 14th St | O | 5411 | 562259.166096 | 4185053.458770 | Gas Station |
| × | 20093 | Olympic Tug and Barge Co Inc | 321 A Avenue | A | 5171 | 562965.166147 | 4182944.458960 | Generator |
| × | 13494 | Pacific Bell | 1587 Franklin Street | O | 4813 | 564362.165940 | 4184509.458900 | Generator |
| × | 14173 | Pacific Gas and Electric | 1919 Webster Street | O | 4931 | 564560.165977 | 4184740.458900 | Generator |
| × | 14551 | Pacific Gas and Electric | 689 2nd Street | O | 4931 | 563202.166106 | 4183633.458910 | Generator |
| × | 8227 | Pacific Interment Service | 1094 Yerba Buena Ave | E | 7261 | 563548.165902 | 4187269.458640 | Cremator |
| × | 21029 | Pacific Renaissance Plaza | 388 9th St Ste 229 | O | 6512 | 564147.165974 | 4183921.458950 | Generator |
| × | 12318 | Peerless Coffee Co | 260 Oak Street | O | 2095 | 564511.166029 | 4183116.459040 | Coffee roaster |
| × | 23722 | Pinnacle Ag Services | 2440 W 14th Street | O | 3711 | 561300.166191 | 4185579.458760 | Generator |
| × | 13682 | Port of Oakland | Clay & Water Street at Jack London Square | O | 9621 | 563468.166074 | 4183346.458990 | Generator |
| × | 16715 | Port of Oakland | 651 Maritime Street | O | 1799 | 560444.166280 | 4184718.458760 | Generator |
| × | 23577 | Port of Oakland | 1599 Maritime Street | O | 4491 | 560760.166236 | 4185498.458690 | Generator |
| × | 111027 | Port of Oakland | 651 Maritime St | O | 5411 | 560444.166314 | 4184583.458760 | Gas station |
| × | 3791 | Prime Smoked Meats Inc | 220 Alice Street | O | 5049 | 564174.166067 | 4183265.459000 | Smoke house |
| × | 200462 | Prologis | 2420 West 21st Street | O | | 561611.166143 | 4186200.458680 | Generator |
| – | 18373 | PS Printing LLC | 2861 Mandela Parkway | O | 2752 | 562528.166041 | 4186330.458750 | Print press |
| – | 6191 | Quality Body and Fender | 2510 Martin Luther King Way | O | 7532 | 564096.165965 | 4185558.458880 | Autobody |
| × | 23547 | Radio Mirchi | Pole Plaza AHN 18, Pole #110141241 | O | 7812 | 559827.166257 | 4186509.458600 | Generator |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| – | 15931 | Redline Import - Auto Collision | 2300 Market Street #C | O | 7532 | 563540.165986 | 4185575.458840 | Spray area |
| × | 106875 | Rino Pacific | 1107 5th St | O | 5411 | 562682.166122 | 4184104.458920 | Gas station |
| × | 14607 | Rotunda Partners II | 300 Frank Ogawa Plaza | O | 6552 | 564150.024407 | 4184549.804730 | Generator |
| × | 23098 | Royal Coffee Company | 2523 Broadway | O | 5812 | 564682.165897 | 4185486.458840 | coffee roaster |
| × | 14068 | S F Bay Area Rapid Transit District | 101 8th Street | O | 9621 | 564606.166019 | 4183538.459010 | Generator |
| × | 19696 | Safety-Kleen Systems Inc. | 400 Market Street | O | 4953 | 563110.166078 | 4183947.458990 | Soil vapor extraction |
| × | 23208 | Safeway #3125 | 3889 San Pablo Ave | E | 5141 | 563353.165963 | 4187112.458680 | Generator |
| × | 18658 | San Francisco Bay Bridge Toll Plaza | Bay Bridge East | O | 9229 | 560407.166233 | 4186541.458600 | Generator |
| – | 12725 | San Pablo Auto Body | 2926 San Pablo Ave | O | 7532 | 563730.165966 | 4186076.458770 | Spray booth |
| × | 20386 | Satellite First Communities, L P | 540 21st Street | O | 8361 | 564210.165960 | 4185069.458930 | Generator |
| × | 112517 | Sausal Corporation | Bay Bridge Toll Plaza | O | 5411 | 560399.166202 | 4186546.458570 | Gas station |
| × | 208 | Schnitzer Steel Products Company | Adeline Street | O | 5093 | 562499.999966 | 4183475.097660 | Electric shredder |
| – | 16860 | SFPP, L P | Bay Street, off 7th | O | 4613 | 560823.090000 | 4184843.250000 | Diesel additive tank |
| × | 18268 | Sierra Pacific | 3213 Wood Street | O | 3272 | 562424.166075 | 4186446.458730 | Aggregate |
| – | 23904 | Sila Nanotechnologies Inc | 2450 Mariner Square Loop | A | 2819 | 563636.166150 | 4182428.459110 | Wipe cleaning |
| – | 22778 | Solstice Press | 113 Filbert Street | O | 2752 | 562802.166129 | 4183786.458940 | Lithography printing |
| × | 112577 | Southern Counties Oil Company LP | 105 5th St | O | 5411 | 564515.165988 | 4183298.459090 | Gas station |
| × | 16848 | SPRINT | 1075 7th Street | O | 4812 | 562783.166090 | 4184227.458860 | Generator |
| × | 16850 | SPRINT | 114 Brush Street | O | 4812 | 563080.166080 | 4183689.458930 | Generator |
| × | 15760 | SSA Terminals (Oakland) LLC | 1999 Middle Harbor Rd | O | 4731 | 560385.166356 | 4183504.458880 | Generator |
| × | 111133 | SSA Terminals-Oakland LLC | 1999 Middle Harbor Rd | O | 5411 | 560352.166317 | 4184036.458820 | Gas station |
| – | 200748 | Stanford Cleaners | 2134 MARKET ST | O | 7389 | 563492.165996 | 4185376.458810 | Dry cleaning |
| × | 109165 | State of CA - Caltrans | Oak Bay Bridge, E Side, Toll Plaza | O | 5411 | 560420.740000 | 4186547.050000 | Gas Station |
| × | 19281 | State of California | 1515 Clay St, Elihu Harris Building | O | 9441 | 563982.971169 | 4184583.007780 | Generator and boiler |
| × | 14195 | State of California Department of Transportation | 111 Grand Avenue | O | 9621 | 564732.570000 | 4185092.270000 | Generator and boiler |
| × | 201213 | SVF Latham Square Owner LLC | 1611 Telegraph Avenue | O | | 564207.165993 | 4184578.458940 | Boiler |
| – | 21159 | Tam's Auto Body | 2300 Market Street Ste B | O | 7532 | 563536.165942 | 4185564.458800 | Spray booth |
| × | 20487 | Target Corporation Store #T2767 | 1555 40th Street | O | 5311 | 562487.166001 | 4187011.458690 | Generator |

| M | Plant No. | Facility Name | Address | City | SIC code | *x* | *y* | Source Category |
|---|---|---|---|---|---|---|---|---|
| × | 21790 | Target Corporation Store #T2829 | 2700 5th Street | A | 5311 | 563474.166162 | 4182610.459060 | Generator |
| × | 112426 | Tfuels Inc. dba Grand Arco AMPM-C Kim | 889 West Grand Ave | O | 5411 | 563515.165961 | 4185422.458780 | Gas station |
| × | 20987 | The Ellington Community Association | 222 Broadway | O | 6531 | 563773.166110 | 4183461.459050 | Generator |
| × | 17703 | The Home Depot (Store #0627) | 3838 Hollis Street | E | 5311 | 563036.124968 | 4187011.436650 | Generator |
| × | 17073 | T-Mobile | 720 2nd Street | O | 4812 | 563192.166114 | 4183660.458950 | Generator |
| × | 14837 | Trans Pacific Centre | 1000 Broadway | O | 6512 | 564090.166016 | 4184053.459000 | Generator |
| × | 200278 | Trapac | 2800 7TH ST | O | 5411 | 559401.166329 | 4184726.458700 | Gas station |
| × | 17431 | Union Pacific Railroad | 1400 Middle Harbor Road | O | 4011 | 561766.166221 | 4183829.458870 | Generator |
| × | 100583 | Union Pacific Railroad | 1400 Middle Harbor Road | O | 5411 | 561771.166175 | 4183835.458880 | Gas station |
| – | 200538 | Uptown Body and Fender | 401 26th Street | O | 7532 | 564580.165868 | 4185529.458890 | Autobody |
| × | 21130 | US Postal Service - Building Maintenance | 1675 7th Street | O | 4311 | 561587.340000 | 4184448.030000 | Generator and fire pump |
| × | 23711 | USPA City Center LLC | 555 12th Street | O | 6512 | 563819.165993 | 4184285.458950 | Generator and boiler |
| × | 14711 | Verizon Business | 1999 Harrison Street | O | 4813 | 564743.165909 | 4184727.458960 | Generator |
| × | 22412 | Verizon Wireless | 1404 Franklin Street | O | 4812 | 564296.165973 | 4184311.458980 | Generator |
| × | 16284 | Verizon Wireless (Alameda Perm) | 114 Brush Street | O | 4812 | 563080.166085 | 4183688.458990 | Generator |
| × | 18297 | Verizon Wireless (Bay Bridge East) | 107 Burma Road | O | 4812 | 559595.580000 | 4186253.340000 | Standby generator |
| × | 23143 | Viridis Fuels | 2040 Wake Avenue | O | 2861 | 561701.520000 | 4186478.240000 | Boiler |
| × | 22483 | Watermark Bayside, LLC dba Bayside Park | 1440 40th Street | E | 8051 | 562722.165936 | 4187177.458620 | Generator |
| × | 5385 | Weatherford BMW | 575 West Grand Avenue | O | 7532 | 564168.165947 | 4185174.458840 | Spray booth |
| × | 112042 | Westco Gas | 731 West Macarthur Blvd | O | 5411 | 564109.914073 | 4186891.051810 | Gas station |
| × | 22058 | Westcore City Properties, LLC | 1221 Broadway | O | 2812 | 564098.166021 | 4184261.458990 | Generator |
| – | 2620 | WH Strehle Company | 494 36th Street | O | 7532 | 564686.165809 | 4186614.458780 | Autobody |
| × | 23954 | Windstream | 427 14th Street | O | 6531 | 564224.165990 | 4184308.458940 | Generator |

# Attachment 3. Truck-Related Businesses

**Table A-3-1.** Businesses with truck fleet activity operating in the West Oakland Source Domain. Only businesses with an assigned ID were included in this analysis; those excluded were either missing information or had < 4 vehicles per day (VPD). The reference ("Ref.") of the activity information was collected from either a 2019 survey (S19), a 2009 survey (S09), or assumed parameters (A, where a number in parentheses indicates the ID from which the information is based on). A hyphen (–) indicates that the business was excluded from the analysis due to inappropriate business or activity type, and "n/a" indicates that no information was available. The fleet assumed for each business was either HHDT only (all EMFAC2017-based HHDT vehicles except Port Trucks), MHDT only, bus only (BUS), or a mixed fleet (mix) with 0.265 HHDT (Non-Port Truck), 0.10 LHDT, 0.135 MHDT, 0.50 Port Trucks (T7 POAK). All business addresses are located in Oakland, except those with an asterisk (located in Emeryville).

| ID | Business Name | Address | VPD | Ref. | Fleet | Activity Type |
|---|---|---|---|---|---|---|
| | All Star Moving & Storage | 1468 14th Street | 0 | – | – | Storage only |
| | Alpi International Ltd. | 1685 34th Street | < 4 | – | – | Wholesale product supplier |
| | American President Lines Ltd | 1579 Middle Harbor Road | < 4 | – | – | Shipment management |
| 1 | AM&S Transportation Co/ Trade Winds Import Export | 1700 24th Street | 70 | S19 | mix | Trucking |
| 54 | AMPCO Adeline | 1599 Adeline Street | 1000 | S19 | mix | Parking facility |
| 53 | AMPCO MLK | 1 Martin Luther King Jr Way | 1000 | S19 | mix | Parking facility |
| 36 | Aramark Uniform Services | 330 Chestnut Street | 5 | A | MHDT | Uniform rental services |
| 2 | Atthowe Transportation Co Inc. | 3924 Market Street | 5 | S19 | mix | Carrier/broker |
| 24 | AV Trucking Co Inc. | 1155 3rd Street | 41 | S19 | mix | Office |
| 3 | Bay Area Container Transport | 3427 Ettie Street | 19 | S19 | mix | Broker |
| 55 | Best Bay Trucking | 1 Market Street | 50 | S19 | mix | Trucking |
| 4 | Cademartori Trucking | 1833 Peralta Street | 22 | S19 | mix | Shipping/trucking |
| 5 | California Cereal Products | 1267 14th Street | 5 | S19 | mix | Food processing |
| 6 | California Waste Solutions Inc. - 10th | 1820 10th Street | 50 | S19 | mix | Recycling |
| 37 | California Waste Solutions Inc. - Wood | 3300 Wood Street | 50 | A (6) | mix | Recycling |
| 7 | CASS, Inc | 2730 Peralta Street | 6 | S19 | mix | Recycling |
| 38 | CCY Inc. | 2505 Poplar Street | 5 | A | mix | Importers |
| 8 | Central Concrete | 2400 Peralta Street | 13 | S19 | mix | Concrete |

| ID | Business Name | Address | VPD | Ref. | Fleet | Activity Type |
|---|---|---|---|---|---|---|
| 59 | CFN Fuel Station | 2236 Poplar Street | 80 | A (63) | mix | Gas station |
| | Commander Moving | 1829 Mandela Pkwy | < 4 | – | – | Moving/storage |
| | Dusty & Sons Truck Tire Center | 2201 Mandela Pkwy | < 4 | – | – | Tire sales |
| 9 | East Bay Resources | 2430 Willow Street | 5 | S19 | mix | Recycling |
| 60 | EBMUD Adeline | 2127 Adeline Street | 84 | S09 | mix | Office and yard |
| 61 | EMBUD Wake | 2020 Wake Avenue | 84 | A (60) | mix | Yard |
| | FBC International Co. | | – | – | – | Marketing company |
| 10 | Form and Reform | 2601 Adeline Street | 3 | S19 | mix | Light manufacturing |
| 40 | Golden Bear Produce | 315 Franklin Street | 112 | S09 | mix | Carrier |
| | Green Pro Tech (DPF Cleaning) | 18th & Campbell | < 4 | – | – | Diesel particulate filter cleaning |
| 41 | Green Tech Imports | 2811 Adeline Street | 5 | A | mix | Shipping |
| 42 | Greyhound Bus | 2103 San Pablo Avenue | 55 | S09 | BUS | Bus |
| 56 | GST Transport | 1 Market Street | 50 | S19 | mix | Shipping/inspection |
| 57 | High Mountain Transport LLC | 2505 Bataan Avenue | 20 | S19 | mix | Trucking |
| 43 | Iron Mountain Information Management | 1350 West Grand Ave | 5 | A | MHDT | Shredding/storage |
| 11 | ISSA Transportation Services, LLC (JB Truck Repair) | 1639 18th St | 10 | S19 | mix | Truck repair |
| | JB Truck Electrical Repair | 1433 18th St | < 4 | – | – | Truck services |
| 12 | J&A Truck Repair | 2300 Poplar Street | 14 | S19 | mix | Truck repair |
| 44 | J&O Tires/Scales | 2401 Union Street | 5 | S09 | mix | Truck services |
| 13 | JH Fitzmaurice | 2857 Hannah Street * | 4 | S19 | mix | Home construction and improvement |
| 14 | Kamal Trucking Corp | 526 2nd Street | 56 | S19 | mix | Carrier |
| | KMC Trading (Chang's) | 2505 Poplar St | < 4 | – | – | Recycling |
| 15 | Lange Trucking/Hoovestol | 2226 Campbell Street | 26 | S19 | mix | Trucking |
| 62 | Lenger & Sons Produce Express | 2565 Buna Street #90 | 5 | A | MHDT | Trucking (food) |
| 45 | Matheson Mail Transportation | 2500 Poplar Street | 30 | S09 | mix | Local general freight trucking |
| 46 | Mayway Corporation | 1338 Mandela Pkwy | 5 | A | mix | Distribution |
| 16 | Mindful Distribution | 2935 Adeline Street | 4 | S19 | MHDT | Beer distributor |

| ID | Business Name | Address | VPD | Ref. | Fleet | Activity Type |
|---|---|---|---|---|---|---|
| | MK Enterprises | 2225 Campbell St | < 4 | – | – | Print advertising |
| | Mueller Nicholls | 2400 Union St | < 4 | – | – | Carrier |
| 17 | Mutual Express Company | 1700 West Grand Avenue | 40 | S19 | mix | Trucking |
| 18 | Narayan's Trucking Inc. | 1155 3rd Street, Suite 260 | 41 | S19 | mix | Office |
| 19 | National Recycling | 1312 Kirkham Ct | 5 | S19 | mix | Recycling |
| 20 | Natural Logistics | Beach Street * | 14 | S19 | mix | Shipping/trucking |
| 58 | Oakland Port Trucking | 1 Market Street | 25 | S19 | mix | Trucking |
| 21 | OMSS | 10 Burma Road | 1200 | S19 | mix | Truck parking |
| 22 | PACE Supply (Morgan Southern) | 425 Market Street | 75 | S19 | mix | Plumbing wholesale |
| 23 | Pacific Coast Container (PCC Logistics) | 2498 16th Street | 58 | S19 | mix | Broker |
| 25 | Pacific Coast Supply | 1735 24th Street | 10 | S19 | mix | Building materials |
| | Pacific Rail Services | 1408 Middle Harbor Road | n/a | – | – | Repair |
| 26 | Portillo Trucking Company | 160 Franklin Street | 16 | S19 | mix | Trucking |
| 27 | Quintero Trucking | 2270 Poplar Street | 21 | S19 | mix | Trucking |
| 63 | Rinehart Oil Truck Fueling Station | 1107 5th Street | 80 | S19 | mix | Gas station |
| | RCM International (Martin Construction) | 2850 Poplar Street | < 4 | – | – | Concrete mixing |
| 28 | S.F. Enterprises (Modern Express and Courier) | 2525 Mandela Pkwy | 7 | S19 | mix | Yard |
| 29 | Saroni Food Services | 1301 26th Street | 12 | S19 | mix | Food (cold storage facility) |
| 30 | Sea Logix | 1425 Maritime Street Bldg 319 | 5 | A | mix | Trucking/drayage |
| 47 | Sierra Concrete | 3211 Wood Street | 10 | A | mix | Concrete |
| | Skasol | 1696 W Grand Avenue | < 4 | – | – | Manufacturer |
| 31 | Starline Supply Company | 2401 Peralta Street | 8 | S19 | mix | Carrier |
| | Starving Student Movers | 2850 Poplar Street | 4 | – | – | Moving company |
| | Steel Company (name unknown) | 1699 W Grand Avenue | n/a | – | – | Steel |
| 48 | Sutta Shredding Company | 1221 3rd Street | 5 | A | MHDT | Recycling |
| | Sweet Maria's Coffee Warehouse | 2823 Adeline Street | < 4 | – | – | Retail |
| | Terminal Maintenance Company | 2502 Middle Harbor Drive | n/a | – | – | Carrier |
| 49 | TFS Trucking | 2226 Myrtle Street | 10 | A | mix | Yard |

| ID | Business Name | Address | VPD | Ref. | Fleet | Activity Type |
|---|---|---|---|---|---|---|
| 32 | Tighe Transportation & Wisle | 2230 Willow Street | 2 | S19 | mix | Trucking |
| | Transpacific Trading | 2433 Poplar St | < 4 | – | – | Tire sales |
| 50 | U.S. Freight Systems | 1819 10th Street | 10 | A | mix | Shipping/trucking |
| 51 | U.S. Postal Service Depot | 1675 7th Street | 1034 | S09 | HHDT | Postal depot |
| 33 | VA Transportation Inc. | 1340 Mandela Pkwy | 47 | S19 | mix | Shipping/trucking |
| | Western Seafare | 1297 26th Street | n/a | – | – | Refrigerated warehouse |
| | Western States Teleport Inc. | 2303 Poplar Street | – | – | – | Telephone company |
| 34 | Wings Century Trucking | 1599 Maritime Street | 50 | S19 | mix | Trucking |
| 35 | Wyse Logistics | 1301 24th Street | 56 | S19 | mix | Drayage, warehouse, transloading, bulk trucks |

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**CONFIDENTIAL ADMINISTRATIVE DRAFT**

# The West Oakland Community Action Plan

# FINAL
# ENVIRONMENTAL IMPACT REPORT

## APPENDIX D:
## Response to Comments on the Draft Environmental Impact Report

**September, 2019**

**State Clearinghouse No. 2019059062**


*Lead Agency:*
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA  94105
Contact:  Ada Márquez
(415) 749-8673

# TABLE OF CONTENTS

INTRODUCTION ........................................................................................................ D-2
COMMENT LETTERS AND RESPONSES .......................................................................... D-4

# INTRODUCTION

This Final Environmental Impact Report (FEIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the CEQA Guidelines (California Code of Regulations Section 15000 et seq.). According to CEQA Guidelines, Section 15132, the FEIR shall consist of:

- The Draft Environmental Impact Report (DEIR) or a revision of the Draft;
- Comments and recommendations received on the DEIR either verbatim or in summary;
- A list of persons, organizations, and public agencies comments on the DEIR;
- The responses of the Lead Agency to significant environmental points raised in the review and consultation process; and,
- Any other information added by the Lead Agency.

This Response to Comments, together with other portions of the DEIR as revised, constitutes the FEIR for the proposed West Oakland Community Action Plan.

The DEIR contains a detailed project description, the environmental setting for each of the environmental resources topic areas where the Notice of Preparation and Initial Study (NOP/IS) determined there was a potential significant adverse impact, an analysis of the potentially significant environmental impacts including cumulative impacts, project alternatives, mitigation measures, and other areas of discussion as required by CEQA. The discussion of the project-related and cumulative environmental impacts included a detailed analysis of air quality, energy, greenhouse gas emissions, hazards and hazardous materials, and utilities and service systems.

The DEIR was released on July 25, 2019 and circulated for a 45-day public review and comment period that ended on September 9, 2019. The DEIR is available at the Bay Area Air Quality Management District (BAAQMD), 375 Beale Street, Suite 600, San Francisco, California 94105. Copies can also be obtained by accessing the BAAQMD's CEQA website at: http://www.baaqmd.gov/community-health/community-health-protection-program/west-oakland-community-action-plan.

The Final EIR includes revisions to the Strategy numbers. The revised strategy numbers do not change any of the environmental analyses. Furthermore, none of the modifications alter any conclusions reached in the Draft EIR, nor provide new information of substantial importance relative to the draft document that would require recirculation of the Draft EIR pursuant to CEQA Guidelines §15088.5. The revised Strategy numbers for all the strategies in the WOCAP can be found in Table 2.6-1 of the Final EIR.

The BAAQMD received 11 comment letters on the Draft EIR; ten letters were received by September 9, 2019 and one letter was received after the comment period. The comment letters and responses to the comments raised in those letters are provided in this document. The comments are bracketed and numbered. The related responses are identified with the corresponding number and are included following each comment letter.

Documentation for AB 52 Native American Tribal Consultation compliance is included in this Appendix, as well.

Comment Letters Received

| Letter No. | Date | Contact | Agency |
|---|---|---|---|
| 1 | 8/21/19 | Ryan Ahrling | Department of Toxic Substances Control |
| 2 | 8/23/19 | Catherine Mukai | Port of Oakland |
| 3 | 9/6/19 | Alexander Coate | East Bay Municipal Utility District |
| 4 | 9/6/19 | Richard Sinkoff | Port of Oakland |
| 5 | 9/6/19 | Ed Manasse | City of Oakland |
| 6 | 9/9/19 | Erik Alm | California Department of Transportation |
| 7 | 9/9/19 | Alix Bockelman | Metropolitan Transportation Commission |
| 8 | 9/9/19 | William M. Sloan | Venable LLP, for Oakland Athletics |
| 9 | 9/9/19 | Mike Jacob | Pacific Merchants Shipping Association |
| 10 | 9/9/19 | Craig Frucht | Agriculture Transportation Coalition, et al. |
| 11 | 9/11/19 | Deidre Sanders | East Bay Community Energy |

## COMMENT LETTER 1

## Ryan Ahrling, California Department of Toxic Substances Control

**From:** Ahrling, Ryan@DTSC <Ryan.Ahrling@dtsc.ca.gov>
**Sent:** Wednesday, August 21, 2019 5:42 PM
**To:** Ada Marquez <amarquez@baaqmd.gov>
**Subject:** DTSC Review - Draft EIR West Oakland Community Action Plan

Hello Ms. Ada Márquez,

I represent the Department of Toxic Substance Control, a responsible agency, reviewing the Draft Environmental Impact Report for The West Oakland Community Action Plan. Upon review of the document DTSC requests the following comments be addressed in the revised Environmental Impact Report:

- Within Section 3.5.1.1 Contaminated Sites the "Cortese List" is addressed. The section states that "there are a total of 123 reported environmental cases (within West Oakland)." This section should indicate the number of Cortese List sites which is different than the total number of environmental cleanup sites mentioned. Please reference the following link for Cortese List sites: 1-1

  https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES,OPEN,FUDS,CLOSE&status=ACT,BKLG,COM,COLUR&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+(CORTESE)

  As shown in the link above, there are only 16 Cortese List sites in Oakland. For DTSC, the Cortese List includes sites for which DTSC has issued an order for cleanup.

Please feel free to reach out with any questions or concerns.

Best,

Ryan Ahrling
Environmental Scientist
Site Mitigation and Restoration Program
Department of Toxic Substances Control
700 Heinz Avenue
Berkeley, California 94710-2721
(510) 540-3817
Ryan.Ahrling@dtsc.ca.gov

## RESPONSE TO COMMENT LETTER NO. 1

**Response 1-1:**

Thank you for providing the reference and correct information about the number of Cortese sites in Oakland. The FEIR has been updated to reflect the presence of 16 Cortese List sites, which is different than the total of number of environmental cleanup sites.

## COMMENT LETTER NO. 2

### Catherine Mukai, Port of Oakland

**From:** Catherine Mukai <cmukai@portoakland.com>
**Date:** August 23, 2019 at 2:34:47 PM PDT
**To:** "David M. Holstius" <dholstius@baaqmd.gov>, Phil Martien <PMartien@baaqmd.gov>
**Cc:** Diane Heinze <dheinze@portoakland.com>, Tracy Fidell <tfidell@portoakland.com>
**Subject: RE: Technical questions on the WOCAP DEIR**

Sorry, when I've written Appendix D, I mean C.

**Catherine Mukai**
(510) 627-1174
cmukai@portoakland.com

**From:** Catherine Mukai
**Sent:** Friday, August 23, 2019 2:05 PM
**To:** David M. Holstius <dholstius@baaqmd.gov>; Phil Martien <PMartien@baaqmd.gov>
**Cc:** Diane Heinze <dheinze@portoakland.com>; Tracy Fidell <tfidell@portoakland.com>
**Subject:** Technical questions on the WOCAP DEIR

Hi Phil and David,

Hope you are doing well. We've gone through the WOCAP DEIR and the Technical Support Document. We're really glad to see the Technical Support Document and appreciate all your hard work.

We have some questions for you, below. Can we set up a call to discuss these, as well? Just let us know.

1. In Section 1.4.2.2 Energy Impacts, what is the basis of the estimate of 0.42 gigawatt-hours for marine vessel shore power? Is this a per-call assumption for Schnitzer Steel, as it is repeated in Table 3.3.3 of the DEIR?
2. In Section 3.2.1.4.1 TAC Health Effects, Figure 3.2-1 cites "BAAQMD, 2016," which is not listed in the Chapter 5 References. What is the citation "BAAQMD, 2016"?
3. In Section 3.2.1.4 Sensitive Receptors, Community-Scale Emissions Inventory, and Health Risks in West Oakland, Table 3.2-7, Port trucks and rail seem to have emissions of carcinogens other than DPM. Please clarify what these emissions are and what is their source, if not tailpipe exhaust.
4. In Section 3.2.1.4 Sensitive Receptors, Community-Scale Emissions Inventory, and Health Risks in West Oakland, Table 3.2-8 shows a modeled residential cancer risk from local sources in West Oakland of 204 in one million. Is this a population-weighted average? In Appendix C to the DEIR, Table 5-1, the "excess cancer risk across residential areas in West Oakland" is shown to be 307.1 in one million. What is the difference in these two tables? In Appendix C to the DEIR, Section 5.3 states population-weighted excess cancer risk is 203 in a million.
5. Section 3.2.3 Significance Criteria of the DEIR cites "The Air District's draft CEQA Guidelines (BAAQMD, 2017a)." Can you clarify whether the BAAQMD CEQA Guidelines are draft and not final, as they are not noted as Draft on either the website or on their cover page.
6. Section 3.4.2 Environmental Setting Table 3.4-4 shows the City of Oakland's estimated GHG emissions. The City of Oakland Emissions Inventory does not rely on the Port of Oakland's published seaport air emissions inventory for seaport sources. The text and Table 3.4-4 cites "City of Oakland, 2014," which is not listed in the Chapter 5 References. What is the citation "City of Oakland, 2014"?

7. In Appendix B to the DEIR, Table Hoteling Emissions – No Shore Power, what is the basis of the estimate of 24 hours per transit (where “transit” is assumed to mean “voyage” and not the act of transiting, for OGV auxiliary generator and boiler usage? Is this a per-call assumption for Schnitzer Steel? Is this simply the hours per day, as calculations seem to rely on emissions per 24-hour day multiplied by 100 days of hoteling per year? Publicly available information from the CARB *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* indicate that the average call at Schnitzer Steel has 124 hours at berth; the Schnitzer Steel BAAQMD permit to operate limits calls to 32 OGV calls per year. This indicates a higher maximum hours of shore power use per year than 24 hours by 100 days, not accounting for vessel shifts, which would require disconnection. CARB’s *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* uses slightly different emission factors than Appendix B to the DEIR, as well. Will BAAQMD revise the inputs to align with CARB’s emissions inventory methods?
8. Can you send us copies of Tanrikulu 2019a and 2019b, as referred to in Appendix C to the DEIR?
9. In Appendix D to the DEIR, Table 2-1, were other data sources used for non-Port OGV, Commercial Harbor Craft, and Cargo-Handling Equipment?
10. In Appendix D to the DEIR, Section 2.3.3 Emission Factors, what emissions are speciated using CT-EMFAC2017? What CARB Speciate profile did BAAQMD use, and for what activity?
11. In Appendix D to the DEIR, Section 2.4.2 Schnitzer Steel, this sentence is unclear: “Although there are no restrictions on the type of trucks that can operate at Schnitzer Steel, for this assessment, the District assumed that all trucks were diesel fuel MHDTs and HHDTs (modeled as either Non-POAK-Truck 2 or heavy-heavy duty diesel single unit truck (T7 Single, which usually has the highest emission factors of all T7 vehicles in EMFAC2017); the vehicle category varied depending on the emission factor available at the time of analysis, and are summarized in Table 2-13.” What vehicle category is used in the final analysis? Do vehicle categories vary temporally by time of day? A table may be able to show clearly what vehicle category is used under what conditions.
12. In Appendix D to the DEIR, Section 2.5 Ocean-Going Vessels, why did BAAQMD choose not to update the PM emission factor for auxiliary engines to match what CARB is using in the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results*?
13. In Appendix D to the DEIR, Section 2.5.1 Port of Oakland, please clarify that the statement “[t]he use of shore power represents greater than 50% reduction in auxiliary engine operating hours at berth overall and resulting in 40–50% reduction in emissions for all pollutants” is specific to 2017 container vessel calls.
14. Appendix D to the DEIR, Section 2.5.2 Schnitzer Steel, states “Emissions from container ship assist tugs (harbor craft) used to assist cargo vessels movements upon arrival and departure from the terminal were included in the OGV emissions.” The Port requests emissions from harbor craft assisting OGV calling Schnitzer Steel be tabulated separately with associated air dispersion impacts also tracked separately. This aligns the emissions and risk categories with potential rulemaking categories.
15. Appendix D to the DEIR, Section 2.5.2 Schnitzer Steel, states “Due to confidentiality agreement, the District cannot release specific parameter information used to derive the OGV emissions for Schnitzer Steel.” Understanding that input values will not be released, the Port requests the list of input values which were used and kept confidential, as well as the final DPM, $PM_{2.5}$, and TAC emissions for Schnitzer Steel OGV in tons per year.
16. In Appendix D to the DEIR, Section 3.4.5 Ocean-Going Vessels, vessels at berth were modeled as polygon area sources. In the CARB November 5, *2018 Preliminary Health Analyses: Control Measure for Ocean-Going Vessels At Berth and At Anchor*, CARB models OGV at berth as point sources. Please explain why polygon area sources were considered more representative of at-berth OGV emissions dispersion.
17. Appendix D to the DEIR, Section 5.4 Source Apportionment, does not disaggregate results to the level of CHE at the Union Pacific Railyard. Are Union Pacific CHE included? WOCAP Chapter 5 – Technical Assessment, on page 5-23, mentions “emissions from line haul

locomotives, switchers, and cargo handling equipment" at the Union Pacific Railyard. The Port requests emissions from CHE at the Union Pacific Railyard be tabulated separately with associated air dispersion impacts also tracked separately. This aligns the emissions and risk categories with potential rulemaking categories.

18. Referring to Appendix D to the DEIR, Section 5.4 Source Apportionment, please provide the modeled $PM_{2.5}$ emissions from Pinnacle Ag Services and Schnitzer Steel.
19. Appendix D to the DEIR, Section 6.1.6 Omitted Emissions Sources, mentions a memo, "a memo, *Spatial Allocation Methodology of Transportation Refrigeration Unit (TRU) Emissions for AB617 Communities*, provided to the District by CARB on May 30, 2019." Can you send us a copy of this memo?
20. Page 5-23 of the WOCAP: What queries were made of the FHWA FAF database? Does BAAQMD plan to update the growth projections using FAF version 4.5?
21. Can you clarify how multipathway exposure is integrated into one Inhalation CPF in Attachment 1 to the Technical Support Document?
22. For the With Plan modeling page 6-7 of the WOCAP:
    a. What numbers went into the model?
    b. When does the 8 EV trucks/year assumption begin? In 2017? 2019?
        i. 8 x 7 years = 56 trucks by 2024… Are these on top of the 21 electric trucks in the 2020 Plan?
    c. When does the 1 tug per year assumption begin?
        i. Is this on top of the 2 (done) + 3 (coming) tug repowers funded by BAAQMD?
        ii. What tugs are part of Strategy 45? That's 8 more tugs. There might only be 4 tugs that need new engines, and they might not serve the Port regularly.
    d. How many CHE replaced per year? Starting when and is that on top of the 44 in the 2020 Plan?
23. A 1% growth rate is assumed for permitted sources, aligned with Regional growth. Does brake wear, tire wear and road dust use the same 1% growth? How does this jibe with 5% growth at Port?
24. In Figure 2-7, does life expectancy take into account unnatural deaths?

Also twice when Till is cited as a source his last name is misspelled, just a small thing. It's Till Stoeckenius.

2 A. Appendix C to the DEIR, Section 2.5 Ocean-Going Vessels, states "Vessel auxiliary power is primarily used when propulsion engines are not running (e.g., at berth or in anchorage outside of the Source Domain). Vessel auxiliary power was derived from auxiliary generator capacity taken from the 2018 IHS Fairplay database or estimated from a comparable ship (by size and owner) if data were not available." This is incorrect. Vessel auxiliary engines run at the same time as the propulsion engines during transiting and maneuvering, and also run when propulsion engines are not running, unless the vessel is connected to shore power. The Port's 2017 Seaport Emissions Inventory accounts for auxiliary engine emissions in all vessel modes.

2 B. Appendix C of the DEIR, Section 2.7 Cargo Handling Equipment, states "Other types general purpose CHE, such as sweepers, bulldozers, backhoes, excavators, and other off-road equipment, were not included as part of the CHE category since they are used at the Port for facility maintenance and construction." Equipment that is not used to move cargo, which at the Port is containerized, is not CHE. The Port suggests this sentence be revised to "Other types of general purpose off-road equipment, such as sweepers, bulldozers, backhoes, excavators, and other off-road equipment, were not included as part of the CHE category since they are used at the Port for facility maintenance and construction."

2. C. Appendix C of the DEIR, Section 2.7 Cargo Handling Equipment, states “Emissions were split between on-dock and off-dock operations, based on the mix of equipment types used at the marine terminals as compared to the BNSF railyard.” The use of the term “off-dock operations” at the Port applies to more areas than just the BNSF railyard. Section 3.4.7 indicates that all off-dock CHE emissions were modeled as originating from polygon area sources covering the BNSF railyard. Additionally, Figure 3-14 incorrectly identifies the location of the BNSF railyard. The “off-dock operations” label applies to all non-marine terminal tenants at the Port, including at the BNSF railyard and at the former Oakland Army Base.

Thanks,

**Catherine Mukai, PE**
*Environmental Programs and Planning*
*Port of Oakland*
*530 Water Street*
*Oakland, CA 94607*
*(510) 627-1174*
*cmukai@portoakland.com*

**PORT OF OAKLAND**

**RESPONSE TO COMMENT LETTER NO. 2**
**Port of Oakland**

**Response 2-1:**

The estimate of 0.42 GWh cited in Table 3.3.-3 for estimated electricity increases is based on 210 kw power rating for an auxiliary engine (Port of Long Beach 2016 Emissions Inventory - Table 2.1) running for 20 hours per day. This assumes any power generated from the auxiliary engines is replaced with shore power. The Port of Long Beach inventory was used because it had more detailed information on the vessel-types used by Schnitzer and other bulk vessel, which were not available in the Port of Oakland emission inventory.

**Response 2-2:**

The complete citation for Figure 3.2-1 is the BAAQMD *Spare the Air, Cool the Climate: 2017 Clean Air Plan* (p.2/26).

**Response 2-3:**

Per our conversation on August 29th, 2019, this table shows a summary of sources and the emission inventory within West Oakland. DPM is a TAC, from the combustion of diesel fuel. Fine particulate matter (PM2.5) emissions come from several anthropogenic sources as included in Table 3.2-7. A full list of TACs compounds included in the analysis is provided in Attachment 1 of Appendix A Part 1. The bottom-up approach sources include permitted stationary sources , on-road mobile sources, truck-related businesses, ocean-going vessels, commercial harbor crafts, cargo handling equipment, Port trucks at the Terminals, locomotives, railyards, commuter ferries and excursion vessels; and the top-down approach include other area sources and non-road sources.

**Response 2-4:**

Per our conversation on August 29th, 2019: In the DEIR, Table 3.2-8 is weighted by population and averaged over the West Oakland community area, which we refer to as the "residential impacts". "Residential-weighted" and "population-weighted" are used interchangeably in this document (data used are from the 2010 Census, where population is based on residence). In Appendix C Table 5-1, the values reflect the local concentration contributions and excess cancer risk averaged over the West Oakland community area; these are the same data as in DEIR Table 3.2-8 but not weighted by population.

**Response 2-5:**

The May, 2017 BAAQMD CEQA Thresholds and Guidelines are not a draft version; these are the current Air District recommendations. Section 3.2.3 has been revised to delete the word "draft".

**Response 2-6:**

The complete citation for Section 3.4.2 Environmental Setting Table 3.4-4 is the *West Oakland Specific Plan Draft EIR* (2014).

**Response 2-7:**

The word “Transit” can be removed as the calculations are a per day basis.

The emissions are on a per 24 hour day basis, and the emissions assumes a total of 100 days (2400 hours) of operation. Of the 24 hours, 4 hours is assumed to be disconnected to account for any vessel shifts/malfunctions/sync-up times (2000 hours of connected time and 400 hours of disconnected time).

The Draft CARB document is not explicit about the inclusion of Schnitzer Steel, however, one can infer that the bulk vessels included for the Port of Oakland in the Draft CARB document are from Schnitzer Steel, since the Port of Oakland Inventory does not include bulk ships, whereas, the Draft CARB document does. Further, in the Draft CARB document, only 19 vessels were included in the 2016 inventory for the Port of Oakland, for a total of 2,356 hours of hoteling, which falls under the umbrella of the emission calculations completed in Appendix B of the Draft EIR for Schnitzer Steel (assumed 2,400 hours of hoteling). Please note, that in this case increasing the hoteling hours at Schnitzer Steel will only generate more emissions reductions over the baseline, since the existing emissions are being replaced by shore power. Therefore, the analysis is more conservative with fewer operational hours at Schnitzer Steel, because fewer emissions reductions would be realized and attributed to the Plan. Further, the CEQA analysis should be based on actual hours, not permitted hours.

Updating to the emission factors in the Draft CARB Inventory would result in a higher ROG emission factor, and a lower GHG, SOx, PM10, and PM2.5 emission factors. The use of the CARB emissions factors would likely translate to an increase in ROG emissions over those reported in the Draft EIR and a decrease in GHG, SOx, PM10, and PM2.5 from those reported in the in the draft EIR. FYI – the NOx and CO emission factors are essentially the same.

It is important to realize that these emission calculations are ultimately used to estimate emission reductions associated with the Plan, thus using the Draft CARB Inventory would provide a less conservative (generally greater emission reductions), than the emission factors used in Appendix B of the Draft EIR. Since these emissions are conservative, the emission factors will not be updated in the Final EIR.

**Response 2-8:**

Copies of Tanrikulu 2019a and 2019b will be posted online.

**Response 2-9:**

Emissions from sources:

- Non-Port OGV: Applies only to Schnitzer Steel. In this case, the District estimated the emissions; this data source has been added to Table 2-1 for OGV.
- Non-Port CHC: Applies only to Schnitzer Steel. In this case, the District estimated the emissions. Because these emissions aren't totaled in the document under CHC, this data source was not added to Table 2-1 CHC.
- Non-Port CHE: some included for the UP railyard within total emissions, which is discussed in Section 2.10.3, but isn't the formal CHE section (Section 2.7). The total emissions from the UP railyard was provided by UP (via Gary Rubenstein), as noted in Table 2-1. Because these emissions aren't totaled in the document under CHE, these data source were not added to Table 2-1 CHE.

**Response 2-10:**

CT-EMFAC2017 provides emission factors for the following MSATs: 1,3-butadiene, acetaldehyde, acrolein, benzene, DPM, ethylbenzene, formaldehyde, naphthalene, and DEOG. These emission factors have already been speciated using emissions derived from EMFAC2017 (PL or web database) with speciation profiles for PM2.5 or TOG (depending on pollutant) available from CARB (https://ww3.arb.ca.gov/ei/speciate/speciate.htm). Speciation profiles were available by vehicle type, model year, activity (e.g., running exhaust), etc. Emission factors in CT-EMFAC2017 are then provided at the level of Non-Truck, Truck 1, and Truck 2 for Alameda County by calendar year and season.

The District derived emission factors for Port Trucks (POAK, within the Truck 2 category) and non-POAK-Truck 2 as in Appendix A Section 2.3.3. POAK emission factors were derived using TOG profile 818 for toxics; in the final version of the Action Plan, these emissions are included in the Planning Inventory but not included in the cancer risk calculations, per the Port's previous comments

In this analysis, Port Trucks were separated from other vehicles for tracking emissions, but speciation for all vehicles were done with the same procedure. Port Trucks have the same TAC speciation profile as all other diesel trucks. Other truck categories include different proportions of vehicles by fuel type, which affects their speciation.

*Note: In our call on 2019-08-29, the Port asked the District about the ratio of cancer risk-weighted TACs to DPM for Port Trucks, OGRE railyard, and BNSF railyard. For the two railyards, the ratio would not be calculated as exactly 744.7 from the text due to rounding of the values in the table.

**Response 2-11:**

This information has since changed. The District modeled trucks at Schnitzer Steel as "diesel fuel MHDTs and HHDTs", with the same fleet through the entire day.

**Response 2-12:**

The following applies to Port OGVs (Section 2.5.1):

- Maneuvering emissions include emissions from both the main and auxiliary engine. Total emissions were based on Ramboll's 2017 Seaport Inventory and were used directly; the District was not provided with the split of emissions by engine type, and thus no emission factors were adjusted.
- Information has since been updated for berthing emissions; CARB has provided the District with OGV berthing emissions directly (which includes some adjustments to emission factors).

**Response 2-13:**

This paragraph has since been removed; the District is using berthing emissions provided directly by CARB. This sentence has been deleted from the FEIR.

**Response 2-14:**

Based on our inventory, the total emissions from Schnitzer Steel OGVs and tugs are small, and tugs represent a smaller fraction of these emissions. Only one quantified Plan Strategy was applied to address tug emissions (repowers), which could have co-benefits if these tugs also assist OGVs for Schnitzer Steel. These tug emissions were therefore not separated from the total "OGV" category. Emissions will be reported by EIC in the Planning Inventory, but not in the Action Plan documents.

**Response 2-15:**

In Appendix A Part I, it states "Similar to the emissions inventory developed for the Port (Ramboll 2018), emissions from OGVs operating from Schnitzer Steel were estimated based on the rated power and load factor of each vessel, duration of each trip, and the pollutant-specific emission factors during transiting, maneuvering, and hoteling." Due to confidentiality agreement, the District cannot release specific parameter information used to derive the OGV emissions for Schnitzer Steel. Emissions for PM2.5 and DPM are provided in Appendix A Part I Table 2-16 for the total OGVs and assist tugs combined.

**Response 2-16:**

This report by CARB and the modeling for the Action Plan both use AERMOD.

Modeling a source as a point source in AERMOD requires the following parameters: emission rate (g/s), stack height (m agl), stack gas exit temperature (K), stack gas exit velocity (m/s), and interior stack diameter (m) (listed in Section 3.4.1). The District does not have all of these stack parameters for each OGV arriving at the Port. The District could have assumed default stack parameters (as in CARB's report), but area sources in AERMOD do not require all of these parameters and were thus more straightforward to set up in our modeling simulations. Using an area source is reasonable since the exact location of the stack may change over time.
Do note that the total emissions are the same if using either a point source or an area source; only the dispersion of those emissions differ.

**Response 2-17:**

See Section 2.10.3, and Section 6.1.5.

**Response 2-18:**

Section 5.4 presents the results of dispersion modeling (i.e., local concentration contributions). See Table 2-2 for emissions.

**Response 2-19:**

The memo was provided to Port staff per their request.

**Response 2-20:**

The District used CARB's combined growth and control factors directly for projecting emissions.

**Response 2-21:**

Multipathway exposures that take into account potential increase in cancer potency due to exposures to non-inhalation pathways were addressed by modifying the cancer potency using a weighing factor. The CP weighing factor is listed in Table 2-5-1 of the District's Regulation 2-5. This factor was derived using unit emission rates in CARB's HARP model.

TACs with multi-pathway cancer impacts include: arsenic, inorganic arsenic compounds, chromium (hexavalent), inorganic hexavalent chromium compounds, di(2-ethylhexyl) phthalate, hexachlorocyclohexanes, lead, inorganic lead compounds, 4,4-methylene dianiline and its dichloride, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated dibenzop-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and dioxin like PCBs. For inhalation only (non-multipathway) carcinogens, the CP weighting factor is equal to the inhalation cancer potency factor.

**Response 2-22:**

For parts b-d: The annual activity begins in 2020 and runs through 2024, and the procurements are on top of any already funded commitments included in the Port's "Beyond 2020" Seaport AQ Plan. Regarding CHE, rather than estimate units/year, this category was combined with other miscellaneous off-road equipment (large and small) and estimated to utilize $1 million per year of grant funds.

**Response 2-23:**

There is a different growth rate associated with emissions from on-road mobile sources. Brake wear, tire wear, and road dust are mainly related to changes in VMT. VMT was projected using information from EMFAC2017. The growth factors are documented in the Technical Support

Document Part II (forthcoming). The growth for "Port Trucks at Terminals" category was forecasted using the 5% growth rate for the Port.

**Response 2-24:**

The data comes from the Alameda County Health Department. Staff confirmed life expectancy includes all causes.

**Response 2-A:**

The Port's comment pertains to Appendix C Base Year Emissions Inventory and Air Pollutant Dispersion Modeling to the DEIR, Section 2.5 Ocean-going Vessels. The Port implies that auxiliary engine emissions during maneuvering were not included in the District's emissions inventory, which would be incorrect. The District used emission estimates directly from the 2017 Port inventory, which does include emissions from the auxiliary engines in both maneuvering and berthing modes; the District has clarified the text of the Action Plan Appendix A so that this is clear.

**Response 2-B:**

The Port's comment pertains to Appendix C Base Year Emissions Inventory and Air Pollutant Dispersion Modeling to the DEIR, Section 2.7 Cargo Handling Equipment. Thank you for your suggestion to revise sentences in the Technical Appendix; this will be reflected in the new version of the Action Plan Appendix A. Revising a sentence about different equipment does not address the adequacy of the DEIR. (§15204)

**Response 2-C:**

The District worked with Ramboll to spatially allocate the emissions from CHE among the Port terminals and BNSF and to create the polygon for the BNSF CHE equipment. This polygon encompasses only the area adjacent to the railyard where CHE would typically operate.

# COMMENT LETTER NO. 3

## Alexander R. Coate, East Bay Municipal Utility District

EAST BAY
MUNICIPAL UTILITY DISTRICT

ALEXANDER R. COATE
GENERAL MANAGER

September 6, 2019

Ms. Ada E. Marquez
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

RE: Draft Environmental Impact Report for the Assembly Bill 617 West Oakland Community Action Plan – Draft Environmental Impact Report

Dear Ms. Marquez:

The East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Draft Environmental Impact Report (EIR) for the West Oakland Community Action Plan (CAP). The CAP project area (Project Area) is located in the West Oakland neighborhood of Oakland, CA, as defined by the California Air Resources Board (CARB) in compliance with Assembly Bill (AB) 617.

EBMUD provides critical water and wastewater services to protect public health and the health of the San Francisco Bay. EBMUD's water service area includes 1.4 million customers in Alameda and Contra Costa Counties and its wastewater service area includes 685,000 customers. 3-1
The Project Area is within both service areas. EBMUD operates its maintenance centers and Main Wastewater Treatment Plant (MWWTP), including portions of its interceptor system, within the Project Area. Air emissions from the MWWTP are regulated by the Bay Area Air Quality Management District (Air District).

**BACKGROUND**

CARB developed a Community Air Protection Program to implement AB 617. West Oakland is one of ten communities selected by CARB to participate in the program and the West Oakland Steering Committee (WOSC) was formed by the Air District to implement it. EBMUD is a member of the WOSC and appreciates the opportunity to work collaboratively with the Air District and the WOSC on this important initiative.

EBMUD has reviewed the Draft EIR for the CAP and respectfully submits the following comments.

375 ELEVENTH STREET . OAKLAND . CA 94607-4240 . (510) 287-0101

**COMMENTS**

Comment 1: For all strategies that are non-BAAQMD items, if the strategy is subject to CEQA, EBMUD expects to have the opportunity to comment on the respective CEQA analyses independently in the future CEQA review processes conducted by whichever respective lead agency's purview it falls under since the environmental impacts of those items were not reviewed as a part of the CAP environmental review process.

Citing the preferred alternative as the Proposed Project instead of Alternative 2 is confusing since the Draft EIR considers impacts from strategies that are included in Alternative 2 only and not in the Proposed Project. The Proposed Project includes all the Strategies listed in the CAP. The alternatives analysis in Section 4 analyzes two alternatives to the Proposed Project. Alternative 1 is the no project alternative. Alternative 2 is limited to implementing only those Strategies within the jurisdiction of the Air District. 3-2

Section 3.1.6.4 states:

*The major portion of the Strategies would be implemented by agencies other than the Air District...Further, the Air District's approval of the Strategies will not authorize or commit those agencies to any action. As these actions and activities by independent agencies are not Air District actions and will occur independently of the District's approval of the Strategies under their authority, they are not direct or indirect effects resulting from approval of the Plan that must be analyzed in this [Draft EIR] document.* (Underlining added by EBMUD for emphasis.)

Accordingly, Chapter 3 does not address implementation actions by other agencies that are independent of the Air District's implementation actions under the CAP. It should be noted that Chapter 3 analyzes the Proposed Project's environmental setting, impacts, mitigation measures, and cumulative impacts.

Comment 2: EBMUD expects to have the opportunity to comment on the subsequent CEQA analyses prepared by the Air District for those strategies that were determined in the Draft EIR as being too speculative for evaluation per CEQA.

A number of the Air District's strategies in the CAP are cited in the Draft EIR as being too speculative for evaluation in accordance with CEQA. These strategies are described as requiring further study to determine how the strategy will be accomplished or implemented before a CEQA evaluation can be completed. As such, EBMUD expects that as that further study is conducted, the Air District will conduct subsequent CEQA analysis of each of those strategies and provide the opportunity for public comment on the analyses. In particular, EBMUD requests review of the CEQA analyses for following strategies: Strategy 67, Strategy 68, and Further Study Measure 4 listed in Table 6-2 of the CAP. 3-3

Enclosed with this letter, please find EBMUD's comment letter on the Draft West Oakland CAP, with comments on the specific Draft Strategies included in the CAP.

**CONCLUSION**

EBMUD appreciates the opportunity to coordinate with the Air District on this project and requests that the Air District continue to include EBMUD in the WOSC as it refines the CAP, finalizes the EIR, and implements the final CAP. EBMUD looks forward to continuing to collaborate with the Air District to ensure the success of this project. 3-4

If you have questions or would like additional information regarding the comments provided in this letter, please contact Matt Hoeft at (510) 287-0214 or matthew.hoeft@ebmud.com.

Sincerely,

Alexander R. Coate

Alexander R. Coate
General Manager

ARC:MRF:mrf

Enclosure: EBMUD Comment Letter dated September 6, 2019 "Assembly Bill 617 West Oakland Community Action Plan"

**RESPONSE TO COMMENT LETTER NO. 3**
**East Bay Municipal Utility District**

**Response 3-1:**

Thank you for your comment letter.

**Response 3-2:**

The East Bay Municipal Utility District (EBMUD) will have the opportunity to participate and comment on the California Environmental Quality Act (CEQA) analyses for non-BAAQMD strategies. Lead agencies that decide to potentially implement any of the strategies in the West Oakland Community Action Plan (WOCAP) will be responsible for preparing the appropriate environmental document, such as an EIR or Negative Declaration (CEQA Guideline §15051).

The Proposed Project, (the preferred alternative) will achieve substantially more environmental benefits than Alternative 2. The Proposed Project analyses includes the cumulative benefits of all the strategies, both BAAQMD and non-BAAQMD. For example, the Proposed Project will be consistent with AB 617 requirements and the community goals in the WOCAP, with emission reductions of criteria pollutants, particulate matter, and Toxic Air Contaminants (TAC), and improve public health. However, Alternative 2 would not achieve the WOCAP's goals and have substantially less environmental benefits.

**Response 3-3:**

The DEIR in Chapter 3, only evaluates the strategies that will potentially be implemented by BAAQMD. Per CEQA, "in describing and evaluating a project in an environmental document, the lead agency may consider specific economic, legal, social, technological, or other benefits, including regionwide or statewide environmental benefits, of a proposed project and the negative impacts of denying the project" (Public Resources Code §21082.4; see also §21001(g) (promoting consideration of qualitative factors, as well as economic and technical factors and long-term benefits and costs).

**Response 3-4:**

BAAQMD staff will continue to engage with EBMUD staff in implementing the WOCAP.

**COMMENT LETTER NO. 4**

**Port of Oakland**

PORT OF OAKLAND

September 6, 2019

Ada E. Márquez
Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
amarquez@BAAQMD.gov

*via email*

**Subject: Port of Oakland Comments on the Draft Environmental Impact Report for the West Oakland Community Action Plan, State Clearinghouse No. 2019059062**

Dear Ms. Márquez:

The Port of Oakland ("Port") appreciates the opportunity to provide comments on the Bay Area Air Quality Management District's ("BAAQMD") July 2019 Draft Environmental Impact Report ("DEIR") for the AB 617 West Oakland Community Action Plan ("WOCAP"). The DEIR identifies the environmental impacts of the WOCAP. This letter follows the June 14, 2019, Port comment letter to BAAQMD on the Notice of Preparation for this DEIR.

The letter introduces the Port and its actions on air quality, then clarifies the role of the Port with respect to the WOCAP, before making specific comments on the DEIR.

4-1

**About the Port**

Under the Charter of the City of Oakland (the "Charter"), the Port of Oakland is an independent Department of the City of Oakland, operating by and through the Board of Port Commissioners ("Board"). The Board is appointed by the City Council upon nomination by the Mayor and has complete and exclusive power and duty to adopt and enforce rules and regulations within the Port Area. The Port Area includes the waterfront properties and lands adjacent thereto, including trust lands granted to the City by the State of California. As an enterprise department of the City of Oakland, the Port of Oakland does not receive tax revenues, but instead must generate revenue to be self-supporting. About 20% of the jobs created through the Port are based in Oakland. The Port and its tenants contribute $698 million in state and local taxes.[1]

4-2

[1] https://www.portofoakland.com/economic-impact-report/jobs-study-port-oakland-generates-84000-jobs-bay-area/

**Market Share and Growth**

The Port is the only container port serving the Bay Area, loading California agricultural products for export to foreign markets and importing goods destined primarily for Bay Area residents. The Port operates in a competitive goods movement marketplace, competing against other ports along the West Coast including Canada and Mexico, and also competing against U.S. East Coast ports. The Bay Conservation and Development Commission ("BCDC") *Draft Final 2019-2050 Bay Area Seaport Forecast*[2] notes:

"California container ports compete with other U.S. and North American ports in two ways:

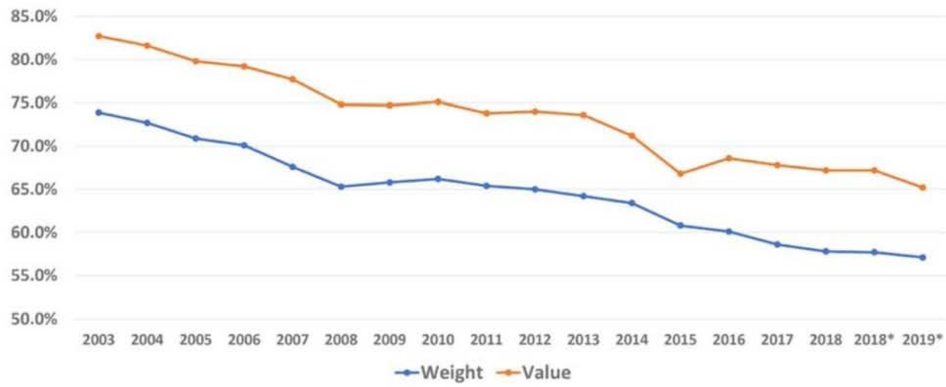
- "California ports compete for "discretionary" container traffic that can move by rail to other regions through any one of several ports. For example, Oakland competes for Asian imports to Midwestern consumer markets with the ports of Los Angeles, Long Beach, Vancouver [Canada], Prince Rupert [Canada], New York-New Jersey, Baltimore, and Virginia.
- "California ports compete with other regions for the location of import distribution centers (DCs) and their inbound trade flows. For example, San Joaquin County might compete with Georgia for a new import DC that would bring in goods through either Oakland or Savannah."

As shown in Exhibit 1, West Coast ports are losing market share both on the weight of cargo and its value. The loss of market share, even as the market grows, means that discretionary cargo may be transiting to the U.S. East Coast or Canada rather than California ports. For the East coast, this entails a longer transit ocean voyage from Asia through the Panama Canal with the associated higher ocean-going vessel ("OGV") emissions.

4-3

[2] http://www.bcdc.ca.gov/seaport/CargoForecastDraftFinal.pdf

**Exhibit 1. West Coast Ports' Market Share of Containerized Asian Imports**



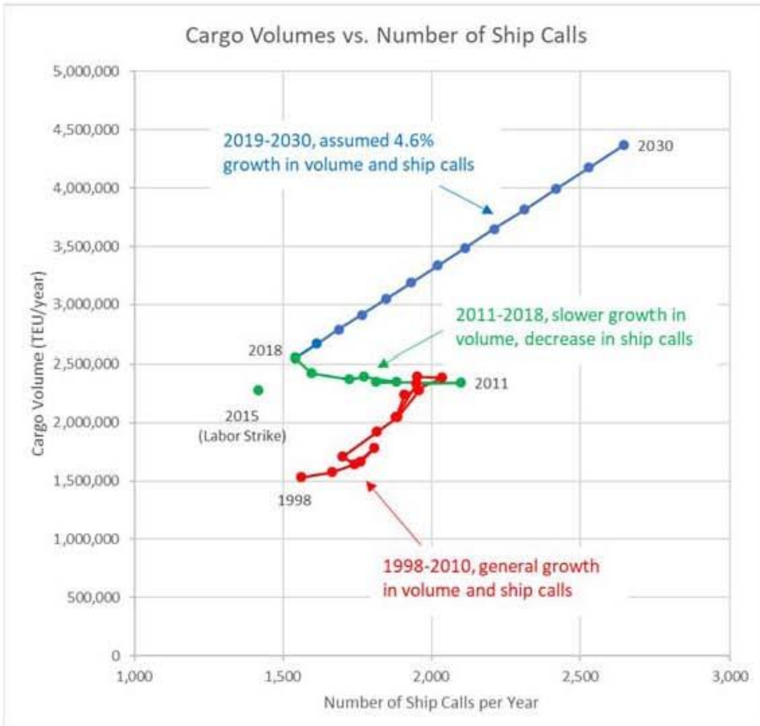

Source: U.S. Commerce Department via Pacific Merchant Shipping Association
*First half of the year only

The Port's Compound Annual Growth Rate ("CAGR") from fiscal year 2008 to fiscal year 2018 was **0.4%**.[3] The Port's fiscal year 2019 through fiscal year 2020 Operating Revenue Budgets are based on cargo growth estimates ranging from 0% to 2.0%. Budget projections through fiscal year 2024 reflect similar growth assumptions. 4-3 Cont.

The number of vessel calls at the Port has been decreasing in recent years, as illustrated in Exhibit 2. Each dot on the graph is a different year. The graph shows cargo volume on the y-axis generally growing upwards from year to year. It shows number of ship calls on the x-axis. The number of ship calls generally grew each year until 2011, when it abruptly shifts and begins to decrease each year. 4-4

[3] From Budget and Finance report at May 23, 2019 Port Board Meeting (File ID 098-19), slide 6.

**Exhibit 2. Port Cargo Volumes vs. Number of Ship Calls, Actual 1998-2018 calls and Projected 2019-2030 calls using CARB's average CAGR of 4.6% for the Port**




Starting in 2011, shipping lines have been forming alliances and moving more cargo on fewer, larger ships. The average capacity of a vessel calling the Port is 6,333 Twenty-Foot Equivalent Units ("TEUs") (BCDC, 2019). All international shipping lines calling the Port also call the ports of Los Angeles and Long Beach. As those vessels grow, as described in CARB's *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results*, the vessels calling Oakland will also be, on average, larger with more containers discharged and per vessel.

4-4 Cont.

**Development and Operations**

At the end of 2018, the Cool Port cold storage facility opened on Port property. This facility uses temperature-controlled transloading and efficient use of rail to reduce truck trips. The CenterPoint Properties development, a 460,000-square foot warehousing and transloading facility, is expected to open in June 2020, and it will allow even more transloading within the Port area. The development of transloading centers in the Port's backlands, adjacent to the marine terminals,

4-5

allows for efficient cargo transport with fewer and shorter truck trips, which is a deliberate Port response to reduce logistics sprawl.

The use of on-dock transloading, on-line portal and appointment systems for truckers, and the cleanest available engines set the Port apart as an industry leader in systematic efficient and low-emissions operations. The Port is currently enacting its GoPort program, a series of three projects to further improve efficiency at the Port. The first project, the $30.6M Freight Intelligent Transportation System ("FITS") is in construction. FITS includes advanced and innovative demonstration technologies to improve the efficiency and safety of operations and improve circulation and reliability of truck and rail throughout the Seaport. The second two projects improve 7th Street access points via grade separations for rail. These projects will improve both truck and rail efficiencies by removing at-grade crossings and modernizing the Port's circulation infrastructure.

4-5 Cont.

**The Port's Role in Improving Air Quality**

The Port has performed in a leadership role to improve air quality and manage Seaport-serving truck traffic within the Port area and West Oakland.

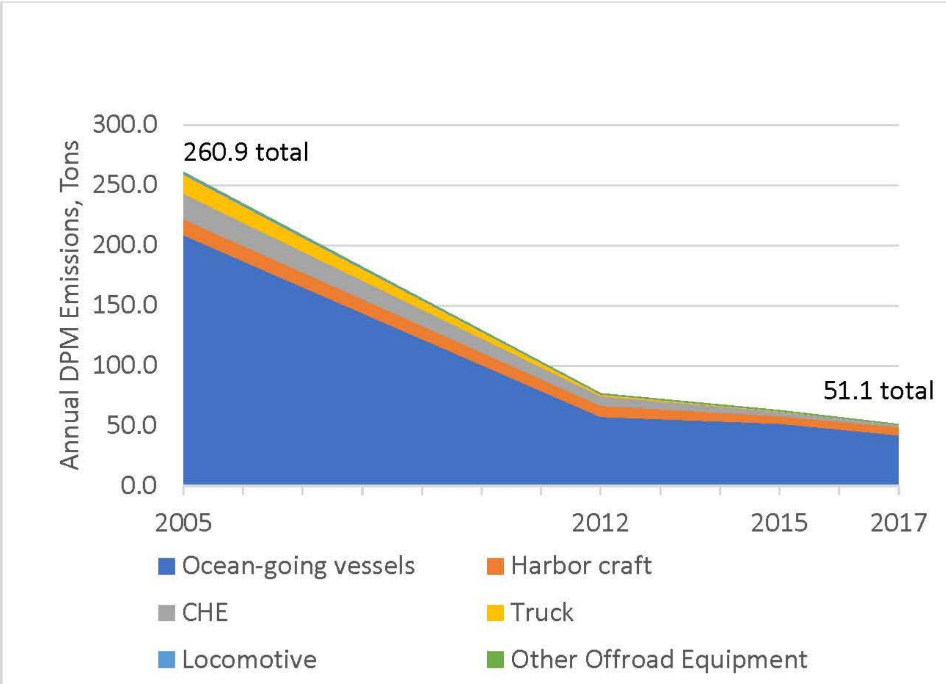
Following a comprehensive stakeholder outreach process, which included extensive engagement from the West Oakland community and the BAAQMD, the Board approved its Marine Air Quality Improvement Plan (MAQIP) in 2009. The MAQIP identified a series of programs and projects to improve air quality in West Oakland and the region affected by the Port's operations. The Port and its business partners—the carriers, terminals, and truckers—have played a major role and invested millions in their own projects resulting in a decrease in emissions from Port operations.

4-6

As a result, the 2017 Seaport Emissions Inventory shows that the Seaport-related emissions have achieved an over 80% reduction in emissions of diesel particulate matter ("DPM") between 2005 and 2017 (Exhibit 3). During this period, the Port, the truckers, the marine terminal operators and the carriers invested in environmental programs designed to reduce emissions through the use of the cleanest diesel engines available, the use of shore power for ocean-going vessels, and outreach to truck and equipment owners regarding incentives, as noted in the Port's June 14, 2019, comment letter to BAAQMD. Maintaining the successful business of the Port is essential to support the 84,144 jobs the Port and its partners provide in the Bay Area, with the Port's overall economic value at an estimated $130 billion.[4]

[4] https://www.portofoakland.com/economic-impact-report/jobs-study-port-oakland-generates-84000-jobs-bay-area/

**Exhibit 3. Reduction in Port Diesel Particulate Matter ("DPM") Emissions Since 2005**




In late 2017, the Port initiated a successor to the MAQIP called the Seaport Air Quality 2020 and Beyond Plan ("2020 and Beyond Plan"). The process of developing the 2020 and Beyond Plan involved extensive stakeholder engagement, including participation by BAAQMD and the West Oakland Environmental Indicators Project ("WOEIP") as co-chairs of the 2020 and Beyond Plan Steering Committee. The 2020 and Beyond Plan establishes the Port's long-term vision of a zero-emissions Seaport and provides a framework for making future decisions on the Port's clean air projects in consultation with the stakeholders. The 2020 and Beyond Plan was approved by the Board on June 13, 2019, through Resolution 1941.

The standards for air quality in California are amongst the most protective of human health in the United States. California sets stricter ambient air quality standards than USEPA. At California seaports, operators use some of the cleanest equipment available and are held to very strict standards relative to their domestic and international competitors, as shown below. No other state regulates the goods movement industry as aggressively and separately from other sectors, as California does; CARB has historically held the goods movement industry to higher standards than other sectors, with the result that the goods movement industry uses cleaner equipment than other industries. The resulting air quality requirements and accomplishments include:

4-6
Cont.

- All container lift and horizontal transport equipment is regulated to Tier 4 off-road engine standards by the California Air Resources Board ("CARB") via the Mobile Cargo-Handling Equipment ("CHE") at Ports and Intermodal Rail Yards Regulation for California seaports.
- Drayage trucks serving the Seaport are all newer than 2007 and use diesel particulate filters. With appointment systems for truckers, the Port has reduced queue and idle times at terminal gates.
- By the end of 2022, every truck will have a model year 2010 or newer engine pursuant to the CARB Drayage Truck Regulation. Trucks newer than 2010 have selective catalytic reduction for NOx control.
- The Port designed, constructed, and operates a shore power program, with 75% of all 2018 calls using zero-emission shore power. This level of shore power usage was achieved after an approximately $55-million investment at the Port and only six years after implementation of California's first-ever requirement to use shore power, a previously untested control measure for container vessels.

4-6 Cont.

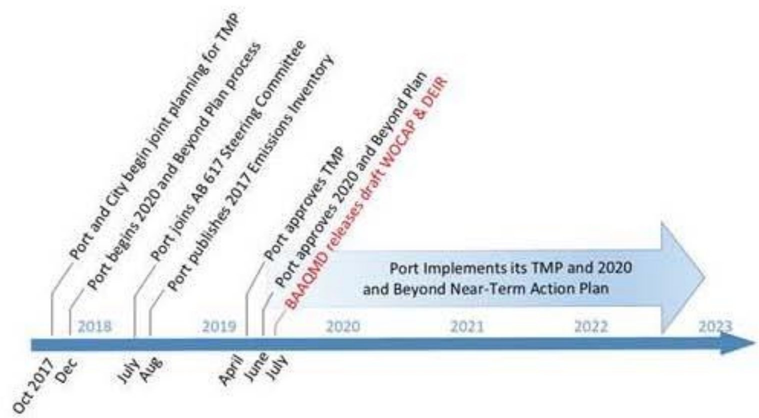
It is worth noting that the compliance summary in Chapter 7 of the WOCAP, supported by details in Appendix E of the WOCAP, "List of Complaints Received in West Oakland (January 2016 – December 2018)" showed that there were zero violations documented for complaints related to Port tenants during the three-year period summarized. For trucks, out of 924 inspections, the majority conducted within the Port, only nine reported emissions violations; less than 1%. These data highlight an extremely high compliance rate at the Port for both mobile and stationary sources.

Recognizing that operations at the Seaport and on the City of Oakland's portion of the former Oakland Army Base (OAB) affect the West Oakland community, with some impacts associated with truck traffic in and around the Port, the Port and the City also prepared a Truck Management Plan ("TMP"). The TMP included extensive input from the West Oakland residential and business communities. The Port's Executive Director approved the TMP on April 29, 2019. The TMP addresses impacts in the area encompassed by West Oakland, the Port of Oakland, the former Oakland Army Base, and the industrial area of Jack London Square north of Jefferson Street. The TMP is intended to improve safety for people walking, biking, and driving in West Oakland; reduce the nuisance of trucks driving or parking where they should not; and improve the quality of life for people living and working in West Oakland, including a reduction in localized diesel emissions.

4-7

A timeline of recent Port activities relating to the TMP, the 2020 and Beyond Plan, and the WOCAP is provided in Exhibit 4, below. The Port is committed to implementing the TMP and the 2020 and Beyond Plan, effective on their approval dates of April 29, 2019, and June 13, 2019, respectively. The 2020 and Beyond Plan contains a Near-Term Action Plan, which will be implemented independently of the WOCAP. Therefore, all Port commitments listed in the Near-Term Action Plan that overlap with WOCAP Strategies should be part of the "without Plan" scenario in the WOCAP in Chapters 5 and 6 analysis and discussion.

**Exhibit 4. Timeline of Recent Port Activities**




4-7 Cont.

Source: Port of Oakland, 2019.

**The Port's Role on the West Oakland Community Action Plan**

Port staff have served on the AB 617 Steering Committee since the July 27, 2018, kick-off meeting at City Hall, where Board of Port Commissioners ("Port Board") President Mr. Cestra Butner provided opening statements and Port Environmental Supervisor Diane Heinze described the Port's Draft Seaport Air Quality 2020 and Beyond Plan. The result of the AB 617 Steering Committee process is the WOCAP, created by BAAQMD and WOEIP.

The Port's focus in its involvement with the WOCAP has been to educate and inform the BAAQMD and WOEIP about the Port, the need for maintaining and improving efficient Seaport operations, and both ongoing and future air quality improvement initiatives the Port included in the MAQIP and the 2020 and Beyond Plan. The Port will evaluate initiatives identified through the WOCAP process to determine if they meet the screening criteria described in the 2020 and Beyond Plan for implementation. 4-8

It must be noted that the Port is not a Responsible Agency for the WOCAP, under the provisions of the California Environmental Quality Act ("CEQA"). CEQA Guidelines section 15381 states:

> *"'Responsible agency' means a public agency which proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or negative declaration. For the purposes of CEQA, the term 'responsible agency' includes all public agencies other than the lead agency which have discretionary approval power over the project."*

The WOCAP DEIR accurately reflects this in Section 1.2.3 of the DEIR. BAAQMD does not list the Port as a Responsible Agency.

However, Section 2.3 of the DEIR states:

*"[t]he Seaport Air Quality 2020 and Beyond Plan is an example of the Port's effort to manage operations at and air pollution from the Port. For the [West Oakland Clean Air] Plan, the Port will implement strategies that address air pollution from Port and Port tenant activities, such as the movement of inbound and outbound freight on cargo equipment, port trucks, locomotive, and ocean-going ships and harbor craft in the San Francisco Bay (Strategies #19, #32, #38, #58, #59, and #60)."*

This is not accurate. The initiatives and process described in the Port's 2020 and Beyond Plan constitute the Port's plan and commitment towards a zero-emission seaport. Although the 2020 and Beyond Plan will consider additional initiatives not explicitly listed in that Plan; including initiatives identified in the WOCAP DEIR and others, through the process described in the Plan, the WOCAP cannot commit the Port to implement strategies listed, but not analyzed, in the DEIR. The Board of Port Commissioners has sole authority over the actions of the Port and only the Board can direct Port actions. Port staff have already started screening emissions reduction measures for a potential update to the 2020 and Beyond Plan's Near-Term Action Plan. The Port will consider incorporation of appropriate measures from the WOCAP based upon review and consideration and the exercise of the Board's independent judgment, per the 2020 and Beyond Plan and associated Board Resolution 19-41.

4-8 Cont.

**The Relationship between the WOCAP DEIR and the Port's CEQA Review Process**

The WOCAP includes 84 Strategies, 28 of which (33%) are under the authority of BAAQMD to implement and 56 of which are outside BAAQMD's authority to implement, are not analyzed in the DEIR, and, in the case of those initiatives identified as the Port's responsibility, have not been evaluated in other CEQA documents. Suggesting that agencies such as the Port will rely on the DEIR to tier off CEQA analysis of the 56 Strategies creates the false impression that these initiatives have some level of CEQA clearance, which they do not. While many of the 28 BAAQMD Strategies were "not expected to result in adverse physical environmental impacts" as stated in the DEIR, some were found "too speculative to determine if any environmental impacts might occur at this stage," and as such may also need further CEQA review before they can be considered for implementation.

Chapter 4 of the DEIR identifies Alternative 2 as the Alternative consisting of the 28 BAAQMD Strategies; which are analyzed in the DEIR. Because these are the only initiatives evaluated in the DEIR, this should be identified as the Proposed Project. The Proposed Project identified in the DEIR, including all 84 Strategies, has not been evaluated for CEQA compliance.

4-9

**The Port Board of Commissioners Will Conduct its own CEQA Review Pursuant to its own Authority**

The Port offers these comments on the DEIR as a member of the AB 617 Steering Committee and as a committed participant in reducing emissions in West Oakland, primarily through the MAQIP and its successor, the 2020 and Beyond Plan. As defined under the California Environmental Quality Act, the Port is not a Responsible Agency for the WOCAP, meaning the Port will need to conduct its own CEQA review pursuant to its own authority for consideration of implementation of actions in the 2020 and Beyond Plan.

The Port requests that it be removed from the discussion in Section 2.3, which should be limited to BAAQMD as the agency with authority over the 28 Strategies analyzed in the DEIR.

Section 1.2.3 of the DEIR states "[l]ocal public agencies, such as cities, and counties could be expected to tier off this EIR when considering land use and planning decisions related to projects that implement a Strategy in the West Oakland Community Action Plan, pursuant to CEQA Guidelines §15152."

Section 1.4 of the DEIR states "…the Air District's approval of the Strategies will not authorize or commit those agencies to any action. As these actions and activities by independent agencies are not Air District actions and will occur independently of the District's approval of the Strategies under their authority, they are not direct or indirect effects resulting from approval of the Plan that must be analyzed in this document. Accordingly, the EIR does not address implementation actions by other agencies that are independent of the Air District's implementation actions under the Community Action Plan." 4-10

The Port cannot rely on or tier off the AB 617 WOCAP DEIR to provide environmental review for future discretionary actions as there is no analysis of direct or indirect effects associated with Port-assigned strategies. In addition, the Port will not be making any discretionary approvals for the 28 BAAQMD actions included in the 84 WOCAP Strategies. Even though Section 1.1 of the DEIR states the Port is one of the government agencies with "primary responsibility for implementing the strategies in the [West Oakland] Community Action Plan," the Port is not a Responsible Agency as defined in CEQA.

**Port-Specific Growth Estimates Should Rely on Port-Specific Studies**

As the Port stated in its June 14, 2019 comment letter to BAAQMD on the Notice of Preparation for this DEIR, the macroeconomic cargo growth estimate CARB developed and BAAQMD applied in Appendix C of the DEIR is overly aggressive, not realistic, and therefore misleading in the context of forecasting emissions. CARB developed a growth estimate of 4.6% CAGR based on its interpretation of the Federal Highway Administration Freight Analysis Framework ("FAF") Version 4.3.1 data. In the WOCAP, this growth estimate is rounded to 5%. 4-11

The WOCAP (Page 5.23) and the DEIR do not provide details on the queries made of the FAF database, nor the underlying assumptions for freight growth in Oakland. The FAF database has been updated three times since Version 4.3.1. Accordingly, the Port requests that the FAF growth analysis be updated to rely on FAF Version 4.5.

Subsequent to CARB's FAF analysis, BCDC has prepared a port- and region-specific analysis of anticipated cargo growth in the Bay Area. As CARB states in its January 2019 *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results*,[5] for the Ports of Los Angeles and Long Beach ("LA/LB"), "CARB is using the Mercator growth rates for the Ports of LA/LB because; (1) this analysis was port specific and not regional, and (2) the forecasting accounts for berth space, port capacity, shipping lanes, and additional features not included in FAF." The same is true for the BCDC *Draft Final 2019-2050 Bay Area Seaport Forecast*. Since BCDC has published the Oakland-specific forecast, BAAQMD's future-year projections should replace the unrealistic 4.6% forecast with the BCDC forecast of 2.2% CAGR for container throughput, to provide a justifiable projection of anticipated growth. This is the medium-growth scenario in the BCDC forecast. It is particularly important that the 4.6% CAGR **not** be applied to vessel and tug activity because growth in number of vessel calls should be estimated separately as the trend over the past eight years is for negative growth in number of vessel calls. 4-11 Cont.

The Port requests that the growth rate of vessel calls be set to 0%. This is a conservative estimate which will overestimate vessel activity in future years.

**The Port Supports the Goal of Coordinating Efforts on Strategies Focused on the Highest-Impact Sources**

Figure 5-10 of the WOCAP shows that Street and Highway Heavy-Duty Trucks, excluding Port Drayage Trucks, have a high health impact relative to their emissions due to proximity to residents in West Oakland. The Port supports Strategies regarding emissions reductions for these categories, as well as for rail and commercial harbor craft. 4-12

**The Port Supports Strategies Continuing Incentives**

The Port recognizes that incentive programs are critical to implementing several air quality initiatives. For instance, the Port is currently designing and constructing electric charging stations for ten zero-emissions battery-electric trucks at tenant Shippers Transport Express ("STE"). The trucks are being funded through CARB's Zero- and Near-Zero Emissions Freight Facilities ("ZANZEFF") grant, with the intent to demonstrate zero-emissions Class 8 over-the-road drayage trucks in a commercial environment. As part of the ZANZEFF grant project, it is expected that $9 million will be awarded to improve air quality associated with Port seaport operations, out of a larger multi-port grant award, to demonstrate the viability of zero emissions cargo handling equipment and heavy-duty Class 8 electric trucks in seaport operations.[6] 4-13

Of the ten emissions-reduction projects listed in Table 2.6-2 of the DEIR and repeated in Table D-1 of Appendix D to the WOCAP, six of these projects were already initiated by Port tenants, for total $PM_{2.5}$ reductions of 2.5 tons per year. Three of the remaining projects, for tug

[5] https://www.arb.ca.gov/msei/ordiesel/draft2019ogvinv.pdf
[6] https://www.portofoakland.com/seaport/port-oakland-add-electric-trucks-thanks-state-grant/

boat engine replacements, will also serve Port operations. Not listed in Table 2.6-2 are three additional projects in West Oakland, funded by BAAQMD through the Reformulated Gasoline Settlement Fund ("RFG") in 2019. These projects will bring five electric forklifts, one electric vacuum unit, two electric terminal trucks, and six electric yard hostlers to West Oakland.[7] 4-13 Cont.

WOCAP Strategies #36, 44, 45, 46, 47, 48, and 49 are for the BAAQMD to use and improve incentives for equipment and infrastructure. The Port applauds these Strategies and will continue to encourage Port tenants and related business to avail themselves of available funding through Trucker Work Group announcements, Trucker Environmental Office Hours, and individual outreach. Trucker Environmental Office Hours allow Port staff to inform truck drivers about grant and voucher funding opportunities for cleaner equipment, assist with the grant application process, and provide updates on the latest zero-emissions demonstration projects.

Exhibit 5 shows the details of weekly Trucker Environmental Office Hours at the Port. As noted in the Port's June 14, 2019, comment letter to BAAQMD, BAAQMD staff are always invited to attend these office hours, which Port staff find to be a rewarding and productive way to advertise the technologies and funding available to truck drivers. Port staff also request BAAQMD promotional materials for grants in the following languages most commonly spoken by Port truckers: English, Spanish, Punjabi, Simple Chinese, and Vietnamese.

**Exhibit 5. Trucker Environmental Office Hours Advertisement on Maritime Street** 4-14


[7] http://www.baaqmd.gov/~/media/files/board-of-directors/2019/msc_agenda_072519-pdf.pdf?la=en

Unlike cleaner diesel equipment, zero-emissions technologies will require new infrastructure for charging or alternative fuel dispensing. Infrastructure for zero-emissions equipment needs incentive funding as much as the equipment itself, and, unlike the equipment, which is limited in operational availability at this time, infrastructure can be funded immediately. The Port suggests that WOCAP Strategies #36, 44, 45, 46, 47, 48, and 49 be refined to explicitly allow for the funding of infrastructure independent of equipment. For each Strategy that begins "The Air District offers financial incentives to..." the Port requests the Strategy be revised to begin "The Air District offers financial incentives for equipment and infrastructure to…" 4-14 Cont.

Port staff encourage BAAQMD to streamline and simplify the funding application process. Programs like CARB's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project ("HVIP") and Clean Off-Road Equipment Voucher Incentive Project ("CORE") vouchers are examples of streamlined and simple funding opportunities. HVIP and CORE do not require tedious applications or up-front payment for new equipment with delayed reimbursement, which is a burden on the applicant. Additionally, neither HVIP nor CORE requires an existing piece of equipment, which may have significant resale value, to be scrapped.

Given the state of zero-emissions technology, demonstration projects like ZANZEFF will continue to be essential to improve commercial offerings. In addition to the Port's ZANZEFF commitment, Port tenant GSC Logistics is currently testing a BYD battery-electric Class 8 truck, with second-generation trucks to follow within the year. The GSC Logistics project is funded through CARB's Climate Change Investments, with the South Coast Air Quality Management District ("SCAQMD") as the lead applicant and BAAQMD as a co-applicant. This grant-funded project allows the user, GSC Logistics, to invest time and expertise in the project, with minimal financial and administrative burden. The technology vendor, who stands to benefit from an improved commercial product, is the major sponsor of the project. 4-15

Incentives are necessary to support transformative change in seaport equipment technologies. The investments the Port's tenants and operators make in Oakland are contingent on overall business considerations, including regulatory uncertainty and growth potential. Regulations to limit growth will limit clean technology investment in the Bay Area. The loss of Asian import trade to U.S. East Coast ports has real environmental impacts; longer trade routes have higher emissions—from the sources the WOCAP health risk assessment has identified as the highest emitters, OGV.

**<u>Corrections of Inaccuracies in the WOCAP DEIR</u>**

The Port requests correction of the following items in the Final EIR and the Final WOCAP, including the Final Technical Support Document. Attachments 1 and 2 to this letter list specific questions on the DEIR and WOCAP, respectively. 4-16

The Port requests that in the Technical Support Document, when entire phrases, sentences, and paragraphs are quoted from the Port's 2017 Seaport Air Emissions Inventory, that a citation is given to the author, Ramboll US Corporation, and the text is placed in quotation marks.

1. Figures 1-1, 2-1, 2-4, 2-5, 2-6, 2-7, 3-1, 3-3, 3-4, 3-8, 3-9, 3-10, 3-12, 3-13, 3-14, 3-15, 3-16, 3-17, 3-18, and 4-2 of Appendix C to the DEIR show an incorrect Port boundary. Exhibit 6 shows the correct Port boundary, with the City's portions of the former Oakland Army Base, the Union Pacific Railyard, and the Schnitzer Steel property specifically shown as not being in the Port or the Port Area. Only a portion of the Schnitzer Steel property is in the Port's land use planning Port Area. 4-17

2. DEIR Section 2.2 Background states "Stationary sources of air pollution are regulated and subject to permitted conditions established by the District. These include complex sources such as metal smelting, wastewater treatment plants, and Port activities, and smaller facilities, such as diesel generators, gasoline dispensing facilities (GDFs, or gas stations), and boilers." Stationary sources at the Port, which are diesel generators and GDFs, are not complex sources. Please strike the phrase "and Port activities" from this sentence. 4-18

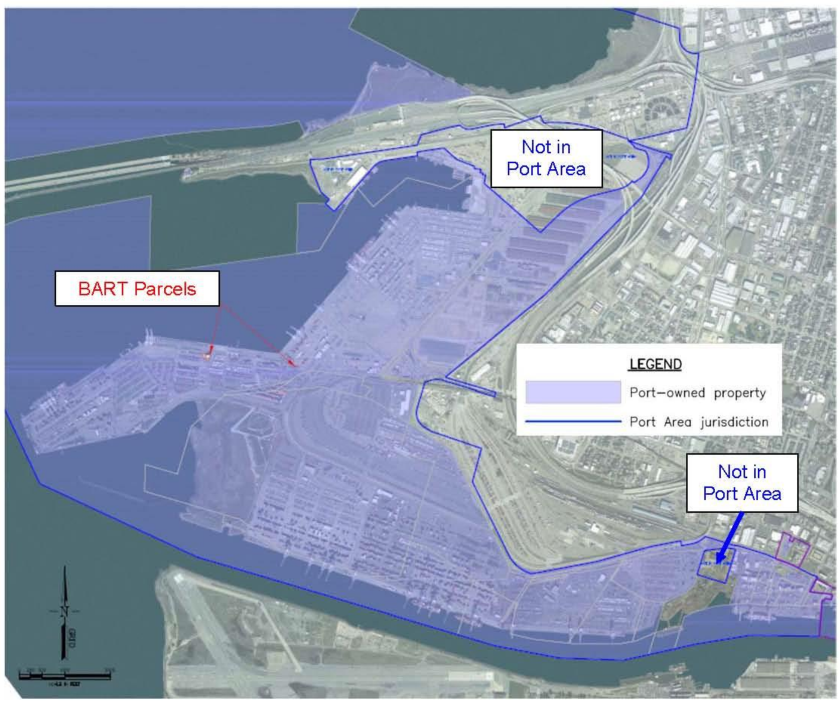
3. DEIR Section 3.7.3.7 Land Use and Planning incorrectly states "The Union Pacific Intermodal Yard lies south of Interstate 880, within the Port." The Union Pacific Railyard is not within the Port. Please replace this sentence with "The Union Pacific Intermodal Yard lies south of Interstate 880, outside of the Port Area." 4-19

4. DEIR Section 3.7.3.7 Land Use and Planning incorrectly states: "Interstate 880 is located along the western boundary of West Oakland area. The Union Pacific Railroad and the BNSF Railroad, and the Knight Rail Yard are located underneath and immediately west of Interstate 880." The Knight Rail Yard is now known as the Outer Harbor Intermodal Terminal. The Port requests that this sentence replace "Knight Rail Yard" with "Outer Harbor Intermodal Terminal." 4-20

5. DEIR Section 3.7.3.7 says "The Oakland Base Reuse Authority currently leases space for various transportation, industrial and commercial uses until the former Army Base is redeveloped for permanent non-military uses." The Port of Oakland and the City of Oakland lease their respective parts of the space, not the Oakland Base Reuse Authority. The Oakland Army Base redevelopment is underway and contains only non-military uses. Please strike this sentence. 4-21

6. Appendix C of the DEIR, Section 2.1.3 Emissions Sources and Base Year, says "The Port is the fifth busiest port in the U.S. and serves as a gateway for intermodal cargo transport. In 2017, the Port consisted of four active marine terminals (TraPac, Nutter (STS/Everport), Oakland International Container Terminal [OICT], and Matson), and two railyards (Burlington Northern Santa Fe [BNSF], and Oakland Global Rail Enterprise [OGRE]). A fifth terminal (the Charles P. Howard terminal, located on the southeastern corner of the Port), has been vacant since the tenant filed for bankruptcy in 2010. Presently, the American Baseball League the Oakland Athletics (the A's) is investigating the possibility of building a baseball stadium on the site that is currently being used for long term Port (drayage) Truck parking." 4-22

**Exhibit 6. Port of Oakland Property Map**



a. The Port of Oakland is currently the eighth busiest container port in the United States based on annual container volume. Please update the ranking from "fifth" to "eighth."

b. Since not all terminals are identified by their current lessee in parentheses, please strike "(STS/Everport)" from the second sentence of this paragraph.

c. The Charles P. Howard Terminal, located on the southeastern corner of the Port, is not vacant: short-term tenants use the site for truck parking, loaded and empty container storage and staging, transloading (i.e. logistics) facilities, longshoreperson training facilities, and berthing vessels for maintenance and storage. The Howard Terminal has not been used as a marine terminal since January 2014. Please describe the actual activities at the Howard Terminal and strike the incorrect description of a tenant filing for bankruptcy in 2010.

4-22 Cont.

7. Appendix C of the DEIR, Section 2.1.3 Emissions Sources and Base Year, states "While there are some privately owned terminals and non-maritime activity on Port property, emissions from these sources are not included in the Port source categories. For example, emissions from activities at Schnitzer Steel and from truck fleets operating on Port property were accounted for separately."

a. Privately owned terminals are not part of the Port nor are they on Port property. Exhibit 6 shows what is Port property and what is in the Port Area. The Schnitzer Steel terminal is not "within the Port" or "part of the Port" and is not on Port property. Please strike the sentence "While there are some privately owned terminals and non-maritime activity on Port property, emissions from these sources are not included in the Port source categories."

b. The Port requests clarification of what is construed as "non-maritime activity on Port property."

4-23

8. Appendix C to the DEIR, Section 2.5 Ocean-Going Vessels, states "Vessel auxiliary power is primarily used when propulsion engines are not running (e.g., at berth or in anchorage outside of the Source Domain). Vessel auxiliary power was derived from auxiliary generator capacity taken from the 2018 IHS Fairplay database or estimated from a comparable ship (by size and owner) if data were not available." This is incorrect. Vessel auxiliary engines run at the same time as the propulsion engines during transiting and maneuvering, and also run when propulsion engines are not running, unless the vessel is connected to shore power. The Port's 2017 Seaport Emissions Inventory accounts for auxiliary engine emissions in all vessel modes.

4-24

9. Appendix C of the DEIR, Section 2.7 Cargo Handling Equipment, states "Other types general purpose CHE, such as sweepers, bulldozers, backhoes, excavators, and other off-road equipment, were not included as part of the CHE category since they are used at the Port for facility maintenance and construction." Equipment that is not used to move cargo, which at the Port is containerized, is not CHE. The Port

4-25

suggests this sentence be revised to "Other types of general-purpose off-road equipment, such as sweepers, bulldozers, backhoes, excavators, and other off-road equipment, were not included as part of the CHE category since they are used at the Port for facility maintenance and construction." 4-25 Cont.

10. Appendix C of the DEIR, Section 2.7 Cargo Handling Equipment, states "Emissions were split between on-dock and off-dock operations, based on the mix of equipment types used at the marine terminals as compared to the BNSF railyard." The use of the term "off-dock operations" at the Port applies to more areas than just the BNSF railyard. Section 3.4.7 indicates that all off-dock CHE emissions were modeled as originating from polygon area sources covering the BNSF railyard. Additionally, Figure 3-14 incorrectly identifies the location of the BNSF railyard. The "off-dock operations" label applies to all non-marine terminal tenants at the Port, including at the BNSF railyard and at the former Oakland Army Base. 4-26

11. Appendix C to the DEIR, Section 6 Uncertainties, Limitations, and Future Improvements, states "The District did attempt to correct emissions for the largest emissions sources (such as Schnitzer Steel) to better reflect the latest source test results and upcoming facility modifications." Since the health risk assessment for the WOCAP is intended to provide information on "base year (effective 2017)" conditions, the Port requests that upcoming facility modifications at Schnitzer Steel and any other large emissions sources be assumed only in future-year analyses, not the 2017 base-year health risk analysis. 4-27

12. Appendix D of the WOCAP, page D-3, states "[i]n response to advocacy by community members, the Air District and others, the Port Commissioners adopted the 2020 and Beyond Plan in 2019 with the condition that the Port would review and incorporate applicable measures from this Community Action Plan." Board Resolution 19-41 directs Port staff to "submit an Agenda Report to the Board by June 1, 2020, on Port-related strategies and/or implementing actions that are legally required or that, in the Port's judgment, may meet the 2020 and Beyond Plan feasibility criteria (Table D2), as a result of the final West Oakland Community Air Action Plan prepared pursuant to AB 617 and any potential related updates to the 2020 and Beyond Plan." Port staff have started screening emissions reduction measures for a potential update to the 2020 and Beyond Plan's Near-Term Action Plan. The Port will not incorporate measures from the WOCAP without appropriate review and consideration using the Board's judgment, per the 2020 and Beyond Plan and associated Board Resolution 19-41. 4-28

Port staff appreciate the responses from BAAQMD staff on technical questions transmitted via email on August 23, 2019. Port staff request that speciated toxic air contaminant (TAC) emissions from the Port Truck category be removed to avoid double-counting of Port Truck TAC emissions. DPM is the only TAC that should be used for Port Truck running exhaust emissions, per BAAQMD Rule 2-5, which states "Diesel exhaust particulate matter should be used as a surrogate for all TAC emissions from diesel-fueled compression-ignition internal combustion 4-29 engines." Port Truck emissions estimates should be conducted using the same methods as for non-Port trucks and vehicles. 4-29 Cont.

**Closing**

Thank you for the opportunity to comment on the DEIR. My staff and I look forward to discussing these issues with you. If you have any questions, please contact Catherine Mukai, Port Associate Environmental Planner/Scientist at (510) 627-1174 or cmukai@portoakland.com.

Sincerely,

Richard Sinkoff
Director of Environmental Programs & Planning

CC: Danny Wan, Acting Port Executive Director
Michele Heffes, Acting Port Attorney

**Attachment 1: Questions on the DEIR**

1. In Section 1.4.2.2 Energy Impacts, what is the basis of the estimate of 0.42 gigawatt-hours for marine vessel shore power? The value is repeated in Table 3.3.3 of the DEIR. The Port's 2015 Emissions Inventory Final Report, which includes shore power usage information for container ships only, does not contain the value 0.42 gigawatt-hours for marine vessel shore power, nor does the Port's 2017 Seaport Air Emissions Inventory. 4-30

2. In Section 3.2.1.4 Sensitive Receptors, Community-Scale Emissions Inventory, and Health Risks in West Oakland, Table 3.2-8 shows a modeled residential cancer risk from local sources in West Oakland of 204 in one million. In Appendix C to the DEIR, Section 5.3 states population-weighted excess cancer risk is 203 in a million. In Appendix C to the DEIR, Table 5-1, the "excess cancer risk across residential areas in West Oakland" is shown to be 307.1 in one million. What is the difference between population-weighted cancer risk and residential-weighted cancer risk? 4-31

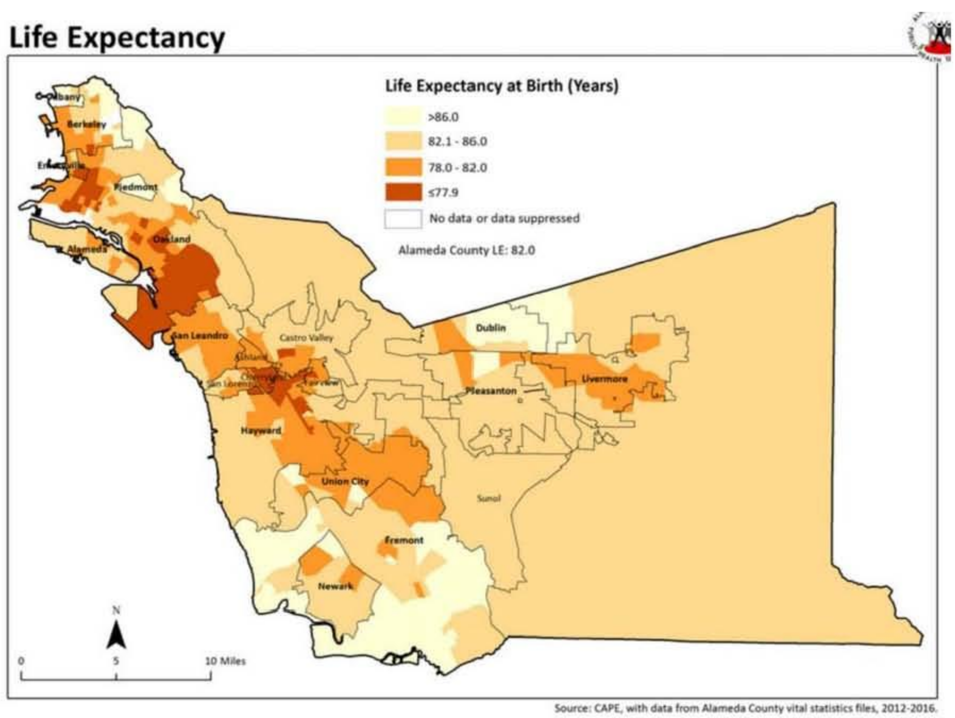
3. To support regulatory planning and advocacy, the Port requests that a supplemental table of emissions is provided that sorts emissions sources by regulatory category, for example CHE or commercial harbor craft. 4-32

**Attachment 2: Questions on the WOCAP**

1. Figure 2-5, the totals add to more than 100%. Please add cumulative total as labels on y-axis. 4-33

2. Figure 2-7 and 2-9: Do these life expectancy values include un-natural deaths due to accident or violence, or are they only for deaths due to disease/sickness? 4-34

3. Figure 2-8: What year is this life expectancy map based on? The map seems inconsistent with the information in Figure 2-7. For example, Figure 2-7 shows that Asians and Hispanic/Latinos have the longest life expectancy, but Chinatown and East Oakland which have the highest populations for those groups show the shortest life expectancy. West Oakland has similar life expectance as North Oakland and West Berkeley. Can you explain the discrepancy? There is a more recent map available at Alameda County's website here: [http://www.acphd.org/media/500113/mapset2018.pdf](http://www.acphd.org/media/500113/mapset2018.pdf). Please replace the older version with this one. 4-35




4. Page 2-9: Are there more recent vital statistics than 2010-2012? 4-36

5. Page 4-6, top of page. How do exposure conditions in Hoover-Foster neighborhood compare to other neighborhoods in the East Bay and in the Bay Area? Can you give some comparisons? 4-37

6. Page 5-2: Is there a way we can see the results of the regional modeling work? 4-38

7. Table 5-2: Why are the dredging emissions higher than reported in the Port's 2017 inventory? Where are the Schnitzer tug emissions reported? How were Schnitzer ship emissions calculated? What is included in UP Rail Yard emissions? 4-39

8. Figure 5-10: This graph is very helpful and illustrative. As requested previously, could you please include the same graph for 2024? 4-40

9. Page 5-23 for On-Road Trucks: Starting at the end of 2022 all trucks serving the Port will have model year 2010 or newer engines. Is this included in the Without Plan scenario? 4-41

10. Page 5-24: Why is Port growth 5% when regional growth is only 1%? The Port understands that the two do not need to be the same, but they are at least related, since the Port's key imports are regional cargo, not discretionary Inland Point Intermodal (IPI) cargo. 4-42

11. Page 6-3: The Port and City are committed to fully implementing the Truck Management Plan. In fact, the Port and the City have already started implementing strategies for routing, signage, and parking. The Truck Management Plan will be implemented even if the WOCAP is not approved, thus the benefits should be included in any "Without Plan" scenarios. 4-43

12. Page 6-4: CARB is already developing its new Advanced Clean Truck Regulation; the final workshop was held 8/21/19. The Port participated in the workshop. CARB staff announced that the language was largely final and they did not expect many changes. For this reason, the benefits should be included in any "Without Plan" scenarios. 4-44

13. Page 6-6: The Port applauds Strategy #70 to install filtration systems at schools, community centers, and retirement homes. The Port suggests that the program include funding set asides for regular maintenance of the filters. 4-45

14. Page 6-7: Please give more specifics in the bullet list of assumptions for the "With Plan" scenario. The Port's understanding is that for trucks, the assumption is that eight new electric trucks will be purchased each year starting in 2020; or 40 trucks by the end of 2024. There are currently zero electric drayage trucks in commercial production, so these may be more demonstration trucks? For cargo handling equipment, how many pieces are assumed to become electric each year and of what type? Please list the funding source assumed for these purchases, that is helpful information. 4-46

15. Page 6-7: The Port is very pleased that BAAQMD plans to streamline and simplify the grant application process and requirements. Port staff hear a lot of concerns during Trucker Environmental Office Hours about how difficult and complicated the process is, technical difficulties with the on-line application, the limitations of working with dealers whose supply of used trucks is overpriced with small selection. Other concerns are the requirement to scrap a truck that can be as new as 2010 (with a 2009 engine) when that truck still has a lot of resale value. Perhaps BAAQMD would consider 3-way transfers? Language barriers could be 4-47

mitigated by providing grant materials in more languages, and more advertising would be useful. 4-47 Cont.

16. Page 6-10: What is the per-truck DPM and cancer risk reduction for replacing a single diesel truck with an electric truck? Why are the Advanced Clean Truck and Heavy-Duty Inspection and Maintenance rules considered in the "With Plan" alternative when both of those CARB rules are well underway and will continue even if the WOCAP is not approved? The benefits of these should be moved to the "Without Plan" scenario.

    For ocean-going vessels, the Port requests a 0% growth rate, not 5%, for reasons already stated above. Also, the Port already has a requirement to meet 90% shore power compliance by 2020, due to grant requirements. Because of this and the fact that CARB's At-Berth amendments are already underway, the benefits of increased shore power should be moved to the "Without Plan" scenario. These will occur regardless of whether the WOCAP is approved. 4-48

17. Page 6-14: California Waste Solutions has already publicly announced its move to the former Oakland Army Base, so the benefits should be included in the "Without Plan" scenario. 4-49

18. Page D-3: The paragraph starting with "The MAQIP" is not accurate. The MAQIP planning horizon goes until 2020. The Port had always intended to create a new air quality plan once the MAQIP expired naturally. It is not true to say that the Port initiated the 2020 and Beyond effort because it recognized "the need to identify additional strategies to achieve the 85% reduction goal." It is more accurate to say that the Port initiated the 2020 and Beyond Planning process to proactively develop a long-term framework to address both TACs and GHGs. The Port believes it is on track to meet the 85% reduction goal relying on the MAQIP, considering it was already at over 80% reductions in 2017 with three more years of progress ahead. 4-50

**RESPONSE TO COMMENT LETTER NO. 4**
**Port of Oakland**

**Response 4-1:**

The District notes and appreciates the Port of Oakland's (Port's) comments on the DEIR. This is an introductory paragraph and no comments are provided on the DEIR; no further response is required. (CEQA Guidelines §15204)

**Response 4-2:**

The District notes and appreciates the general information provided on the Port's operation and will share the information on to the decisionmakers. The comment provides no information on the DEIR; no further response is required. (CEQA Guidelines §15204)

**Response 4-3:**

The District notes and appreciates the information provided on the Port's market share and will pass the information on to the decisionmakers. The comment provides no information on the DEIR; no further response is required. (CEQA Guidelines §15204)

**Response 4-4:**

The District notes and appreciates the information provided on the Port's vessel calls and will pass the information on to the decisionmakers. The comment provides no information on the DEIR; no further response is required. (CEQA Guidelines §15204)

**Response 4-5:**

The District notes and appreciates the information provided on the Port's development and operations and will pass the information on to the decisionmakers. The comment provides no information on the DEIR; no further response is required. (CEQA Guidelines §15204)

**Response 4-6:**

The District notes and appreciates the information provided on the Port's achievements in improving air quality and will pass the information on to the decisionmakers. The comment provides no information on the DEIR; no further response is required. (CEQA Guidelines §15204)

**Response 4-7:**

The District notes and appreciates the information provided on the Port's Truck Management Plan, which is independent of the West Oakland Community Action Plan, and will pass the information on to the decisionmakers. The comment provides no information on the DEIR; no further response is required. (CEQA Guidelines §15204)

**Response 4-8:**

The DEIR does not commit the Port or any other public agency to implement strategies listed in the West Oakland Community Action Plan.

As noted in the 3.1.6 of the DEIR, the "West Oakland Community Action Plan is designed to be a comprehensive Plan for the District and other agencies and community groups to use to implement strategies to reduce West Oakland residents' exposure to diesel PM, PM2.5, and Toxic Air Contaminant (TAC) emissions." (see DEIR page 3.1-4)

As further discussed in Section 3.1.6.4 (see DEIR page 3.1-10), "the West Oakland Community Action Plan also includes Strategies proposed to be implemented primarily or exclusively by other agencies, such as the City of Oakland and CARB." The DEIR further explains that the "West Oakland Community Action Plan includes these control measures because they involve activities by other agencies in the region that further the same clean air goals for West Oakland that the Air District, and other agencies and organizations, are seeking to achieve under the Plan. Including them in the Plan serves to provide a comprehensive picture of all such activities throughout the region. Further, the Air District's approval of the Strategies will not authorize or commit those agencies to any action. As these actions and activities by other agencies are not Air District actions and will occur independently of the District's approval of the Strategies under their authority, they are not direct or indirect effects resulting from approval of the Plan that must be analyzed in this document. Accordingly, Chapter 3 does not address implementation actions by other agencies that are independent of the Air District's implementation actions under the Community Action Plan."

Therefore, the DEIR clearly recognizes that the Air District's approval of strategies in the West Oakland Community Plan "will not authorize or commit those agencies to any action." The Plan simply acknowledges that, in order for the Plan to be effective, a number of public agencies must act collaboratively for the Plan to reach it goals of reducing the exposure of West Oakland Residents to TAC and other emissions.

**Response 4-9:**

As stated in Response 4-8, the District identified all strategies in the West Oakland Community Action Plan in the DEIR in order to provide a comprehensive view of the strategies that will be required for the West Oakland Community Action Plan to reach its goal of reduced exposure of West Oakland residents to TAC and other emissions. To not include the other strategies, would be to ignore the other actions that are required to reach the goals of the Plan, even if sufficient data are not available to analyze their impacts in detail.
(CEQA Guidelines §15204)

**Response 4-10:**

The District notes and appreciates the efforts of the Port on the AB617 Steering Committee. The DEIR section 1.2.3 Intended Uses of this Document discloses several intended uses of a CEQA document: as an informational document (CEQA Guidelines §15121); identify the intended uses of the document (§15124 (d)(1); and the appropriateness of tiering (§15152). The DEIR does not commit any government agency to tier off from the DEIR. If other government agencies decide to implement any strategies, they can use this EIR as a reference to reduce repetitive discussions of the same issue (§15152 (b). As stated in the DEIR, only strategies that will be implemented by the Air District will be analyzed; since other strategies are not within the District's jurisdiction (§15064 (d)(3). For a response as it pertains to Alternative 2, please see Response 5-10. (CEQA Guidelines §15204)

**Response 4-11:**

The District is aware of BCDC draft final Bay Area Seaport Forecast report and the differences between the container forecasts in that report and those developed by CARB. The District consulted with CARB on port forecasts, and CARB staff indicated their belief that the growth forecasts associated with those used in the development of the At-Berth regulation were sound and reliable. We will continue to review and monitor forecast data for the Port. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-12:**

The Air District appreciates the Port's support of reducing emissions from heavy-duty trucks in West Oakland.

**Response 4-13:**

The comment cites Table 2.6-2 of the DEIR's project description which is also included in Appendix D as Table D-1. As noted, these are "A sample of upcoming emission reduction projects" and are examples in the DEIR. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-14:**

The Air District appreciates the Port's support for Strategies to encourage Port tenants and related business to use available funding for cleaner and zero-emission technologies. Thank you for your suggestions on the proposed Strategies. These comments do not apply to the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-15:**

The Air District appreciates the comment that the funding application process should be simplified and that financial incentives are necessary to support transformative change in port equipment operations. The comment does not provide in comments on the DEIR; no further response is required. (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-16:**

This comment refers to the DEIR Technical Document Appendix C; please see this updated document attached in this FEIR. The Technical Support Document Appendix C has been updated which includes complete citations.

**<u>Response 4-17:</u>**

This comment refers to the DEIR Technical Document Appendix C; please see this updated document attached in this FEIR for the boundaries. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**<u>Response 4-18:</u>**

The comment refers to the Technical Support Document Appendix C of the DEIR Section 2.2 Background. The following was removed from this aforementioned section: “and Port activities”.

**<u>Response 4-19:</u>**

The FEIR has been revised to change the sentence to “outside of the Port Area.”

**<u>Response 4-20:</u>**

The FEIR has been revised to change the sentence to “the Outer Harbor Intermodal Terminal (formerly known as the Knight Rail Yard).”

**<u>Response 4-21:</u>**

The FEIR has been revised to delete the referenced sentence.

**<u>Response 4-22:</u>**

Thank you for your suggestions for the Technical Support Document Appendix C of the DEIR Section 2.7 Cargo Handling Equipment. This document has been updated.

**<u>Response 4-23:</u>**

Technical document Appendix C has been updated to reflect these comments.

**<u>Response 4-24:</u>**

Technical document Appendix C has been updated to reflect these comments.

**<u>Response 4-25:</u>**

Technical document Appendix C has been updated to reflect these comments.

**<u>Response 4-26:</u>**

The District worked with Ramboll to spatially allocate the emissions from Cargo Handling Equipment (CHE) among the Port terminals and BNSF and to create the polygon for the BNSF CHE equipment. This polygon encompasses only the area adjacent to the railyard where CHE would typically operate. In addition,
this comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-27:**

Technical document Appendix C has been updated to reflect these comments.

**Response 4-28:**

Thank you for your comment of the WOCAP Appendix D, page D-3. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-29:**

Speciated toxic air contaminants emissions from the Port Truck category has been removed. This has been updated in technical document Appendix C. Thank you for submitting comments on the WOCAP and the DEIR.

**Response 4-30:**

Please see Response 2-1.

**Response 4-31:**

This comment refers to the DEIR Technical Appendix C; see Response 2-4. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-32:**

Thank you for your suggestion to provide supplemental information about regulatory planning and advocacy. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-33:**

Comments on Attachment 2: Questions on the WOCAP Figure 2-5 has been revised in the Final Plan and includes the cumulative total. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-34:**

Comments on Attachment 2: Questions on the WOCAP: "The life expectancy values in Figures 2-7 and 2-9 include all deaths." This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-35:**

Comments on Attachment 2: Questions on the WOCAP: Figure 2-7 is based on Alameda County as a whole and has been updated to 2017. Figure 2-8 has been replaced and now shows years 2013-2017. In Figure 2-8, life expectancy is presented by census tract and based on 2013-2017. Both figures rely on data from ACPHD. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-36:**

Comments on Attachment 2: Questions on the WOCAP: This includes the most recent data available from the Alameda County Vital Statistics Files. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-37:**

Comments on Attachment 2: Questions on the WOCAP: The scope and timeline of AB617 did not allow time to make comparisons at the local level to communities outside of West Oakland. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-38:**

Comments on Attachment 2: Questions on the WOCAP: Further technical documentation about the regional model will be available on the webpage. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-39:**

A. Comments on Attachment 2: Questions on the WOCAP: The dredging emissions in Table 5-2 include emissions from both dredging activity and disposal of dredged materials. For disposal, only the portions of vessel trips that took place within the West Oakland modeling domain were considered. For example, dredging DPM emissions include 1.11 tpy from dredging and 0.05 tpy from disposal, for a total of 1.16 tpy.

B. Comments on Attachment 2: Questions on the WOCAP: Schnitzer tug emissions are reported in the category "Schnitzer (ships)" in Table 5-2. This category includes emissions from both OGVs and tugs.

C. Comments on Attachment 2: Questions on the WOCAP: The methodology for estimating emissions from Schnitzer ships is described in Appendix A, Part 1, Section 2.5.2.

D. Comments on Attachment 2: Questions on the WOCAP: UP Railyard emissions include locomotives, cargo handling equipment, transportation refrigeration units (TRUs), and service/repair operations. See Appendix A, Part 1, Section 2.10.3.

These comments do not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-40:**

Comments on Attachment 2: Questions on the WOCAP: This graph will be available in the near future on the Plan webpage. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-41:**

Comments on Attachment 2: Questions on the WOCAP: Yes, this regulation is accounted for in the EMFAC2017-based emissions estimates used for the 2024 Without Plan scenario. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-42:**

Comments on Attachment 2: Questions on the WOCAP: Multiple stakeholders have proposed different projections. The growth rate used in this plan is consistent with growth factors for the At-Berth Regulation amendments CARB has proposed. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-43:**

Comments on Attachment 2: Questions on the WOCAP: For the Truck Management Plan, no emission reductions were calculated or incorporated into 2024 emissions scenarios. Part of the Plan will be ensuring that the air quality benefits associated with the Truck Management Plan are realized. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-44:**

Comments on Attachment 2: Questions on the WOCAP: The Plan represents a combination of statewide actions implemented by CARB and local actions implemented by the Air District and other local agencies. As such, CARB has instructed the District to include Advanced Clean Truck (ACT)-related emission reductions in our “With Plan” scenario. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151;§15088).

**Response 4-45:**

Comments on Attachment 2: Questions on the WOCAP: The Steering Committee will consider this comment further during Plan implementation. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-46:**

Comments on Attachment 2: Questions on the WOCAP: This comment is beyond the scope of the DEIR and the WOCAP and will be addressed during Plan implementation 5. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-47:**

Comments on Attachment 2: Questions on the WOCAP: The Steering Committee will consider this comment further during Plan implementation. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-48:**

A. Comments on Attachment 2: Questions on the WOCAP: See above in Response 4-44 for an explanation of why ACT reductions were considered "With Plan." Also, emission reductions for voluntary truck and CHE replacements were not quantified or included in emission summary tables. Any benefits from these programs would be in addition to the emission reduction targets specified in the plan.

B: Comments on Attachment 2: Questions on the WOCAP: The District has since refined the estimates for future year emissions for OGVs. At CARB's recommendation, the District is now using CARB's growth and control assumptions for OGV maneuvering, consistent with their SIP inventory estimates. The District is also using OGV berthing emissions estimates provided by CARB that are consistent with their At-Berth regulation. These benefits are included in the With Plan scenario. See also Response 4-42 above.

These comments do not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-49:**

Comments on Attachment 2: Questions on the WOCAP: This comment is beyond the scope of the DEIR and the WOCAP and will be addressed during Plan implementation. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 4-50:**

Comments on Attachment 2: Questions on the WOCAP: Appendix D page D-3 has been updated to state: In 2018, the Port reconvened the MAQIP Task Force "… to assist in updating the MAQIP (2018 Update to the 2009 MAQIP) and in identifying issues for seaport air quality planning beyond the Year 2020 …." This updated statement is based on the Project Statement available online at https://www.portofoakland.com/files/PDF/Project%20Statement%20-%20MAQIP%20Update%20-%20Feb%2021,%202018.pdf.

This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**COMMENT LETTER NO. 5**

**City of Oakland**

CITY OF OAKLAND

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September 6, 2019

Ada E. Marquez
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amarquez@baaqmd.gov
WestOaklandPlan@baaqmd.gov

**Subject:** Comments on the Draft Environmental Impact Report for the AB 617 West Oakland Community Action Plan

Dear Ms. Marquez,

Thank you for the opportunity to review and comment on the Draft Environmental Impact Report (DEIR) for the AB 617 West Oakland Community Action Plan (Plan). The City of Oakland (City) supports the Plan and its goals and respectfully submits the following comments on the DEIR. Concurrently with this letter, the City is also providing a separate letter commenting on the Plan.

As stated in the Notice of Preparation (NOP) issued by the Bay Area Air Quality Management District (BAAQMD or Air District), and reiterated in the DEIR, BAAQMD is the lead agency undertaking both the Plan and the preparation of a program-level EIR for that Plan. As such, BAAQMD determined that its approval of the strategies contained in the Plan "will not authorize or commit" other agencies with implementing authority to undertake any action and it would be analyzing only the impacts of those strategies and measures over which BAAQMD has authority (DEIR at page 1-5). We agree with this approach. 5-1

Consistent with this approach, and the City's comments on the NOP, the City is a not a responsible agency as defined under CEQA Guidelines section 15381, which states that "'Responsible agency' means a public agency which proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or negative declaration. For the purposes of CEQA, the term 'responsible agency' includes all public agencies other than the lead agency which have discretionary approval power over the project." The City looks forward to working collaboratively as an implementing partner; however, because the Plan does not authorize or commit any particular action by the City, or analyze any of the actions where the City is identified as the implementing jurisdiction, the City will need to conduct its own environmental review should it undertake any discretionary action to implement any of the strategies in the future.

Specific comments on the DEIR for the Plan by chapter follow.

Chapter 1

As stated on Page 1-5 of the DEIR, while the Plan includes an extensive list of strategies, many of which fall within other agencies' jurisdiction, the Air District's approval of the strategies contained in the Plan "will not authorize or commit those agencies to any action." Therefore, as a general comment, we respectfully request that any reference to the City of Oakland being responsible for actions/strategies be either removed to the extent the context implies that the Plan requires a particular City action, or else reworded to "has jurisdiction and discretion over" to the extent the context explains the City's general authority over the strategies. Additionally, consistent with the statements in the DEIR Chapter 2 (discussed below), the Strategies designated with the City as the lead jurisdictional entity have not been evaluated for feasibility or effectiveness; therefore, on page 1-5, please clarify as follows: "The West Oakland Community Action Plan includes these control measures because they involve activities by other agencies in the region that <u>*have the potential to*</u> further the same clean air goals for West Oakland that the Air District, and other agencies and organizations, are seeking to achieve under the Plan." 5-2

<u>Chapter 2</u>

We agree with the statement on page 2-4 of the DEIR that acknowledges more investigation is necessary "to understand authority, legality, effectiveness, and feasibility" of each strategy. However, some of the language in the DEIR incorrectly implies that strategies assigned to other jurisdictions are final and "will be" implemented. We request that the introduction to the Project Description contained in Section 2.1 be revised to clarify that: "<u>Although strategies beyond the authority of the Air District are included within the Plan for informational purposes, the City and other agencies have complete discretion over the commitment of staff time, resources, funding, and ultimately, which strategies to implement</u>."

Additionally, Page 2-5 of Section 2.3 should be revised to be consistent with the Air District's stated approach, as follows: "For the Plan, the City of Oakland <u>*has jurisdiction over*</u> strategies that address air pollution impacts from land use and transportation, such as Strategies #1 and #4-11<u>*, and has discretion over which, if any, of the Plan's strategies to pursue*</u>." At the end of the fourth paragraph on Page 2-4, please consider reiterating that the Plan does not "authorize or commit any agency other than the Air District to any particular action or strategy."

We also note that some of the narrative discussion of the proposed strategies in the DEIR is inconsistent with the text within the Strategies Table in Chapter 2. For example, the discussion of Land Use Strategy #5 on Page 2-12 should be revised to be consistent with the proposed strategy on Page 2-14. Additional comments on the specific strategies are contained in the letter sent concurrently addressing the Plan itself. 5-3

<u>Chapter 3</u>

Appropriately, because the Air District does not have the power to enforce strategies within the jurisdiction of other agencies, the CEQA Checklist did not address implementation actions by other agencies. We respectfully suggest that each subchapter of Chapter 3 clarify that the EIR evaluates only the potential impacts associated with implementation of the strategies in the West Oakland Community Plan to be implemented primarily or exclusively by the Air District. In the Table of strategies, we also recommend highlighting those strategies that were evaluated in the DEIR.

Additionally, the City requests specific changes to the following pages in Chapter 3: 5-4

- Page 3.2 – 16, Figure 3.2-2: Sensitive Receptors in West Oakland, the Wood Street Zones (D-WS-1, 9) should be added as residential zones. 5-5

- Page 3.3 – 2, the second to last paragraph, last sentence states "The City of Oakland operates three 55 MW fossil fuel plants that supplement PG&E's electricity generation." This is not correct; the City does not operate any power plants. 5-6
- Page 3.5 – 15, Section 3.5.2.3 Local Regulations, the City is not aware of a program called the Urban Land Redevelopment Program, so reference to this should be removed or further refined. 5-7
- Page 3.4 -24, Table 3.4-9. The column heading should say "Operation Emissions" instead of "Construction Emissions". 5-8

<u>Chapter 4</u>

The DEIR's discussion of Project Alternatives in Chapter 4 is confusing. For example, Section 4.4.1 states that under the No Project Alternative, the land use strategies to limit exposure to emissions would not be implemented, but the discussion does not address the fact that even under the proposed Project, the land use strategies may be changed or eliminated. Indeed, many of the strategies where the City is identified as the jurisdictional agency, like moving the recyclers or implementing the Truck Management Plan, will proceed independent of the Plan. Thus, the No Project Alternative misrepresents the impacts of the Plan against the alternative, because it incorrectly assumes that the strategies that are already being implemented by other agencies would not be implemented if the Plan were not adopted. Please revise the discussion of the No Project Alternative accordingly. 5-9

Alternative 2, The District Only Strategies Alternative, is in fact the project under review in the DEIR, as only the impacts of the strategies implemented by the Air District were considered. We recommend revising the discussion of the Proposed Project alternative to reflect this review and deleting Alternative 2 entirely, as it is misleading and inaccurately implies that the Plan requires the implementation of strategies by other agencies. 5-10

As discussed during the Steering Committee's evaluation of the Plan strategies, and communicated to the Air District in the City's comment on the Draft Plan dated June 20, 2019, implementation of any of the Plan's strategies by the City will first require an ongoing collaborative process to evaluate the intended outcome of each strategy and the effectiveness of each proposed action, remove or identify new strategies, and may require identification of new funding sources and/or changes to existing policies, codes, or ordinances. The City looks forward to beginning this collaborative process following the Air District's approval of the Plan. 5-11

Thank you for the opportunity to comment on the scope of the EIR. If you have any questions, please contact Ed Manasse at (510)238-7733 or emanasse@oaklandca.gov.

Sincerely,

Ed Manasse, Deputy Director, Bureau of Planning
Environmental Review Officer

cc: Ms. Margaret Gordon, WOEIP
Brian Beveridge, WOEIP
Elizabeth Yura, BAAQMD
Yvette DiCarlo, BAAQMD
Ada E. Marquez, BAAQMD

Alison Kirk, BAAQMD
William Gilchrist, City of Oakland
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Ryan Russo, City of Oakland
Micah Hinkle, City of Oakland
Jason Mitchell, City of Oakland
Daniel Hamilton, City of Oakland
Laura Kaminski, City of Oakland
Nicole Ferrara, City of Oakland
Joe Wang, City of Oakland
Richard Sinkoff, Port of Oakland
Henry Hilken, BAAQMD

Attachment A: Additional Technical Comments

Attachment A: Additional Technical Comments

| Location in EIR | Information in EIR | Comment | |
|---|---|---|---|
| Page 1-15 | Summary tables indicate that no Mitigation Measures (MM) would be required for construction. | Wouldn't the general BAAQMD Construction MM related to fugitive dust suppression, idling restrictions etc. be applicable to some of these proposed activities? It is also possible they are covered in the project design but perhaps a reference to the MM would suffice. | 5-12 |
| Page 3.2-32 | Table 3.2-12 presents criteria pollutant emission estimates associated with the construction of 1 enclosure. | Project level significance thresholds for construction are not supported by the discussion in Section 3.2.3 to use BAAQMD's Regional Plans thresholds of significance. Additionally, the annual thresholds would not apply if this was project level because 1. it cannot be assumed that only one enclosure would occur in that year and 2. the BAAQMD threshold of significance for annual emissions does not apply to construction. | 5-13 |
| Page 3.2-33 | "The installation of an SCR Unit may potentially result in increased ammonia emissions due to "ammonia slip" (unreacted ammonia released in the exhaust). As a result, ammonia slip emissions could increase, thus, contributing to PM10 concentrations." | The potential for a bonnet system to control emissions from marine vessels includes discussion of ammonia slip and PM10 but does not discuss the potential for secondary PM2.5 from ammonia slip. As the WOCAP is designed to reduce TAC and PM2.5 in the community, it is suggested to include this in the discussion. | 5-14 |
| Page 3.2-33 | "…technology has progressed such that ammonia slip can be limited to five parts per million (ppm) or less. SCR vendors have developed better injection systems that result in a more even distribution of NOx ahead of the catalyst so that the potential for ammonia slip has been reduced. Similarly, ammonia injection rates are more precisely controlled by model control logic units that are a combination of feed-back control and feed forward control using a proportional/integral controller that sets flow rates by predicting SCR outlet ammonia concentrations and calibrating them to a set reference value." | Reference to a technical document specific to "bonnet" style SCR's should be included. SCR technology for a continuous stationary source would be different than for varying stack parameters of differing vessel types, which are docking and undocking. | 5-15 |
| Page 3.2-34 | "Further, the bonnet system would be located on a barge within/adjacent to the Port and would be located about 0.5 mile from the closest residential area, further minimizing the potential for exposure to TAC emissions." | The discussion of distance to a sensitive receptor is not necessary to include when evaluating criteria pollutants (unless PM2.5 health risk is to be evaluated). If it is included, the residents outside of the West Oakland area should be considered as well. | 5-16 |

| Location in EIR | Information in EIR | Comment | |
|---|---|---|---|
| Page 3.2-37 | Table 3.2-14 PG&E Air Emission Forecast | Footnote 3 is not linked to an item in the table. | |
| Page 3.2-39 | "The Plan is expected to result in reduced emissions from diesel particulate matter by reducing the use of conventional mobile sources and encouraging the use of zero and near-zero emission mobile sources, among other strategies." | Quantification of criteria pollutants from construction activities was included in Table 3.2.-12 but DPM emissions from those construction activities, although short term, were not calculated or discussed. Additionally, the haul trips for the ammonia delivery associate with the SCR would have operational DPM emissions. | 5-17 |
| Page 3.2-38 | "Modeling has been performed that shows the concentration of ammonia at a receptor located 25 meters from a stack would be much less than one percent of the concentration at the release from the exit of the stack (SCAQMD, 2015b)" | The reference document for the "dispersion factor" is for the South Coast region and its tables are specific to the region. Appendix B does not have calculation or modeling for ammonia. It is suggested to completed a screening level model specific to the East Bay conditions or at very least, provide the parameters chosen (e.g. stack height, city, etc.) chosen for the screening calculations completed. | 5-18 |
| Page 3.4-3 | Black Carbon is improperly identified as "Carbon Black" at the beginning of the same paragraph where it is later properly identified. It is also referred to as the "third largest GHG in the Bay Area on a CO2-equivalent basis." which is incorrect as it isn't a "gas" but instead is a fine particulate (also known as soot) that exacerbates climate change. | | 5-19 |
| Page 3.4-10 | The following applicable GHG state regulations were not referenced in the setting section and all seem to be relevant in West Oakland due to the surrounding land uses:<br><br>In May 2016, CARB released the updated Mobile Source Strategy that demonstrates how the State can simultaneously meet air quality standards, achieve GHG emission reduction targets, decrease health risk from transportation emissions, and reduce petroleum consumption over the next fifteen years. Statewide, the Mobile Source Strategy would result in a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels (CARB, 2016).<br><br>CARB approved the *Tractor-Trailer Greenhouse Gas regulation to* reduce GHG emissions produced by certain heavy-duty tractor-trailers. The tractors and trailers subject to this regulation must either use United States Environmental Protection Agency (EPA) "SmartWay" certified tractors and trailers, or be retrofitted with SmartWay verified technologies.<br><br>The *California Sustainable Freight Action Plan* includes strategies to improve freight efficiency and transition to zero emission freight handling technologies. It includes goals to achieve 25 percent improvement of freight system efficiency by 2030, and to deploy over 100,000 freight vehicles and equipment capable of zero emission operation, and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.<br><br>The *Advanced Clean Local Truck Rule* is to accelerate the early market adoption of zero emission trucks that are usually centrally fueled, have duty cycles with low average speed and stop-and-go operation. The rule focuses on urban, mostly | | 5-20 |

| Location in EIR | Information in EIR | Comment | |
|---|---|---|---|
| | vocational trucks, but includes class 7-8 urban goods movement trucks as well. The regulatory schedule begins with the 2023 vehicle model year with early action credits given for pre- 2023 vehicle models. | | 5-20 Cont. |
| Page 4-8 | States that "The potential electricity impacts were determined to be less than significant as they are within the energy forecast and expected electricity production for PG&E." | While this is unlikely to change the significance determination it should be noted for accuracy as the Port is its own distinct energy provider with a different power content label (most recently 28% renewables vs. 33% for PG&E). | 5-21 |
| Page 4-10 | The EIR states: "The potential increase in TAC emissions associated with the proposed project were also determined to be less than significant.... However, it is not possible to estimate the potential TAC emissions reductions at this point until appropriate strategy implementation actions and engineering analyses have been completed and so forth." | Without some additional information related to the (qualitative?) analysis it is difficult to understand the process by which this determination was made. It should be noted that there will likely be some construction emissions with TACs. | 5-22 |
| Page 4-11 | Same comment related to energy provider as from Page 4-8 above. | | 5-23 |
| Page 4-14 | Construction emission are found to be "NS" however the analysis does not appear to demonstrate that the standard BAAQMD MM for construction will not be required. | | 5-24 |
| Other | While highly unlikely to lead to a determination of significance, the Friant Ranch case could be referenced to demonstrated it was considered in this analysis from a health risk due to ozone impacts perspective. | | 5-25 |

**RESPONSE TO COMMENT LETTER NO. 5**
**City of Oakland**

**Response 5-1:**

Thank you for submitting a comment letter for the DEIR and a separate letter on the West Oakland Community Action Plan. The District concurs that neither the City of Oakland nor any other public agency, apart from the District, is a responsible agency as defined under CEQA Guidelines section 15381. As stated in the DEIR, any public agency that decides to implement any of the strategies will be the lead agency legally responsible to prepare the environmental documents for those strategies.

**Response 5-2:**

On page 1-5 Chapter 1 of the DEIR, the clarification now includes the following: The West Oakland Community Action Plan includes these control measures because they involve activities by other agencies in the region that have the potential to further the same clean air goals for West Oakland that the Air District, and other agencies and organizations, are seeking to achieve under the Plan.

**Response 5-3:**

The following sentence has been included in the FEIR Chapter 2 page 2-4: Although strategies beyond the authority of the Air District are included within the Plan for informational purposes, the City and other agencies have complete discretion over the commitment of staff time, resources, funding, and ultimately, which strategies to implement.

**Response 5-4:**

Chapter 3 includes a comprehensive explanation of the analytical framework of the potential impacts associated with the implementation of strategies in subsection 3.1.6 Overview of Analytical Approach on pages 3.1-4 to 3.1-10.

**Response 5-5:**

The map has been updated to incorporate this comment.

**Response 5-6:**

The FEIR includes this correction. The City of Oakland does not operate any power plants.

**Response 5-7:**

References to the Urban Land Redevelopment Program have been deleted from the FEIR

**Response 5-8:**

The FEIR includes the correction of the Table 3.4-9 heading.

**Response 5-9:**

Per CEQA Guidelines section 15126.6(e)(1): The purpose of describing and analyzing the "No Project" alternative is "to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." Alternative 1 the No Project Alternative, would not comply with AB 617 which provides a formal mechanism to identify communities disproportionally impacted by air pollution impacts, and "integrate locally-driven solutions that go beyond existing State and regional programs" (CARB Blueprint, p.4).

**Response 5-10:**

Alternative 2 and the Proposed Project (the preferred alternative) are two distinct projects. The Proposed Project (the preferred alternative) will achieve substantially more environmental benefits than Alternative 2. The Proposed Project analyses includes the cumulative benefits of all the strategies, both BAAQMD and non-BAAQMD. For example, the Proposed Project will be consistent with AB 617 requirements and the community goals in the WOCAP, with emission reductions of criteria pollutants, particulate matter, and TAC, and improve public health. However, Alternative 2 would not achieve the WOCAP's goals and would have substantially less environmental benefits.

**Response 5-11:**

Thank you for communicating the City of Oakland's on-going interest to collaborate with Air District and the Steering Committee.

**Response 5-12:**

As stated on page 3.2-32 of the Draft EIR, "construction emissions associated with the Strategies that the Air District expects to implement under the West Oakland Plan would be below the Air District construction significance thresholds for criteria pollutants and would, therefore, be less than significant. Per CEQA Guidelines §15126.4(a)(3), mitigation measures are not required for effects which are not found to be significant. Therefore no mitigation measures were imposed on construction activities. Nonetheless, all projects implemented as Part of the Plan would be required to comply with existing rules and regulations related to construction activities.

**Response 5-13:**

The BAAQMD guidelines indicate that for plan level analyses, no construction-related significance thresholds apply[1]. In order to provide a conservative analysis of the potential impacts, the EIR used the project-level significance thresholds. In either case, the Strategy 63 which applies

[1] BAAQMD, CEQA Air Quality Guidelines, May 2017, Table 2-1. Available at: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

to two facilities and would be expected to be implemented by 2025. Because of the long lead time and the fact that Strategy 63 would only apply to two facilities, it is not expected that more than one enclosure would be under construction at any given time. However, if two enclosures were to be constructed at the same time, the construction emissions would still be expected to be below the significance thresholds and less than significant.

**Response 5-14:**

The comment regarding ammonia slip applies to both PM10 and PM2.5, i.e., ammonia slip emissions could increase, thus, contributing to PM10 and PM2.5 emissions. The major portion of the particulate emissions are expected to be PM10 emissions, however. As stated in the Draft EIR, SCR vendors have developed better injection systems that result in a more even distribution of NOx ahead of the catalyst so that the potential for ammonia slip has been reduced. Similarly, ammonia injection rates are more precisely controlled by model control logic units. An SCR unit would require an Authority to Construction from the Air District. A limit on ammonia slip is normally included on air permits. Operators would be required to monitor ammonia slip by conducting sources tests and maintaining a continuous monitoring system. In addition, the barge system would include a diesel particulate filter or some other type of particulate control to reduce diesel particulate emissions from the ships while at berth. The particulate control would be expected to minimize emissions of ammonia (from ammonia slip), as well as emissions from PM10 and PM2.5. Operation of the system, including a baghouse or filter, is expected to reduce overall particulate emissions from ships, even if a small amount of particulate emissions was generated through ammonia slip. Specific emission estimates are speculative, as they are unknown until a system has been proposed, engineered and designed. Additional language has been added to the Final EIR for clarification.

**Response 5-15:**

The bonnet system has been tested on locomotives and oceangoing vessels. The diesel auxiliary engines on oceangoing vessels are very similar to locomotive engines. Although a different capture system is required for vessels, the treatment system is the same. Emission testing for the bonnet system on oceangoing vessels has been completed, through collaboration with Advanced Cleanup Technologies, Inc. (ACTI), the Port of Long Beach, Port of Los Angeles, and SCAQMD, which showed emissions reductions of more than 95% of particulate matter, 96% volatile organic compounds, 99% sulfur oxides, and 99% nitrogen oxides (ACTI, 2010. Available at https://www.arb.ca.gov/lists/railyard2010/4-alecs.pdf).

**Response 5-16:**

Ammonia is considered to be a toxic air contaminant. Exposure to ammonia is limited through limitations on ammonia slip. The closest residential area to a barge that may house air pollution control equipment would be about 0.5 mile away, which is in West Oakland. Residents outside of West Oakland would be located much further from the barge and not exposed to additional concentrations of ammonia.

**Response 5-17:**

The references to the footnotes have been updated in the Final EIR. Footnote 3 applies to the description of CASIO Dispatchable Thermal Resources (not footnote2).

**Response 5-18:**

As discussed in 5-14 above, specific emission estimates are speculative, as they are unknown until a system has been proposed, engineered and designed. As referenced on page 3.2-38, it is expected that concentrations of ammonia at 25 meters in the Bay Area would be expected to be much less than one percent of the concentration (expected to be less than 5 ppm) at the release from the exit of the stack. As referenced in footnote 6 on page 3.2-38, concentrations would be comparable or less than those predicted in southern California because meteorological conditions in southern California are more stagnant and less windy than northern California resulting in less dispersion. Since northern California experiences more dispersion, the ambient ammonia concentration would be lower. Therefore, the discussion provides a conservative estimate of potential ammonia impacts.

**Response 5-19:**

The reference to "carbon black" has been revised to "black carbon" on page 3.4-3. For clarification, the paragraph has been changed to "black carbon is the third largest contributor to climate change in the Bay Area on a CO2-equivalent basis."

**Response 5-20:**

The additional state GHG regulations have been added to the Final EIR.

**Response 5-21:**

The comment is referencing a summary comment in the Alternatives Analysis. Please see Section 3.3.4 of the Draft/Final EIR for a more complete discussion of the potential electricity impacts. Thank you for the clarification on the electricity supply at the Port; we agree that the slight difference in renewable power content would not alter the conclusion on page 4-8.

**Response 5-22:**

The comment is referencing a summary comment in the Alternatives Analysis. Please see Section 3.2.4.3 of the Draft/Final EIR for a more complete discussion of the TAC emissions, as well as Responses 5-15, 5-16, and 5-18 above. A qualitative analysis for the potential increase in ammonia was included in the EIR. As shown in Response 5-13, construction emissions associated with the Plan are expected to be minor at this point. More detailed CEQA analyses may be required when specific projects are proposed for implementation of the Plan, including construction emissions.

**Response 5-23:**

See Response 5-21.

**Response 5-24:**

See Response 5-12.

**Response 5-25:**

As discussed in Section 3.2.4.5 – Summary of Operational Emission Impacts, the implementation of the Strategies by the Air District would result in a minor increase in emissions associated with the potential delivery of materials to supply air emission control systems that would be implemented as part of the Plan. The potential emission increases are expected to be offset with emission decreases that would occur due to implementation of the Plan (see Table 3.2-18). Based on the evaluation of the Strategies that the Air District would implement as part of the West Oakland Community Action Plan, the emission reductions associated with the Plan are expected to exceed the potential air quality increases and there would be no net emission increases and beneficial impacts on air quality and public health.

This is a completely different scenario than the Friant Ranch case where a 942 acre master planned mixed use community was being developed with over 2,500 senior residential units, 250,000 square feet of commercial space and extensive open space/recreational amenities on former agricultural land. The Friant Ranch project resulted in a large increase in air quality emissions. Therefore, the Friant Ranch project and court decision are completely distinguishable from and are not applicable to the West Oakland Community Action Plan EIR.

# COMMENT LETTER 6

## Department of Transportation

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY Gavin Newsom, Governor

**DEPARTMENT OF TRANSPORTATION**
DISTRICT 4
OFFICE OF TRANSIT AND COMMUNITY PLANNING
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*Making Conservation a California Way of Life.*

September 9, 2019

SCH #2019059062
GTS # 04-ALA-2019-00448
GTS ID: 15560
ALA-Var-Var

Ada Marquez, Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

**Owning Our Air: The West Oakland Community Action Plan- Draft Environmental Impact Report (DEIR)**

Dear Ada Marquez:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the West Oakland Community Action Plan. Caltrans has completed the review of the DEIR as a California Environmental Quality Act (CEQA) responsible agency. Our comments are based on the July 2019 Draft Environmental Impact Report (DEIR).

***Project Understanding***
The West Oakland Community Action Plan is a joint effort between the West Oakland Environmental Indicators Project (WOEIP) and the Bay Area Air Quality Management District (Air District), with direction from the West Oakland Community Action Plan Steering Committee. The goal of the Community Action Plan is to reduce emissions from air pollution sources within and adjacent to West Oakland air pollution sources. 6-1

The DEIR outlines a number of proposed strategies to reduce air pollution in the West Oakland Community that involve Caltrans. Caltrans recognizes the importance of implementing strategies to improve the air quality in the West Oakland area and is committed to working with the lead agency and its partners in evaluating and prioritizing these strategies. We look forward to working towards our mutual goal of fostering a livable and healthy community of West Oakland.

*"Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability"*

***Encroachment Permit***
Please be advised that any work or traffic control that encroaches onto the State right-of-way (ROW) requires a Caltrans-issued encroachment permit. To obtain an encroachment permit, a completed encroachment permit application, environmental documentation, six (6) sets of plans clearly indicating the State ROW, and six (6) copies of signed, dated and stamped (include stamp expiration date) traffic control plans must be submitted to: Office of Encroachment Permits, California DOT, District 4, P.O. Box 23660, Oakland, CA 94623-0660. To download the permit application and obtain more information, visit https://dot.ca.gov/programs/traffic-operations/ep/applications.

6-1
Cont.

Should you have any questions regarding this letter, please contact me at 510-622-6053 or erik.alm@dot.ca.gov.

Sincerely,

Erik Alm, AICP
District Office Chief
Transit and Community Planning

c: State Clearinghouse

*"Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability"*

**RESPONSE TO COMMENT LETTER NO. 6**
**Department of Transportation**

**Response 6-1:**

The Air District appreciates your comments from Caltrans on the Draft EIR and notes that any construction work or traffic control that encroaches onto the State right-of-way requires a Caltrans encroachment permit in accordance with applicable law.

# COMMENT LETTER 7

## Metropolitan Transportation Commission

METROPOLITAN
TRANSPORTATION
COMMISSION

Bay Area Metro Center
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San Francisco, CA 94105
415.778.6700
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September 9, 2019

Ms. Alison Kirk and Ms. Ada Marquez
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

RE: *Owning Our Air*: The West Oakland Community Action Plan – Comments

Dear Ms. Kirk and Ms. Marquez:

Thank you for the opportunity to comment on the Draft West Oakland Community Action Plan (Action Plan), entitled *Owning Our Air*, as well as the associated Draft Environmental Impact Report (EIR). Our staff has appreciated being engaged in the Steering Committee over the past year, and we commend the Air District's planning staff for developing a robust data-driven air quality Action Plan for West Oakland – in concert with community stakeholders – in just 12 months' time.

The Metropolitan Transportation Commission (MTC) shares the Air District's commitment to improving environmental conditions across the Bay Area, particularly in historically disadvantaged communities such as West Oakland. While regional air quality has generally improved over the past several decades – primarily a result of targeted regulations at the state and regional levels – residents of West Oakland still experience disproportionately high adverse health impacts. This is reflective of the proximity of both industrial land uses and major transportation facilities that surround and traverse the community.

The strategies included in the Action Plan will help to address these inequities over the next decade. We appreciate the specific acknowledgement of Regional Goods Movement Plan, as well as integration of key strategies from that plan and subsequent Goods Movement Investment Strategy (MTC Resolution 4244) into the West Oakland Community Action Plan. MTC is supportive of many strategies outlined in Chapter 6 to address mobile source pollutants, including improvements to local transit and street improvements to encourage non-auto modes. We would suggest that it may be appropriate to recognize that a suite of similar strategies are being considered in the context of *Plan Bay Area 2050* on a regional level.

7-1

Regarding the implementation strategies listed in Chapter 6 of the Action Plan, we support the Air District's efforts in providing financial incentives to reduce emissions from mobile sources, and find these programs to be consistent with many of the community protection elements included in MTC's Goods Movement Investment Strategy. However, we suggest the Plan could be strengthened by detailing the timing of these funding opportunities, the degree to which they will be targeted toward West Oakland, and ultimately, which entities would be best positioned to apply for them.

7-2

Our concern is ensuring that the region is taking advantage of available funding opportunities, and that the various entities- including the Air District, City of Oakland, Port of Oakland, and private sector- are effectively collaborating toward a shared understanding of implementation roles and responsibilities. 7-2 Cont.

With regards to land use, we encourage the Air District to make revisions to the Draft Action Plan to provide further context beyond addressing existing stationary sources. West Oakland has been identified by the City of Oakland as Priority Development Area for more than a decade, which means it is slated for significant residential and employment growth over the coming years. While mitigations are critical to ensure that existing residents can stay in place, reinvestment in this community also presents opportunities to improve the built environment and to address environmental inequities. Further growth in West Oakland can also help to reduce per-capita greenhouse gas emissions, given its central location and relatively good transit accessibility – a key priority of *Plan Bay Area 2050*. 7-3

In addition to these high-level comments, we would also like to provide some specific comments for your consideration, which could help to strengthen the Action Plan: 7-4

**Comments Related to the Summary and Draft Action Plan**

- All figures, maps, and charts should be appropriately captioned with data source or analysis methodology.
- Summary page 5. The summary table of West Oakland Sources in 2024 potentially understates the benefits of the Action Plan, given that the Action Plan document generally cites net benefits across all of these emission source categories. 7-5
- Summary page 8. Consider rephrasing "Complete transit service promises" to "Improve transit services" to better acknowledge fiscal constraints of regional transit operators. 7-6
- Action Plan page 2-3. The Action Plan should acknowledge past successes as a result of community advocacy, in particular the demolition of the Cypress Viaduct and relocation of Interstate 880 after the Loma Preita earthquake. These infrastructure investments are a first step towards addressing mid-20th century decisions, such as freeway construction that divided West Oakland and other communities of concern in our region. 7-7
- Action Plan, page 6-17. We generally support the creation of the Sustainable Freight Advisory Committee. We have three suggestions: 1) the Air District should take on staffing responsibilities for this committee to ensure its success; 2) the committee should consider a broader geographic scope, as the Action Plan seems to suggest it would be limited to West Oakland; and 3) the Committee should broaden its scope to serve as a venue for information sharing especially around regional and state funding opportunities and financial incentives. 7-8
- Action Plan, pages 6-19 to 6-20. Actions 43-49 and 52 describe financial incentives that the Air District will make available to reduce mobile sources. We suggest the Air District build upon these actions by further specifying 1) how these financial incentives might be phased over the 5-year lifecycle of the Plan; 2) the degree to which these opportunities will be targeted toward West Oakland; 3) venues for information sharing and collaboration among potential proposers like the City of Oakland, Port of Oakland, and the private sector. 7-9

**Comments Related to the Draft EIR**

- DEIR page 3.4-12. The description of California Air Resources Board targets set under Senate Bill 375 should be updated to acknowledge 2018 action by the Board, which modified the Bay Area's per-capita GHG reduction targets for 2020 and 2035. 7-10

We look forward to working with the Air District and partner organizations to advance key strategies from the Action Plan in the coming years. Should you have any questions with regards to our feedback, please feel free to contact David Vautin of our Regional Planning team at dvautin@bayareametro.gov.

Sincerely,

Alix A. Bockelman
Deputy Executive Director, Policy

AB: DV

## RESPONSE TO COMMENT LETTER NO. 7
## Metropolitan Transportation Commission

Note: Comments from 7-1 to 7-9, pertain to the WOCAP only. These comments do not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 7-1:**

Thank you for your comment letter. The District appreciates the Metropolitan Transportation Commission's (MTC) involvement in the Steering Committee over the past year. In addition, the District looks forward to working with MTC on the Plan strategies as well as the regional strategies considered for Plan Bay Area 2050.

**Response 7-2:**

Funding has been added to the list of subjects to be discussed as part of the Freight Advisory Committee described in Draft Plan Strategy #21. The Steering Committee and co-leads will also further explore funding issues and interagency coordination including timing and targeting of incentives during Plan implementation.

**Response 7-3:**

The following text has been added to the MTC section in Chapter 6 for reference to Plan Bay Area 2050 and the region's climate goals: "MTC is currently working on Plan Bay Area 2050. Plan Bay Area 2050 is a long-range plan for the future of the nine-county region, focusing on the economy, the environment, housing, and transportation. Plan Bay Area 2050 will identify West Oakland as a designated Priority Development Area (PDA), which means that it has convenient public transit service prioritized by local government for housing, jobs, and services. As a PDA, West Oakland has access to dedicated funding for plans and infrastructure improvements, and MTC recognizes PDAs as important locations for growth that will help address the region's climate emission reduction goals."

**Response 7-4:**

All figures, maps, and charts have been updated with additional text to describe sources and methods.

**Response 7-5:**

Thank you for your comment.

**Response 7-6:**

The Plan Summary has been updated on page 8 to revise "Complete transit service promises" to "Improve transit services."

**Response 7-7:**

The following text has been added to the West Oakland History section in Chapter 2: “The San Francisco-Oakland earthquake in 1989 knocked down the Cypress Freeway. Due to the successful activism of the West Oakland community, the rebuilt freeway was relocated.”

**Response 7-8:**

Funding has been added to a list of topics to discuss under Draft Plan Strategy #21. Staffing responsibilities will be addressed during Plan implementation. As the Plan's scope is just for West Oakland, the co-leads have designed the Freight Advisory Committee to focus on this community.

**Response 7-9:**

Further discussion on the details of the financial incentives will be determined during implementation.

**Response 7-10:**

DEIR page 3.4-12 has been revised as follows: “CARB set initial GHG emission targets which were modified in 2018 to the following reduction targets for ABAG/MTC region: reduce per capita 10 percent of GHG emissions below 2005 levels by 2020 and 19 percent below 2005 levels by 2035.” (FEIR p. 3.4-12)

**COMMENT LETTER 8**

**Venable, LLP for Oakland Athletics**

VENABLE LLP

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September 9, 2019

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***VIA E-MAIL and CERTIFIED U.S. MAIL***

Alison Kirk
Ada E. Márquez
Principal Environmental Planners
Bay Area Air Quality Management District
375 Beale Street, Suite 600
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WestOaklandPlan@baaqmd.gov

**Re: Comment Letter on the Draft West Oakland Community Action Plan and Draft Environmental Impact Report**

The Oakland Athletics (A's), through their undersigned counsel, submit this comment letter on the Draft West Oakland Community Action Plan and Draft Environmental Impact Report (DEIR).

As community members deeply rooted in Oakland, the Oakland Athletics (A's) are very interested in the West Oakland Community Action Plan and committed to its implementation. The A's have two goals in submitting these comments. First, the A's want to affirm their interest in putting the Action Plan into action and improving environmental conditions for West Oakland residents. The A's believe their proposed ballpark in West Oakland can play an important role in helping to implement the Action Plan. Second, the A's believe several strategies identified in the Draft Action Plan would benefit from clarification and possible expansion.

**I. The ballpark project can help implement the Action Plan's strategies and improve conditions for West Oakland residents.** 8-1

As recognized in Strategy 2 of the Draft Action Plan, the A's are evaluating the Howard Terminal site at the Port of Oakland as a potential location for a new ballpark. While the ballpark project is currently at an early stage, the A's anticipate the project can play an important role in helping to implement the Action Plan's strategies. Consistent with Strategy 2, the A's look forward to continuing to work with the public, West Oakland Environmental Indicators Project, the Bay Area Air Quality Management District (BAAQMD), and other agencies and community groups during the course of review of the proposed ballpark project to identify ways the A's can help realize the Action Plan's emissions reduction goals. 8-1 Cont.

## II. Available information raises several questions about the Draft Action Plan's strategy for reducing Schnitzer Steel's air pollution emissions.

The A's evaluation of the Howard Terminal site as a potential location for a new ballpark necessarily involves reviewing environmental conditions in West Oakland, including conditions associated with the operations at Schnitzer Steel's Metals Recycling Yard and Port (the Schnitzer Facility), which is adjacent to Howard Terminal.

Schnitzer is a public company with more than $2 billion in sales and net income for its latest fiscal year of more than $100 million, which operates California's largest metal shredding facility in West Oakland.[1] Schnitzer's operations include shredding automobiles, appliances, and scrap metal in a "mega-shredder" and removing metals. While recycling is an important activity, the Draft Action Plan indicates Schnitzer is a considerable source of air pollution and excess cancer risk in the West Oakland community, as explained further below. Based on this finding of the Draft Action Plan, the A's have several questions about strategies for reducing Schnitzer's air pollution emissions. 8-2

### A. Why does the Draft Action Plan exclude Schnitzer from Strategy 1, which will help relocate West Oakland's two other recyclers away from receptors?

Strategy 1 of the Draft Action Plan provides for "relocating two recycling companies (California Waste Solutions and CASS, Inc.) to the former Oakland Army Base."[2] The Draft Action Plan explains that this measure "will reduce exposure from both their onsite operations and from trucks traveling and idling on local streets," including by distancing the recyclers from residential and other receptors.[3] Strategy 4 similarly calls for identifying "locations outside of West Oakland for heavier industrial businesses currently in West Oakland that contribute to air pollution emissions and negative health outcomes in West Oakland."[4]

The Draft Action Plan shows air pollution emissions and excess cancer risks attributed to these two recyclers are much lower than the air pollution and cancer risk caused by Schnitzer, the other recycler in West Oakland. In fact, according to the Draft Action Plan, Schnitzer emits more pollutants and contributes more cancer risk than any other permitted source in West Oakland that

[1] Schnitzer's website states that, in 2018, net income was $156.45 million and total revenue was over $2.364 billion. http://www.schnitzersteel.com/investors_fundamentals.aspx?content=income-statement (last visited Sept. 5, 2019).
[2] Draft Action Plan at 6-2, 6-14, 6-15.
[3] *Id.* at 6-2, 6-3.
[4] *Id.* at 6-15.

was inventoried and modeled as part of the community-scale modeling. According to the Draft Action Plan, Schnitzer's permitted stationary sources emit 5.2 tons per year of PM2.5, more than any other permitted source inventoried and modeled.[5] These PM2.5 emissions result in a weighted cancer risk of 822.78, which is also more than any other permitted source modeled.[6] To put this into perspective, Schnitzer's cancer risk accounts for over 74% of the total cancer risk-weighted emissions caused by all permitted sources listed in Table 5-2 of the Draft Action Plan.[7]

The estimated cancer risk across West Oakland caused by Schnitzer's permitted stationary sources, 5.4 per million, is also more than any other permitted source modeled in the Draft Action Plan.[8] According to the Draft Action Plan, Schnitzer causes an even higher excess cancer risk in Zone 2 (3rd Street) and Zone 3 (7th Street): 7.3 per million in Zone 2 and 7.5 per million in Zone 3.[9] Schnitzer's ocean going vessels add another 2.6 estimated cases per million in Zone 2 and 2.2 cases per million in Zone 3.[10]

8-2 Cont.

Importantly, there are approximately 23,000 residents within one mile of the Schnitzer Facility and, unlike newer or future developments, existing older buildings may not be equipped with the latest filtration technology or systems.[11]

The emissions data in the Draft Action Plan and the proximity of receptors to Schnitzer raise the question of why the Draft Action Plan proposes helping relocate the other two West Oakland recyclers further from receptors but not Schnitzer.

### B. Why aren't concrete measures to reduce Schnitzer's public health impacts identified in the Draft Action Plan?

While Schnitzer is not mentioned in Strategy 1, the Draft Action Plan does include a strategy to reduce Schnitzer's pollution and public health impacts. Strategy 64 provides that "the Air District may require Schnitzer Steel and the East Bay Municipal Utility District to adopt a Risk Reduction Plan if the health risk determined by the facility-wide health risk assessment exceeds a risk action level per the requirements of Rule 11-18 implementation."[12] The Draft

8-3

[5] *Id.* at 5-7 (Table 5-2).
[6] *Id.*
[7] *See id.*
[8] *Id.* at A-98 (Table 5-1).
[9] *Id.* at A-99 (Table 5-2).
[10] *Id.*
[11] Approximate population based on census tract-scale population data from the US Department of Commerce 2010 census. *See* U.S. Census, 2010 US Census American Community Survey, U.S. Department of Commerce, https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.
[12] Draft Action Plan at 6-21.

Action Plan explains that "[a]ccelerated implementation of Rule 11-18 will drive down the toxic emissions at Schnitzer Steel . . . by 70%."[13]

A 70% reduction of Schnitzer's toxic emissions would be very beneficial for the West Oakland community. However, the Draft Action Plan does not explain how emissions will be reduced by 70% reduction or include any concrete measures to achieve this strategy. In fact, the Draft Action Plan implies that these reductions may not be required in stating that "the Air District *may* require Schnitzer Steel and the East Bay Municipal Utility District to adopt a Risk Reduction Plan . . . ."[14] The DEIR also raises uncertainty in stating that that "the implementation actions [to achieve the 70% reduction] themselves and/or any resulting physical changes to the environment are not yet known with any specificity," and are "too speculative for evaluation."[15] In seeming contradiction with these statements, the Draft Action Plan appears to account for a 70% reduction of Schnitzer's toxic air emissions in forecasting emission reductions in 2024 under the Action Plan.[16] 8-3 Cont.

These statements in the Draft Action Plan and DEIR raise the question of why concrete measures to further reduce Schnitzer's emissions and cancer risk are not identified now as part of the AB 617 process and implemented sooner than 2025.[17] Measures that would help reduce Schnitzer's process and fugitive emissions of toxic air contaminants include: enclose stockpiles, pave all surfaces, ensure truck and other containers of "shredder residue" or other material that exceeds toxicity thresholds for hazardous waste are properly secured, prevent all offsite deposition of "light fibrous material," and impose limits on the Facility's toxic air contaminant emissions and associated excess cancer risk. Concrete measures instead of a plan to develop a plan requiring such measures would help ensure that the Action Plan's emission reduction goals are met.

[13] *Id.* at 6-12.
[14] *Id.* at 6-21 (emphasis added); *see also* DEIR at 2-18.
[15] Draft Action Plan at 3.1-6.
[16] *Id.* at 6-12 ("These emission reductions are slated to occur by 2025, and so associated emission reductions are included in the 2024 forecast with the Plan."). It is unclear why a 70% reduction to be achieved by unspecified, "speculative" measures that are "slated to occur by 2025" are accounted for in the 2024 ledger.
[17] The A's understand that Schnitzer has taken steps to improve its environmental performance during the last several years, such as enclosing its mega-shredder and joint products plant, installing scrubbers at the mega-shredder to reduce particulate matter emissions, improving its stormwater collection system, modifying its ship conveyor belt to reduce discharges to the Bay, electrifying its crane, and expanding paved surfaces.

## III. Conclusion

Thank you for this opportunity to comment on the Draft Action Plan and DEIR.

Sincerely,

William M. Sloan

William M. Sloan
Tyler Welti
*Attorneys for the Oakland Athletics*

**RESPONSE TO COMMENT LETTER NO. 8**
**Venable, LLP for Oakland Athletics**

**<u>Response 8-1:</u>**

Thank you for your comment letter. The District looks forward to working with the Oakland Athletics during the review of the proposed ballpark.

This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**<u>Response 8-2:</u>**

Relocating Schnitzer was not identified as a priority by the Steering Committee, the public that attended meetings, or by the City. This Strategy is also consistent with a measure in the West Oakland Specific Plan.

This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**<u>Response 8-3:</u>**

As referenced in the Draft Plan Strategy #64, the District's Rule 11-18 is in progress and will reduce emissions and risk from Schnitzer Steel. The commenter incorrectly cites footnote 15 as "Draft Action Plan at 3.1-6, and inaccurately quotes the DEIR page 3.1-6. The correct discussion is as follows:

> For a number of other proposed stationary source control measures, it is not clear at this point what type of regulatory action (if any) the Air District may take to implement them. For example, several Strategies involve potential rules where further study is needed to determine whether it is possible to obtain additional emissions reductions, and if so, how that would be accomplished. Such measures include Strategy #68 to further control emissions from storage tanks, and Strategy #66 to control emissions from autobody and other coating operations, including vanishing oils and rust inhibitors. For these types of measures, it is not possible to evaluate with any specificity whether there may be a significant environmental impacts arising from the Air District's implementation actions, as the implementation actions themselves and/or any resulting physical changes to the environment are not yet known with any specificity. In such situations, CEQA does not require a CEQA document to engage in speculation about what might or might not occur from such strategies. CEQA Guidelines Section 15145 provides that "[i]f, after thorough investigation, a lead agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact." Accordingly, speculative implementation strategies of this type are not addressed in detail in the environmental analyses. The Air District has projected what implementation of the Community Action Plan may involve as precisely as is reasonably possible at the current stage of development and, wherever there are specific implementation actions and specific physical changes to the

> environment that are likely or reasonably possible to occur, they and their environmental impacts are evaluated in detail. But where it is not possible at this stage to project the nature or extent of an implementation action or any resulting environmental impacts beyond mere speculation, they are not evaluated, and indeed cannot be evaluated, in accordance with CEQA Guidelines Section 15145. In addition to the examples cited above, other measures which are considered too speculative to determine if any environmental impacts might occur at this stage include Strategy #3 (evaluate air pollution and health outcomes of allowing truck traffic on I-580 and a truck lane on I- 880); as well as some of the measures that would encourage zero emission mobile sources.

Therefore, although emissions reductions are anticipated with the implementation of Rule 11-18, these emissions are considered too speculative for evaluation in the DEIR.

# COMMENT LETTER 9

## Pacific Merchant Shipping Association

PMSA
PACIFIC MERCHANT SHIPPING ASSOCIATION

September 9, 2019

Alison Kirk, Principal Environmental Planner
Ada Marquez, Principal Environmental Planner
Bay Area Air Quality Management District
375 Beale St., Suite 600
San Francisco, CA 94105
*Delivered via email to* WestOaklandPlan@baaqmd.gov

**Public Comments Re: "West Oakland Community Action Plan" Draft Plan and Draft EIR**

Dear Ms. Kirk and Ms. Marquez:

We submit these comments regarding the "West Oakland Community Action Plan" (WOCAP) Draft Plan and Draft Environmental Impact Report on behalf of the members of the Pacific Merchant Shipping Association (PMSA). PMSA represents marine terminal operators, ocean carriers, and other maritime industry businesses which operate at the Port of Oakland.

To set the context for the offering of these comments on the WOCAP, it is important to note the tremendous Air Quality improvements which have already been achieved at the Port of Oakland due to the efforts of the private industries operating at the Seaport. From 2005 to 2017, the Port and its industry partners across the maritime intermodal supply chain have achieved tremendous emissions reduction results: 91% reduction in SOx, 80% reduction in Diesel PM, and 30% reduction in NOx.

By starting the WOCAP with a 2017 baseline, the Plan does not acknowledge the dramatic and recent history of air quality improvements at the Port. The significant scope, scale, and speed of implementation and the sheer magnitude of investment in the very substantial emissions reductions which have already occurred is a critical context for all future air quality efforts at the Port of Oakland. These significant contributions to emissions reductions should be reflected affirmatively in the WOCAP. 9-1

The pace and scale of these emissions reductions, as the WOCAP points out with respect to future reductions from seaport sources already anticipated, are primarily dictated by regulatory rules for freight mobile sources which already exist at the state level. As the WOCAP correctly concludes, even without any WOCAP Plan implementation, regulated emissions reductions will continue to result in improvements in West Oakland such that only one residential zone in 2024 will still be clearly over the DPM targets, and three will decrease below the 2030 goals (Figs. 5-11, 5-12).

When one considers that these "without the plan" improvements and reductions are projected to occur even after the application of very aggressively overstated projections of growth in Port emissions, it is clear that the WOCAP's goals are most likely to be achieved under the present "without the Plan" scenario by 2025 for nearly all West Oakland residents with little need for local intervention into questions related to freight mobile source regulation.

PMSA and its member companies are proud of our history of investment in the infrastructure in California necessary to maintain a growing efficient business in the face of major loss of market share and to achieve substantial and significant environmental improvements.

PMSA appreciates and agrees with those related WOCAP goals for mobile source rules and regulations related to the Seaport which acknowledge that the best way to address these sources is to support the rules already in place or to engage in future regulatory processes underway at the state, federal and international level.

For example, while we disagree with the WOCAP's forecasted inventory of future emissions associated with Oceangoing Vessels, PMSA agrees with the WOCAP goal that the best way to pursue strategies for the reduction of emissions from these sources is for the local community to defer to the jurisdiction of the California Air Resources Board (CARB). In this regard, PMSA has been working closely with CARB for years in their efforts to update their existing regulations of vessels at berth and agrees with the WOCAP goal that new amendments to the existing rules for vessels at berth proceed in a manner which is consistent with CARB-adopted policies including the AB 617 Community Air Protection Blueprint, the SB 32 Scoping Plan, the SIP Mobile Source Strategy, and the Sustainable Freight Action Plan.

9-1 Cont.

PMSA agrees with the WOCAP assessment that most of the environmental exposure issues facing West Oakland are not derived from local sources, such as those at the Port, and that the marginal contributions by local sources must be taken in the regional context of emissions issues. It is obvious that many sources contribute to exposure issues and that impacts will necessarily vary by location and proximity of residential areas to industrial sources. The farther residential housing is located from industrial sources (a criteria well beyond the control of the industrial sources), the more marginal the impact on the West Oakland community.

Consistently, the WOCAP highlights the benefit of the existing industrial buffer zones and the value of greater distances between Port operations and residential housing in West Oakland in its examination of the raw emissions values of operations versus the residential impacts of those operations. For instance, while the WOCAP lists Ocean-going Vessels' Berthing and Maneuvering as the 1st and 2nd largest sources of DPM per year (Table 5-2), when it comes to the WOCAP evaluation of the actual Residential Impacts of these emissions, these sources drop dramatically 4th and 7th respectively (Figure 5-10).

With respect to the need to maintain these buffers and to avoid land use incompatibility issues, PMSA is a signatory to a coalition letter submitted separately and we incorporate those comments by reference here regarding proposed residential encroachment being considered by the City of Oakland. PMSA respectfully requests that, to the extent that the purpose of the WOCAP is to reduce exposure to sensitive receptors primarily due to proximity exposures, that the Plan address the question of the creation of these new residential zones.

9-2

Given the obvious negative impacts which would result from allowing the residential redevelopment of Howard Terminal by the Oakland A's and related changes to the Downtown Oakland Specific Plan, which are in direct conflict with the policy goals of the WOCAP, the Plan should do everything it can to discourage the City of Oakland from replacing current industrial zoning within and near the Port of Oakland with new residential uses that are in and amongst and closer than ever before to Port and industrial operations.

9-3

Please find our additional specific comments on pages 4-10 of this letter, below.

We look forward to working with the BAAQMD to clarify, correct and update the WOCAP Draft Plan and the Draft EIR prior to final adoption and presentation to CARB. Please feel free to contact us at any time to discuss these or any other issues.

Sincerely,

Mike Jacob
Vice President & General Counsel

**COMMENTS ON WOCAP DRAFT PLAN**

- Pg. 2-3 - "West Oakland History" & "West Oakland Today"
This History and Today sections are an appropriate location to describe events from 1999 to the present in this narrative. This section is currently missing the recent history of substantial emissions reductions and significant air quality improvements occurring at the Port of Oakland. Acknowledgement of the recent history of investments in improved air quality are arguably just as, if not more, relevant to the profile of impact and context for present air quality initiatives than the other historical inputs noted here. We would request a provision which notes the air quality improvements which have occurred in the WOCAP Planning Area since 2005. 9-4

- Pg. 2-6 – "Population Characteristics"
- Pg. 2-7 – "Health Conditions in West Oakland"
While beyond the immediate scope of AB 617, the WOCAP Plan does properly identify the issue of poverty in West Oakland and disparate level of unemployment as relevant to the context of public health. It is important in this planning process to recognize that just as the impacts of degraded air quality can reduce public health, poverty and unemployment can be greater predictors of and more direct corollaries with public health outcomes. To the extent that these economic factors are complicated by other demographics, employment and the alleviation of poverty become increasing relevant as some studies have found that environmental factors only contribute to 10% of public health outcomes, while socioeconomic factors are the largest at 40%. For more on these issues see the following links which may be of interest: 9-5
https://www.countyhealthrankings.org/sites/default/files/differentPerspectivesForAssigningWeightsToDeterminantsOfHealth.pdf; https://www.dhs.wisconsin.gov/lh-depts/orientation/hoodcarly-employeeorientation-madisonnotes.pdf;
https://www.improvingpopulationhealth.org/blog/what-are-health-factorsdeterminants.html
And, additional relevant study of this subject by the Robert Wood Johnson Foundation:
https://www.rwjf.org/en/library/research/2012/12/how-does-employment--or-unemployment--affect-health-.html; https://www.rwjf.org/en/library/infographics/infographic--stable-jobs---healthier-lives.html; https://www.rwjf.org/en/library/research/2018/09/wealth-matters-for-health-equity.html

- Fig. 5-5 – "Intensity of Air Pollution Contributed by Local Sources in West Oakland (2017)"
- Fig. 5-9 a.b.c. - "... Showing the Mix of Sources Contributing to Local Enhancement ..."
These Maps are unnecessarily limited in scope and do not show values which capture the entirety of the West Oakland planning area, including large portions of the Port complex and those additional areas which are being considered for additional development of new residential housing by the Oakland A's at Howard Terminal and the City of Oakland in its proposed Downtown Oakland Specific Plan. Please include the full picture of sources for each map without the "frame" obscuring the full picture of local sources captured to facilitate evaluation of not just the existing residential zones, but also for the potential for new residential zones proximate to industrial sources. 9-6

- Pg. 5-22 – "Summary of Modeled Changes…" - "Ocean-Going Vessels"
- Pg. 6-10 – "Diesel PM" – "Ocean-Going Vessels"
  The WOCAP assumption which forecasts "a 5% compound annual container ship activity growth rate between 2017 and 2030" is problematic with respect to both: 1) the rate of growth forecast and 2) forecasting OGV emissions and impacts will grow at the same rate as freight.

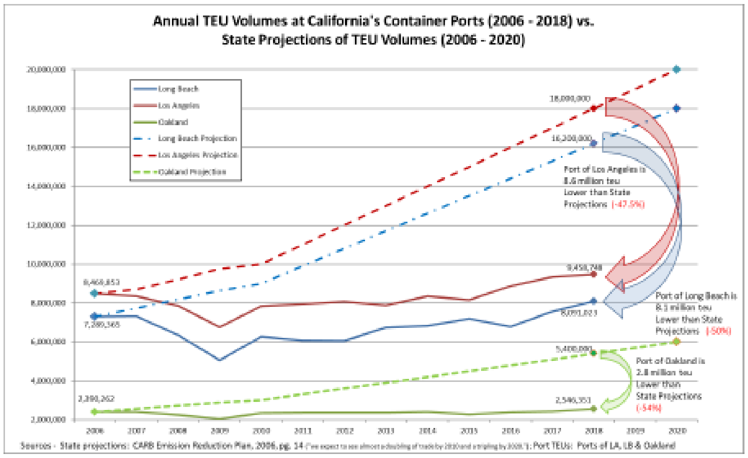
  We appreciate the BAAQMD staff comments regarding refining these estimates with CARB, BCDC, and the Port of Oakland and request that as the District staff works on further improvements to this Plan that these forecasts be reduced to reflect more historically accurate levels of cargo growth and historical trends towards efficiency that actually reduce emissions per unit of freight. To ensure accuracy of predictive emissions and to make sure that the WOCAP is focused on prioritizing issues only those sources necessary to achieve its goals, it is important that these forecasts be revised to advise the public of the most likely scenarios.

  1) Regarding Freight Growth Forecasts

  The FAF analysis used by CARB does not reflect historic growth trends generally, and it departs greatly from the actual growth on the ground in the Port of Oakland. CARB's predicted 5% Compounded Annual Growth Rate until the 2030 horizon of the WOCAP is not consistent with historic actual container volumes at the Port of Oakland, which have not demonstrated anything near this level of growth. 9-7

  From 2005 to 2018, tracking the baseline year for emissions reductions calculations, the Port of Oakland's CAGR per TEU is less than 1%, at 0.88%. When compared to the pre-recession high-water mark of container volumes in 2007, CAGR is even lower, at 0.59%. Even if one excludes the recession years pre-2009, Port of Oakland TEU volumes have only grown 24.5 percent total over the past decade, which is a CAGR of 2.46% between 2009 and 2018. This CAGR of 2.46% is very close to the BCDC 2019-2050 Bay Area Seaport Forecast, which shows a moderate growth forecast of 2.2%. (Exec. Summary, Exhibit 2)

  The disparity between the actual rates of growth and overly optimistic forecasts by CARB have occurred before and can result in significantly skewed views of future air quality impacts and cost-benefit analyses. For example, the 2006 Goods Movement Emission Reduction Plan by forecast was based on an expectation of container cargo growth based on "almost a doubling of trade by 2010 and a tripling by 2020." (GMERP, pg. 14) These forecast estimates are nearly double the actual amount of cargo which is being processed at California's container ports now:



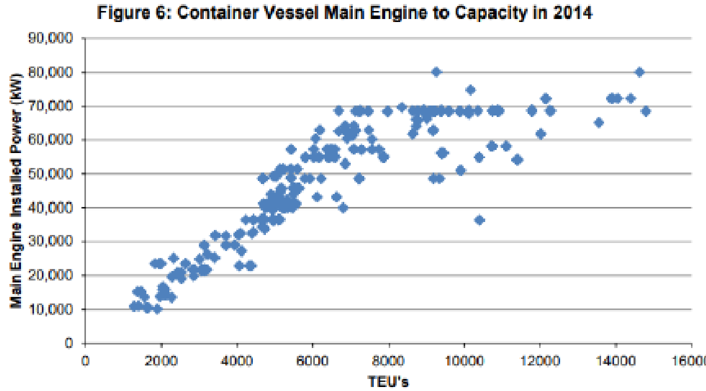

2) Emissions Do Not Increase 1:1 With Cargo Growth

The WOCAP also describes that "OGV emissions and impacts generally will, absent any reductions, grow at [CARB's forecasts for cargo growth] rate." These calculations are more complicated than that, as vessels do not maintain a straight-line methodology for emissions with vessel size or vessel calls with freight forecasts. Instead, we see more cargo growth in the Port of Oakland occurring with fewer vessel calls and with larger vessels on average per port call. 9-7 Cont.

As described in the CARB 2019 "Update to Inventory for Ocean-Going Vessels" main engine and auxiliary engine power "have a non-linear relationship with vessel size" and that "[l]arger vessels show a small increase (on average) in auxiliary engine and boiler sizes but overall are much more efficient on a per-TEU basis." This is illustrated in Figure 6 from the Update:

Update to Inventory for Ocean-Going Vessels

**Figure 6: Container Vessel Main Engine to Capacity in 2014**



This dynamic of efficiency both lowers the rate of emissions per unit and overall emissions from the maritime sector. It is unclear whether these trends were considered given the language of the WOCAP that seems to assert a straight-line projection of emissions to cargo on a 1:1 basis. This is not accurate, and we would request that efficiency trends be reflected in the WOCAP projections. 9-7 Cont.

- Pg. 6-10 – "Diesel PM" – "Ocean-Going Vessels"
  With respect to CARB's At-Berth Regulation, it is important to catalogue these emissions reductions properly. In this instance, the emissions reductions from Ocean-Going Vessels should be captured in the WOCAP "Without Plan" projections.

  The WOCAP correctly identifies that emissions from Ocean-Going Vessels will see future reductions. These emissions reductions are going to continue to be achieved through state regulations that have already been enacted independent of the adoption of this Plan, and which are likely to be further amended by CARB also independent of the adoption of this Plan. However, the language of this section describes these future emissions reductions only being included in the "With Plan" scenarios under the WOCAP. This is facially improper, as these emissions reductions will occur or not occur independent of the WOCAP Plan and should be built into the 2024 and 2030 projections for emissions "Without Plan." 9-8

- Table 6-1 – "Strategies"

  #2 – Development Projects in West Oakland, Including Howard Terminal
  PMSA concurs with the comments of the Industry Coalition submission. 9-9

  #3 – Study Allowing Heavy Truck Traffic on I-580 Through Oakland and I-880 Truck Lanes
  PMSA agrees with the recommendation to study additional truck routes to access the Port of Oakland, including the potential to open Interstate 580 to heavy-duty trucks and to designate "truck only" lanes on I-880. WOCAP should also Oppose any changes to the Downtown Oakland
  Specific Plan that would further restrict freeway access by Trucks to the Port of Oakland, including removal of I-980 or development of the 3rd Street overweight truck corridor. 9-10

  #9 – Truck Hours of Operations Limitation
  PMSA disagrees with any strategy that would limit the ability of trucks serving the Port and its marine terminals from being able to expand gate hours to maximize off-hour service and minimize truck traffic and congestion in the community and throughout the region. Restricting hours of operation would likely lead to increased road and highway congestion, resulting in measurable increases in emissions. From an exposure perspective, off-peak operations may, in fact, be preferable with emissions occurring when nearby receptors are indoors and not engaged in outdoor activities. 9-11

#13 – Development Fees Imposed by the City of Oakland for Environmental Mitigation
PMSA disagrees with the imposition of any fees on freight activities at the Port of Oakland as likely legally problematic under the United States Constitution and without nexus to Port operations. In addition, without further detail as to the scope and nature of this concept, such fees would likely be violative of the City Charter and potentially of the state tidelands trust. 9-12

#19 – Port Electrical Infrastructure Plan
PMSA agrees that greater access, reduced costs, and additional infrastructure provided to industry will remove barriers to improved utilization of electrified equipment. However, it is our experience that many of the most problematic infrastructure components in this regard often lie outside of the control of the Port itself. This Plan should be consider it necessary to examine the roles and authority of the City and PG&E as well. 9-13

#21 – Sustainable Freight Advisory Committee
To the extent this is intended to be an advisory committee, PMSA views this as an unnecessary duplication of the many advisory committees already maintained by the Port, the City, and the BAAQMD which address issues of air quality and freight activities.

To the extent this is intended to set up a special public-agency with a scope which includes oversight of marine terminal, ocean carrier, and other business terms and operations including "improvements to the Port appointment system" or "charging infrastructure and rates," both of which may be proprietary and such regulation by a local government also potentially violative of the federal Shipping Act, or to expand the committee's scope to "enforce truck parking, route, and idling restrictions," which may also be preempted by federal law, PMSA opposes the formation of such a committee. 9-14

#38 – Study Off-terminal Container Yard Development
PMSA agrees with the recommendation to study the creation of additional off-terminal container yards and to improve the ability of trucks to improve efficiency and the number of turns possible to and from the Port. 9-15

#45 – Financial Incentives for Tug and Barge Operators
PMSA agrees with the recommendation to provide financial incentives for the tug and barge fleet serving the Port of Oakland to subsidize their upgrades. 9-16

#55 – CARB Amendments to the Regulations of Vessels At Berth
PMSA agrees with the recommendation that CARB should update and amend the existing regulations for Ocean-Going Vessels while At Berth and has been participating in the ongoing effort at the Board to improve this rule. All CARB amendments to the At Berth rule to evaluate and regulate additional vessel fleets must be consistent with the AB 617 Blueprint, the SB 32 Scoping Plan, the SIP Mobile Source Strategy, and the Sustainable Freight Action Plan. 9-17

#58 – Port of Oakland Clean Ship Program
PMSA is prepared to work with the Port of Oakland to explore the efficacy of a Clean Ship Program, however, these types of initiatives are notoriously hard to manage or to put in to practice. If the purpose of this WOCAP measure is to affirmatively proscribe and restrict vessel 9-18

operations, then PMSA is opposed to this strategy measure. If the purpose of this WOCAP measure is to work to develop incentives and non-prescriptive pathways towards a higher fleet composition of newer vessels, then PMSA supports this strategy measure. 9-18 Cont.

#62 – Air District Seeks Authority in 2021 to Regulate Mobile Sources via Indirect Source Rule
PMSA opposes this strategy. The Port of Oakland, marine terminals, warehouses, and other facilities do not, will not, and should not have the capacity or ability to take responsibility for the emissions of the mobile sources who utilize their facilities. Local Air Districts likewise should not have the authority to regulate those facilities via an Indirect Source Rule. 9-19

**COMMENTS ON WOCAP DRAFT PLAN APPENDICES**

- Emissions Inventory, pg. A-7 – "2.1.3 Emissions Sources and Base Year"
  There are several inaccuracies which need to be corrected in this description:

  > In West Oakland, a large number of emissions source types are attributed to activity from the Port of Oakland. The Port is the fifth busiest port in the U.S. and serves as a gateway for intermodal cargo transport. In 2017, the Port consisted of four active marine terminals (TraPac, Nutter (STS/Everport), Oakland International Container Terminal [OICT], and Matson), and two railyards (Burlington Northern Santa Fe [BNSF], and Oakland Global Rail Enterprise [OGRE]). A fifth terminal (the Charles P. Howard terminal, located on the southeastern corner of the Port), has been vacant since the tenant filed for bankruptcy in 2010. Presently, the American Baseball League the Oakland Athletics (the A's) is investigating the possibility of building a baseball stadium on the site that is currently being used for long term Port (drayage) Truck parking.

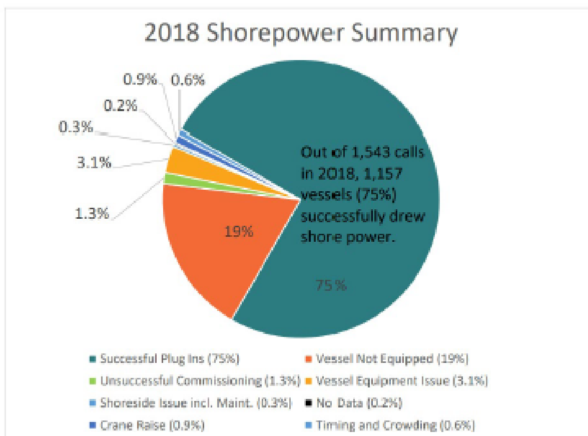
  With respect to the description of the size of the Port, please provide a statistic relative to some metric and provide citations. With respect to the Howard Terminal, several points: While it is not a currently active ship-to-shore marine terminal, it is not vacant and hosts numerous logistics and truck operations. It has not been subject to vacancy due to a bankruptcy. It was last subject to a marine terminal lease through 2014, when SSAT/Matson moved to the former APL terminal. Please clarify that the Oakland A's have a non-binding tentative term sheet with the Port of Oakland but have no rights to the property which is currently undergoing preliminary environmental review. 9-20

- Emissions Inventory, pg. A-35 – "Vessel auxiliary power is primarily used when propulsion engines are not running (e.g. at berth or in anchorage outside of the Source Domain)."
  This is not precisely the most accurate statement. While it is true that when the main engines are not running that the vessel's auxiliary power is the main source of power for crew needs for things like lights, computers, and navigation equipment you need auxiliary engines, it would be inaccurate to conclude that auxiliary power is not used also when propulsion engines are running for those same auxiliary functions. It is just no longer the primary source of vessel power or emissions. 9-21

- Emissions Inventory, pg. A-35 – "capacity taken from the 2018 IHS Fairplay database"
  The IHS Fairplay database on auxiliary engines may be less than accurate or reliable than reliance on other inventories developed and available. The San Pedro Bay ports have implemented a Vessel Boarding Program in order to eliminate mistakes or inaccuracies that had been attributed to outside sources that may be incomplete. Since many ships calling Oakland have a San Pedro Bay port as a first port of call, it would make more sense and increase accuracy if the average loads from the POLA/POLB inventories were used. 9-22

- Emissions Inventory, pg. A-35 – "The use of shore power represents greater than 50% reduction in auxiliary engine operating hours at berth overall and resulting in 40–50% reduction in emissions for all pollutants."
  There are no citations listed for the statistics regarding use of shore power. Please list exact citations for these statistics and provide the context for the percentages of reductions.

  This implies that shore power is only connected for 50% of the time. If so, none of these ships would be complaint with the CARB rule because they would exceed the three-hour connection time limit, and 9-23 this would only be true if average total time at berth was 6 hours or less. This statistic is much lower than the vessel connection rate reported by the Port of Oakland, in 2018 when 75% of the vessels calling in Oakland successfully drew shore power.




  https://www.oaklandseaport.com/wp-content/uploads/2019/07/2019-06_Oakland-shorepower.pdf

- Emissions Inventory, pg. A-35 – "Data from the Port for shore power calls in 2017 indicate that the average in-use power demanded was 10.5% of the auxiliary generator capacity for the significant shore power connections." 9-24
  This statement directly contradicts the use of an 18% load factor for auxiliary engines, as noted above as the basis for assumption for hoteling based on CARB data. If auxiliary engines fulfill a 10.5% load, then that is the load factor, not 18%. Please clarify which load factor is used.

- Emissions Inventory, pg. A-35 – Emissions factors "(assuming 0.1% sulfur content fuel)."
  This is the maximum legal limit. An average based on CARB compliance data should be used to 9-25 estimate PM and SOx emissions from boils not a calculation based solely on the legal maximum.

**RESPONSE TO COMMENT LETTER NO. 9**
**Pacific Merchant Shipping Association**

**Response 9-1:**

Thank you for your comment letter. We appreciate the Port's efforts between 2005 and 2018 to reduce emissions. Much more needs to be done to address emissions and exposure experienced by the West Oakland community. Therefore, the Plan focuses on moving forward with additional emissions reductions.

PMSA's support for CARB rulemaking is noted. Likewise, based on the modeling work in the Proposed Final Plan, the Co-leads believe that more actions are needed to meet the goal and targets of the Plan, in addition to the work that CARB has committed to do to reduce emissions.

Regarding the growth rate used in the Plan, multiple stakeholders have proposed different projections. The growth rate in the Plan is consistent with growth factors for the At-Berth Regulation amendments CARB has proposed.

Both the DEIR and WOCAP DEIR used a 2017 baseline for the air quality environmental setting. As the Plan explains, the technical assessment began in 2018 with the most recent emissions information available from 2017. The Technical Support Document provides the details on the methodology, models, and scientific application. Furthermore, the FEIR Air Quality Environmental Setting discloses the Air District used the American Meteorological Society/EPA Regulatory Improvement Model (AERMOD). Therefore, the DEIR's Technical Support Document provides both adequacy and rigor to define the baseline physical air quality conditions per CEQA Guidelines section §15125.

**Response 9-2:**

Regional emissions reduction program will benefit West Oakland residents, but local reductions are also needed. Based on the modeling work in the Proposed Final Plan, the Co-leads believe that more actions are needed to meet the goal and targets of the Plan. Emission reductions from shipping or other Port related activity may benefit different neighborhoods to different degrees, but such reductions are a critical element of improving air quality in West Oakland.

The Co-leads and Steering Committee's intention is to protect and improve community health by reducing emissions and exposure to emissions. This applies to both existing community members and future community members. Most of the Plan Strategies that seek to improve air quality for existing community members will also benefit future residents. In addition, certain Final Plan Strategies, for example #2, 15, 20, 22, 76, 78, 83, and 86 are intended to reduce emissions from and/or exposure to users of new buildings, including new residential buildings. Certain Final Plan Strategies may be especially appropriate for minimizing impacts of development near the Howard

Terminal site, such as #2, 20, 22, 33, 49, 50, 51, 53, 66, 68, 69, 75, 78, 83, and 86. In particular, implementation of Air District Rule 11-18 (Final Plan Strategy 69) will result in very significant reductions in emissions and risk from the Schnitzer facility, benefiting existing residents and potential future neighboring land uses. The Co-leads look forward to working with all our partners to address present conditions and avoid future negative public health outcomes.(Please refer to Table 2.6-1 of the Final EIR for prior and revised strategy numbers). Per AB 617, the WOCAP must comply with numerous legislative requirements, which includes identifying and addressing cumulative local exposure of air pollutants within the disadvantaged community. Please also see responses to comment Letter #10.

This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-3:**

See Response 9-2. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-4:**

See Response 9-1. Progress has made between 2005 and 2018. Much more needs to be done to address emissions and exposure experienced by the West Oakland community. Therefore, the Plan focuses on moving forward with additional emissions reductions. The Proposed Final Plan includes additional details about the role of monitoring data in Chapter 8: Tracking Progress. The role of measurements will be addressed further during the Plan implementation phase. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-5:**

Thank you for the references. The Plan acknowledges that many social and economic factors influence health outcomes. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-6:**

The maps in Figures 5-5 and 5-9 a.b.c. show the entirety of the receptor grid for which concentrations (impacts) were modeled. The scope of the modeled local sources to which these impacts are attributable extends beyond that receptor grid. Draft Plan Figure 5-2 shows these modeled local sources. The modeling focused on impacts to the West Oakland community, the extent of which was determined by the co-leads. The analysis of impacted populations will be updated when census 2020 data becomes available. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-7:**

Multiple stakeholders have proposed different projections. The growth rate used in the Plan is consistent with growth factors for the At-Berth Regulation amendments CARB has proposed. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-8:**

Emission reductions from already existing regulations have been accounted for in the "Without Plan" scenario. Additional reductions, consistent with those estimated by CARB for the proposed At-Berth Regulation amendments are additionally included in the "With Plan" scenario. Both are based on data from CARB. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-9:**

Please refer to Response 9-2. See the Responses to Comment Letter No. 10 for replies to the Industry Coalition's submission. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-10:**

PMSA's support for Strategy #3 is noted. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-11:**

The Co-leads and Steering Committee will study this issue further during the Plan implementation. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-12:**

The Co-leads and Steering Committee will study this issue further during Plan implementation. PMSA's opposition to imposition of fees is noted. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-13:**

To remove barriers to the electrification at the Port, the Steering Committee will collaborate with the Port, the City, and PG&E during implementation. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-14:**

The Co-leads and Steering Committee will study this issue further during the Plan implementation. comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-15:**

Thank you for your comment. Draft Plan Strategy #38 is now Plan Strategy #43. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-16:**

Thank you for your comment. Draft Plan Strategy #45 is now Plan Strategy #50. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-17:**

Thank you for your comment. Draft Plan Strategy #55 is now Plan Strategy #60. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-18:**

Draft Plan Strategy #58 is now Plan Strategy #63. The Co-leads and Steering Committee will study this issue further during the Plan implementation. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-19:**

Thank you for your comment. Draft Plan Strategy #62 is now Plan Strategy #67. PMSA's opposition to this strategy is noted. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-20:**

Comments regarding Howard Terminal leases are noted. Truck businesses operating on the Howard Terminal property were included in this analysis. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-21:**

Thank you for your comment. The analysis does not assume that auxiliary engines are not used when propulsion engines are running; the analysis used emission estimates directly from the 2017 Port inventory, which does include emissions from the auxiliary engines in both maneuvering and berthing modes. The text of the Action Plan in the Technical Support Document has been clarified. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-22:**

OGV maneuvering and berthing emissions were originally taken from the Port of Oakland's 2012 emission inventory, which was developed by Ramboll. The text on the Draft Plan page A-35 describes Ramboll's approach, including the reliance on HIS Fairplay data for auxiliary engine capacity and ARB's 18% load factor for hoteling. However, the OGV berthing emissions in the Plan have substantially been replaced by emissions estimates developed by CARB as part of the development of their At-Berth Regulations. Ramboll's original emission estimates are still being used for OGV maneuvering. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-23:**

This text has since been updated. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-24:**

During the development of the Port of Oakland's 2017 emission inventory, Ramboll originally relied on an 18% load factor for hoteling. Subsequently, Ramboll recalculated emissions based on average power demand during 2017, discarding the 18% load factor. However, the OGV berthing emissions in the draft Action Plan were ultimately provided by ARB so that the Plan's emissions data would be consistent with emissions estimates developed for ARB's At-Berth Regulation amendments. The technical appendix has been updated to reflect the source of the OGV berthing emissions estimates.
This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 9-25:**

This assumption is consistent with the methodology in CARB's OGV inventory. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

# COMMENT LETTER 10

## Agriculture Transportation Coalition, et al.

September 9, 2019

Alison Kirk & Ada Marquez
Principal Environmental Planners
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
WestOaklandPlan@baaqmd.gov

**Comments on the "West Oakland Community Action Plan" Draft Plan and Draft EIR**

The undersigned organizations, businesses and unions represent interested stakeholders in Oakland's thriving seaport and intermodal transportation sector. We are committed to the success of the Port of Oakland and our role as partners in a seaport which is the largest logistics and supply-chain enterprise in Northern California. The Port of Oakland's customers are ultimately responsible for over 27,000 jobs, $2.5 billion in local income, $500 million in local purchases, and $280 million in state and local taxes.

We are also proud of our collective track records to dramatically and significantly reduce air emissions from seaport operations. From 2005 to 2017 seaport emissions initiatives and air quality improvement efforts in Oakland have yielded successful reductions of 91% in SOx, 80% in Diesel Particulate Matter, and 30% in NOx. More impressive still, these reductions occurred while overall container volumes increased by 6.5% over the same period. By conservative estimates, the international trade community and intermodal supply chain has collectively invested over $5 billion in efforts to reduce air emissions from seaport operations over the past 15 years in California alone. 10-1

It is because of our long history of investing, working, and living in California's port communities and our experiences with the need to significantly invest in improved local air quality that we are also aware of the importance of addressing incompatibility of our industrial uses and local residential uses in nearby communities and neighborhoods.

Under AB 617, it is incumbent on everyone to work together to address the air quality issues related to land use conflicts, including those which result in proximity-based residential impacts. Our industry is working hard in Oakland to preserve the existing industrial buffer zones, maintain infrastructure separations, and to stop residential encroachment that would exacerbate these impacts.

To the extent that the West Oakland Community Action Plan (WOCAP) also proposes to protect local residential areas through the separation of these incompatible land uses, we respectfully request that the Plan be sufficiently revised to ensure that the City of Oakland does not create new neighborhoods in locations which will ***unnecessarily expose*** thousands of new residents to industrial emissions and ***increase*** the conflicts between incompatible residential and industrial land uses within West Oakland. 10-1 Cont.

Incompatible Land Uses

Evaluation of incompatible land uses which result in proximity-based exposures to sensitive receptors are what drive analyses of potential localized impacts under AB 617 generally and the CARB Community Air Protection Blueprint. Consistently, avoidance, mitigation, and preventing incompatible land uses and the subsequent detrimental impacts on air quality and public health which can result from these instances of incompatibility are a central part of the proposed WOCAP:

> "Reducing exposure of the most vulnerable members of the community is a priority of this Plan. Steering Committee members helped identify sensitive receptor locations in West Oakland and developed strategies to reduce exposure in these areas." (PROXIMITY-BASED GOALS, pg. 4-5)

The Plan is therefore built around a focused review of geographical impacts to West Oakland residents and to achieve "Proximity-based Goals" one of the challenges acknowledged by this Plan is the need to minimize the impacts of incompatible land uses.

When analyzing existing land uses, it is necessary to acknowledge that these issues are challenging in large part because both sets of competing uses are lawfully permitted, previously approved, and have utility to a community. For example, current residential uses have every right to seek to improve the living conditions of their neighborhoods as do current industrial businesses have every right to continue to operate and grow their local economy. Neither use is better or worse than the other but when made proximate to one another they create negative incompatibilities. 10-2

The WOCAP seeks to address this tension of competing and incompatible uses through supplemental and mitigating measures which may alleviate the tension of these uses in existing residential areas of West Oakland. However, what the WOCAP fails to provide for are the equally important policies which will avoid the encroachment of new residential housing into existing industrial areas.

The creation of new housing in industrial zones and the elimination of industrial buffers would immediately escalate land use conflicts and result in substantial increases in the exposure for sensitive receptors in West Oakland and which can threaten existing jobs and businesses. These outcomes are antithetical to AB 617, CARB guidance and the stated policy outcomes and goals of the WOCAP.

Therefore, for this Plan to be effective at achieving its goal of minimizing proximity-based residential impacts, it must address not just impacts on existing residential uses from existing industrial uses but also affirmatively limit the introduction of new residential uses into areas of existing industrial operations and encroachment into the existing industrial buffer zones.

Newly Proposed Residential Districts Would Create Additional AB 617 Impact Zones Which Are Unaccounted For in the WOCAP and Undermine WOCAP Goals

The Goals of the WOCAP are to "protect and improve community health by eliminating disparities in exposure to local air pollution" to specific 2025 and 2030 benchmarks. The "2025 targets are to improve air quality exposure in West Oakland neighborhoods so that *all* neighborhoods meet the exposure conditions of today's *average* West Oakland neighborhood."

The City of Oakland is currently considering two proposals for the creation of new residential communities within the WOCAP AB 617 planning area. These proposals would create new and presently unaccounted-for residential impact zones by 2025.

Specifically, the City is considering two new residential zones and concentrations of new sensitive receptors in the WOCAP which are not currently covered by an existing identified Impact Zone:

- Howard Terminal. The Oakland A's are proposing to site at Howard Terminal a development with 3,000 new residential units, a 35,000 seat open-air stadium, public recreation spaces, a hotel, and 1.5 million square feet of commercial office and retail space. This project is currently in the exploratory environmental phase with the City of Oakland potentially considering a General Plan amendment (***https://www.oaklandca.gov/documents/notice-of-preparation-of-draft-eir-for-the-oakland-waterfront-ballpark-district-project***).

- Jack London Maker District. The City is proposing to create a "Jack London Maker District" in its draft Downtown Oakland Specific Plan. (***https://www.oaklandca.gov/topics/downtown-oakland-specific-plan***) This area, which straddles into the AB 617 WOCAP area, would eliminate the current buffer zone between Seaport uses and residential uses by separating those industrial operations from Downtown and Jack London Square encroachment. 10-3

These two proposed project areas are contiguously located within the southeast corner of the currently identified WOCAP area. However, neither of these areas are currently identified in the WOCAP as Residential Zones or locations of Sensitive Receptors. As annotated with the red circles over the SE corner of the "AB 617 West Oakland" area (WOCAP Figure 2-3), these represent potential new "Zone 8" for Howard Terminal and "Zone 9" for the Jack London Maker District:

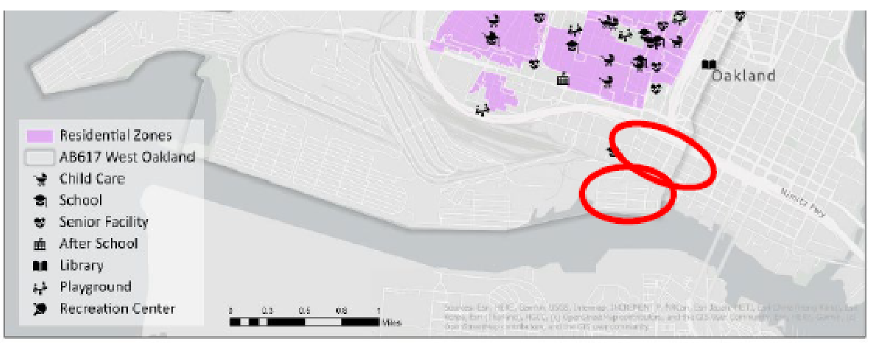
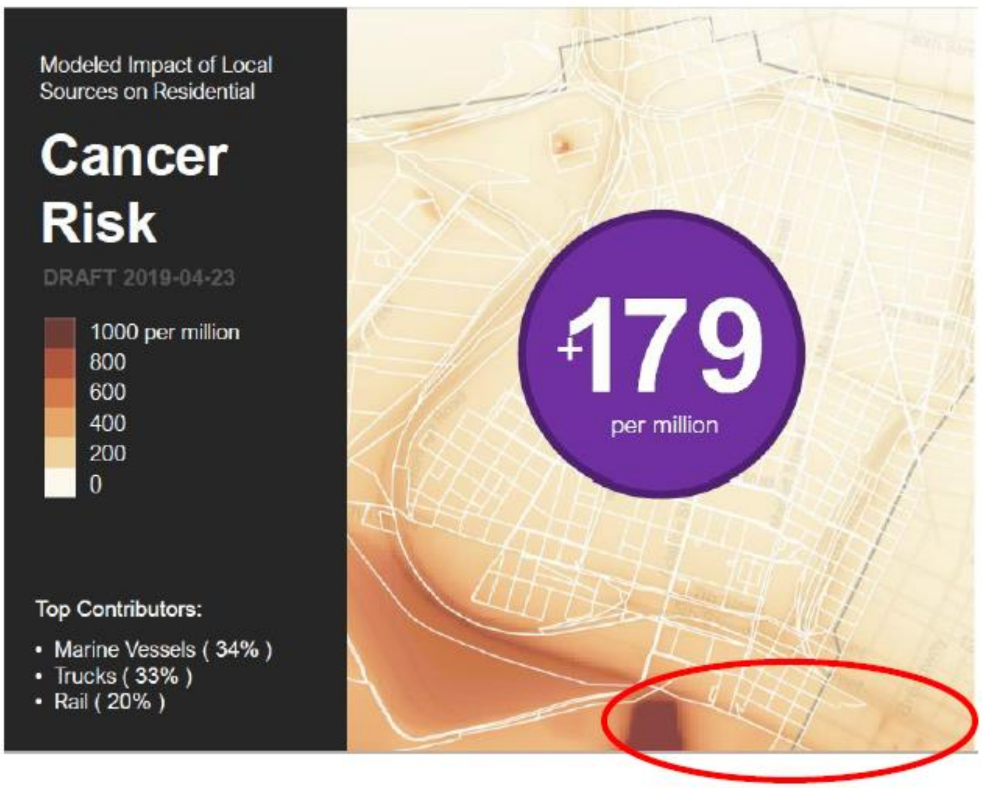



*Figure 2-3. Residential Zones and Sensitive Receptors in West Oakland*

The BAAQMD's models which are underlying the WOCAP have identified these as areas which are highly susceptible to additional air quality impacts. In fact, the Southeast corner of the planning area has the *highest* potential impacts of anywhere within the West Oakland area. As noted on the BAAQMD "Cancer Risk Draft 2019-04-23" modeling map, presented to the District Board on May 1, 2019 in advance of the WOCAP release, the area immediately upwind of Howard Terminal and the Jack London Maker District areas is the only area in which a "Modeled Impact of Local Sources on Residential Cancer Risk" of at least 1,000 per million exists in the local West Oakland modeling domain: 10-4




The existing emissions profiles for these proposed residential zones would be greater than the exposure profiles for all other existing zones. These zones would be facially out of compliance with the WOCAP goals and have estimated excess cancer risk profiles many times greater than most of the existing impact zones in West Oakland. Revised Figure 5-13 below illustrates just how far these proposed new residential zones would be out of compliance with the WOCAP goals and how they compare to the existing residential zones identified in the WOCAP:

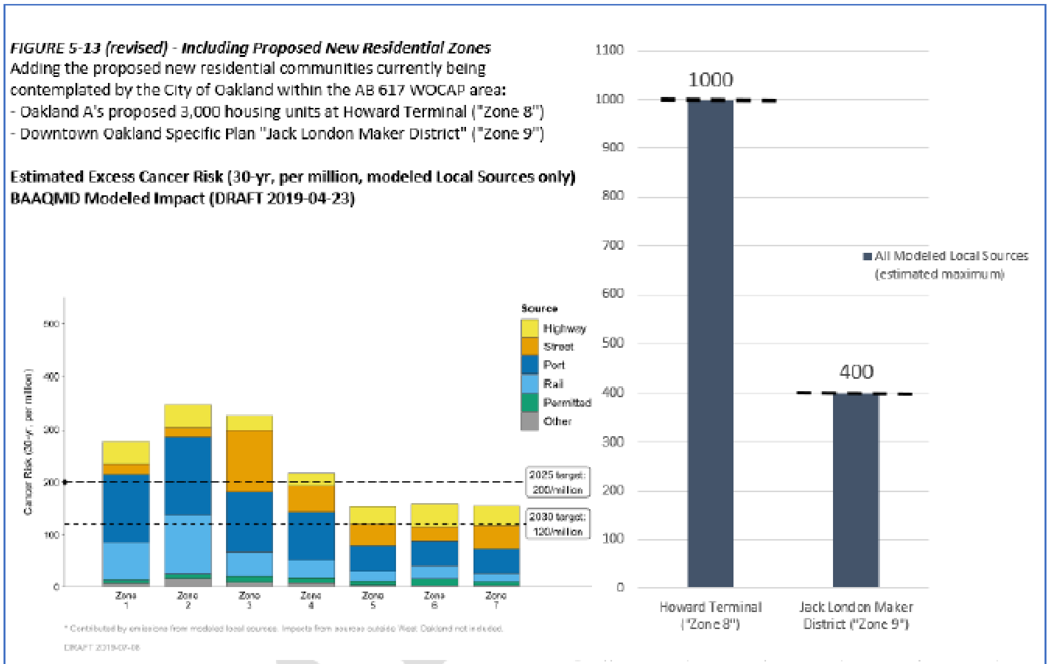



*Figure 5-13. Targets and Source Apportionment for Cancer Risk in 2017 (Baseline)*

10-4 Cont.

Moreover, these risk profiles are based solely on modeled local sources of cancer risk and only those PM impacts which were included in the community scale modeling. They do not account for other PM impacts which are potentially more impactful to these new residential areas than any of the other existing neighborhoods in West Oakland.

10-5

For example, by far and away, the largest local source of PM2.5 by volume in West Oakland is "Commercial cooking" with 20.63 tons per year, compared to the next highest sources of PM2.5 of "Street: Road dust" at 14.74 tpy and "Highway: Non-truck vehicles" at 12.22 tpy. (WOCAP Table 5-2) But, commercial cooking emissions are not included in the community-scale modeling. The Plan surmises that commercial cooking emissions, despite their volume, may be of less consequence to most of the residents of West Oakland "especially given that the majority of commercial cooking facilities are generally downwind of the West Oakland community." (Appendix A, pg. A-107)

This will not necessarily be true for the Howard Terminal or the Jack London Maker District, because of their location at the extreme southeast corner of the WOCAP planning area. As the WOCAP points out, winds in West Oakland are "most frequent from the west and west-northwest at speeds of 2.0-6.0m/s (4.5 – 13.4 mph) (Figure 3-2)." (Appendix A, pg. A-57, A-58):

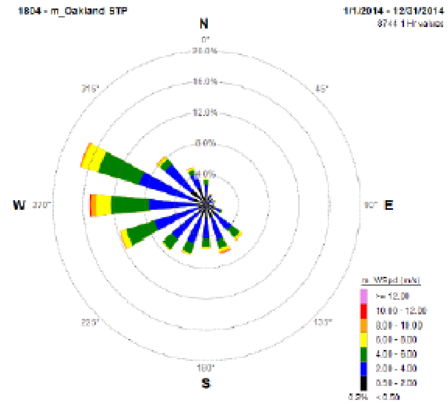



**Figure 3-2.** Annual windrose at the Oakland Sewage Treatment Plant (OST) in 2014. Compass sectors indicate the direction from which the wind is blowing. The percentage of calm winds (WSpd < 0.5 m/s) are also indicated.

As a result of the prevailing WNW winds, most emissions will be blown to the ESE. This is the precise location of the proposed Howard Terminal and Jack London Makers District residential zones.

Not surprisingly, these are also the same areas of the most impactful concentration of existing emissions which are already modeled. There is no rational reason to presume that this corner of West Oakland will not also be the recipient of the emissions from currently non-modeled emissions, such as those from "commercial cooking" given that this category is the most prolific source of local PM2.5 emissions in West Oakland. 10-5 Cont.

Growing and Maintaining Industrial Uses in Industrial Areas With Minimal Congestion Threatened by Howard Terminal and Jack London Maker District Proposals

The A's proposed project at Howard Terminal will displace an active truck staging yard which has successfully removed many trucks from the West Oakland community. The Jack London Makers District threatens to limit the usage and supporting warehouse infrastructure surrounding the Port's main overweight truck corridors. When both of these current truck zones would then be opened up to new residential development, it is not just the impacts on the new residents that would be significant, but the WOCAP should also evaluate the impacts that these new residential developments will have on displacing and creating congestion in existing freight operations that in turn impact existing West Oakland residents and exacerbate AB 617-related concerns and issues.

Howard Terminal currently handles over 325,000 trucking transactions every year and the 3rd street overweight corridor facilitates tens of thousands of truck moves that must be handled in near proximity to the Port. When these development proposals displace these operations, it will inevitably lead to increased pressure to find additional truck parking, develop new truck, chassis, container, and equipment staging facilities, new port-supporting and industrial warehouse space, and transloading and street-turn areas. Such pressures will likely result in increased truck congestion, increased truck hours of delay, degraded levels of service on truck-intense intersections, and the resulting increased idling and emissions associated with all such introductions of unnecessary transportation inefficiencies and vehicle conflicts. 10-6

The displacement of truck parking and truck services in Howard Terminal, and the existing Port-support areas and in the current industrial buffer along 3rd street west of Broadway slated for residential conversion, runs directly counter to the land use strategies proposed by the WOCAP.

Specifically, the Howard Terminal and Jack London Maker District proposals run directly counter to WOCAP Land Use Strategies #5 and #6 and #8, which seek to minimize truck services located within the freeway boundaries and to move those activities to the Port, Army Base and its related industrial-service 10-7 areas along the 3rd Street corridor, such that "any relocated businesses do not cause exposure issues at the new location." In addition, WOCAP Land Use Strategy #26 calls specifically for a yard almost exactly along the lines of the current operations at Howard Terminal, and that this facility will be at a logistics center which is not adjacent to West Oakland residents. 10-7 Cont.

In addition to existing truck displacement issues, there will be new and additional local vehicle traffic going to and from these new development parcels, and this additional traffic will create additional, new truck congestion and idling emissions. These impacts have not been thoroughly analyzed yet for either of the projects. However, even the minimal nod given to the issue of new truck congestion by the Oakland A's recent AB 900/AB 734 submission to the state Office of Planning and Research (evaluation of only 7 truck intersections and presumption that the project's improvements actually decrease truck delays) highlights the challenge that should be considered as part of the WOCAP. The "Emissions from Port Truck Idling Delays Due to Project" evaluation of Howard Terminal would result in increases of at least 27 mt of CO2e annually. (A's Supplemental AB 734 Application, Exhibit A, Table OP-11) (*http://www.opr.ca.gov/ceqa/docs/ab900/20190827-AB_734_OaklandAthletics_Exhibit_A-Supplemental_GHG_Memo.pdf*) 10-8

Further, emissions from construction were not included in the WOCAP model. The WOCAP found that because "construction activity is highly transient, changing in scope and location from year to year" it would not include these emissions due to "uncertainties with 2017 emissions estimates and the spatial distribution of construction activities in the community." (WOCAP, Appendix A, A-108) However, they are nonetheless a significant factor for local emissions impacts directly, and when there is a large, intense multi-year project – such as that proposed at Howard Terminal - the activity is not transient, it is of a known and planned scope, and concentrated in the community. In the A's Supplemental AB 734 Application, Table 4 makes these emissions impacts plain:

**Table 4. Emissions Sources**
**Oakland Waterfront Ballpark District Project**
**Oakland, California**

| Proposed Project | | |
|---|---|---|
| **Type** | **Source** | **Description** |
| Construction | Off-Road Equipment | Direct emissions from diesel off-road equipment exhaust;<br>Indirect emissions from electricity use for electric off-road equipment |
| | On-Road Mobile Sources | Direct emissions from running, idling, and starting exhaust |

10-9

And, Table 6, summarizes the CO2e emissions anticipated by the construction at Howard Terminal:

**Table 6. Construction GHG Emissions**
**Oakland Waterfront Ballpark District Project**
**Oakland, California**

| Year | $CO_2e$ Emissions (MT/year) | | | |
|---|---|---|---|---|
| | Diesel Off-Road Equipment | Electric Off-Road Equipment | On-Road Vehicles | Total |
| 2020 | 366 | 0 | 36 | 402 |
| 2021 | 2,560 | 17 | 2,738 | 5,315 |
| 2022 | 2,814 | 71 | 3,205 | 6,089 |
| 2023 | 1,976 | 24 | 1,768 | 3,768 |
| 2024 | 2,287 | 0 | 1,346 | 3,632 |
| 2025 | 2,151 | 149 | 1,818 | 4,117 |
| 2026 | 2,926 | 193 | 1,893 | 5,012 |
| 2027 | 1,895 | 44 | 1,232 | 3,171 |
| Total GHG Emissions from Construction (MT) | | | | 31,507 |

If the A's OPR submission can analyze the CO2e impacts of its project, there is no reason that the WOCAP emissions of interest including DPM or PM2.5 cannot be likewise estimated and projected. Since these impacts can therefore be anticipated, they should be articulated, measured and captured in the WOCAP. Otherwise, the WOCAP is proposing penalizing freight-related emissions sources doing business at marine terminals in the Port of Oakland but ignoring residential-construction related emissions sources doing business at a marine terminal in the Port of Oakland.

10-9 Cont.

That's a double whammy for the Port and for the community; these construction activities, especially in the heart of a working seaport, will not only displace trucking facilities but will also result in residual delays and congestion of trucks and vehicle traffic off-site and in West Oakland generally. These same residual delays will not only make it harder for port trucks to conduct business in Oakland and increase expenses, but this congestion will have even greater residual congestion impacts on the community and community air quality will suffer as well.

CONCLUSION

Given all these factors, it is readily obvious that the creation of these new residential areas will expose thousands of potential new residents to air emissions at potentially impactful levels and render the WOCAP ineffective at reaching its goals in 2025 and 2030.

10-10

It is critical that we work to avoid developments which are antithetical to the purpose of AB 617, the stated goals of the WOPAC, and to the public health of residents and the economic health of the Northern California megaregion. We look forward to working with the BAAQMD, WOEIP, and other stakeholders to avoid these unnecessarily backward outcomes.

Sincerely,

***Agriculture Transportation Coalition***
***American Waterways Operators***
***BNSF Railway***
***California Trucking Association***
***Customs Brokers and Forwarders Association of Northern California***
***Devine Intermodal***
***GSC Logistics***
***Harbor Trucking Association***
***Inlandboatmen's Union of the Pacific***
***International Longshore and Warehouse Union – Local 10***
***International Organization of Masters, Mates & Pilots***
***Pacific Merchant Shipping Association***
***Quik Pick Express, LLC***
***SSA Terminals***
***Transportation Institute***
***Union Pacific Railroad***

**RESPONSE TO COMMENT LETTER NO. 10**
**Agriculture Transportation Coalition, et al.**

**Response 10-1:**

The WOCAP includes strategies to reduce exposure and emissions including relocation of certain operations out of the community to reduce exposure to sensitive receptors. The WOCAP also includes measures to further reduce emissions from existing industrial sources, which will benefit existing and future residents. During implementation, the co-leads and Steering Committee will work with all partners to address present conditions and avoid future negative public health outcomes. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 10-2:**

See Response 10-1. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 10-3:**

The impact zones identified in the WOCAP reflect the community Steering Committee's priorities. As noted in Response 10-1, the Plan includes strategies that will benefit existing and future residents, including at the Howard Terminal and Jack London Maker District. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 10-4:**

The 2017 cancer risk map presented in the July 2019 Draft WOCAP has been updated since the April 23, 2019 figure provided in the comment and shows substantially different results in the southeast corner. In addition, the "With Plan" scenario projects reductions in cancer risk at the zones nearest Howard Terminal and Jack London Maker District. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 10-5:**

Note that Plan Strategy ~~#82~~ #87 states that both the Air District and CARB investigate incentives and potential regulations to reduce emissions from commercial cooking. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 10-6:**

Under Strategy #26, the City and Port would work to establish permanent truck parking and staging areas. Under Strategy #33, CARB will develop guidance to minimize community exposure related to freight facilities. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 10-7:**

See Response 10-6. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 10-8:**

The Co-leads and Steering Committee's intention is to protect and improve community health by reducing emissions and exposure to emissions. This applies to both existing community members and future community members. Most of the Plan Strategies that seek to improve air quality for existing community members will also benefit future residents. In addition, Strategy #2 references the ongoing environmental review of the Howard Terminal proposal, and Strategy #20 calls for the City to impose transportation demand management requirements for new development. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 10-9:**

The Co-leads recognize the impact of construction activities on the community of West Oakland and that while individual construction projects may be temporary, the cumulative effect of multiple construction projects can be a large contributor to air pollution in West Oakland. Plan Strategies #22, #27, ~~#39~~ #44, ~~#84~~ #89 and Further Study Measure #3 address aspects of construction. The Proposed Final Plan also includes new Strategy #33 that states that CARB will develop a handbook that identifies best practices for freight facilities, including construction practices. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

**Response 10-10:**

See Response 10-1. This comment pertains to the WOCAP only. This comment does not address the standards for adequacy of the DEIR (CEQA Guidelines sections §15146; §15151; §15088).

## COMMENT LETTER 11

### East Bay Community Energy

EAST BAY COMMUNITY ENERGY

***Submitted Via Email***
September 11, 2019

Henry Hilken
Director, Office of Planning and Climate Protection
Bay Area Air Quality Management District
375 Beale St, Suite 600
San Francisco, CA 94105

RE: West Oakland Community Action Plan

Dear Mr. Hilken,

East Bay Community Energy (EBCE) congratulates the West Oakland Environmental Indicators Project (WOEIP), the Bay Area Air Management District (BAAQMD), the Community Action Plan Steering Committee, and the residents of West Oakland for their leadership in developing the West Oakland Community Action Plan *Owning Our Air*.
EBCE welcomes the opportunity to comment on the Plan and looks forward to working with the Air District, the West Oakland community, its leaders and other stakeholders in implementing the plan and we are especially pleased by the role the plan developers have envisioned for EBCE, particularly in replacing the dirty peaker plant currently in Jack London Square with clean energy storage[1] and in providing carbon-free energy options for West Oakland residents and businesses[2]. 11-1
In addition to what was identified in the plan EBCE sees other opportunities for partnering with the West Oakland Community to help improve its air quality[3]. Among them:

- Identifying opportunities to work with stationary sources in the area to help them become more efficient energy users and thereby lower their emissions;
- Engaging smaller businesses in energy efficiency efforts to help reduce their air emissions;
- Increasing the number of electric and ZEV vehicles, both light, medium, heavy and public transit;
- Increase the number of passenger EVs, including shared and personal, along with charging stations.

[1] Ref. "Stationary Sources" Recommendation #69
[2] Ref. "Stationary Sources" Recommendation #83
[3] See attached appendix document for more detailed comments

P: 1-833-699-EBCE (3223)
E: customer-support@ebce.org
ebce.org

Beyond partnering on projects and programs EBCE can also support stakeholders' understanding of energy usage in the community on a more refined level. EBCE staff saw that the CEQA document distributed in support of the West Oakland CAP references PG&E system and regional electricity usage data to base performance measurements. We believe this data is too broadly scaled to provide the information needed to assess AB 617 energy objectives and that EBCE can support more locally scaled data needs. We look forward to discussing with the Air District and the community our ideas on how we can support the Plan. 11-2

Respectfully,

*Deidre Sanders*

Deidre Sanders
Director, Public Policy
East Bay Community Energy

## Appendix: EBCE Areas of Opportunity with Air District and Community

- ***Strategy 14:*** *Battery Storage* - Explore development of incentive program for battery energy storage to help customers replace diesel back-up generators; 11-3
- ***Strategy 17:*** *Fuel Substitution Support* - EBCE is supporting (funding) Oakland's and other EBCE member communities' exploration of ways to eliminate natural gas from the built environment; 11-4
- ***Strategy 18:*** *EV Charging Infrastructure* – Installation of DC fast charging infrastructure; specifically, Level 2 charging for Medium and Heavy-Duty trucks; 11-5
- ***Strategy 21:*** *Freight Emissions Reductions* - Explore creation of a Sustainable Freight Advisory Committee that would look at ways to help reduce area freight VMT out of and in to the Port of Oakland; 11-6
- ***Strategy 36:*** *EBCE/Community Engagement* - Provide incentives to support community outreach efforts for workshops and other related activities; 11-7
- ***Strategy 41:*** *Encourage Growth of Zero Emission Car Share Options* – EBCE is currently working with the CEC to develop a 2021 CALeVIP incentive program that, If approved, will provide significant funding for car share charging infrastructure; 11-8
- ***Strategy 43:*** *Community EV Education Partnership* - EBCE can support outreach and sponsor customer awareness events like Ride and Drives; 11-9
- ***Strategy 44:*** *EBCE Infrastructure Charging Incentives* - EBCE is developing a CALeVIP incentive project that, if approved, will create incentives for EV charging infrastructure 2021-2024. 11-10
- ***Strategy 48:*** *EBCE EV Rate Design* – To benefit all classes of electric vehicles that operate in West Oakland and throughout the County to ensure driving them is cheaper than vehicles using fossil fuels. 11-11
- ***Strategy 49:*** *Supporting Clean Off-Road Equipment (CORE) Replacement* - EBCE is working with external stakeholders to create incentives and technical support to align with other programs (e.g., CORE Voucher; PG&E Fleet Ready) for off-road equipment (e.g., forklifts) 11-12

**Comment: CAP Appendix**

***Pg. D-1:*** We respectfully suggest adding the following description for EBCE under Appendix D: Government Collaboration EBCE is a Joint Power Authority that includes membership from eleven (11) cities in Alameda County, and the County itself. EBCE's Board of Directors is made up of elected officials from each of its member communities, and EBCE staff closely coordinates with each of its local government partners on transportation and goods movement electrification. 11-13

**Comments: Draft CAP EIR**

***Page 3.2*** **-** ***36*** **-** ***Paragraph 3-5:*** Currently states: 11-14

> *Electricity to Alameda County, including West Oakland, is supplied by Pacific Gas and Electric (PG&E).*
>
> Please correct to state that East Bay Community Energy (EBCE) is the electric power service provider for Oakland and most of Alameda County beginning in 2018. As the County's community choice aggregation program, EBCE buys and develops clean electric power for its customers and PG&E ensures this power is safely and reliably delivered through its transmission and distribution system.

***Page 3.2*** - ***38:*** We would appreciate clarification of this statement: 11-15

> *Combustion emissions from gasoline and diesel fuels would be displaced by combustion emissions from natural gas, which is the primary fuel used for generating electricity in the district.*

We also believe that, as the Plan identifies PG&E as the electric power provider for Alameda County, the reference natural gas as "the primary fuel used for generating electricity in the district." also refers to PG&E's power sources. Please reference EBCE's electricity mix from this cite in the Plan's assessment. https://ebce.org/wp-content/uploads/Item-11-Power-Content-Informational-Item.pdf 11-16

Additionally, EBCE respectfully requests that its Strategy comments provided for the Plan be applied to similar EIR Strategies. 11-17

## RESPONSE TO COMMENT LETTER NO. 11
## East Bay Community Energy

**Response 11-1:**

Thank you for your comment letter. The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-2:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-3:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-4:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-5:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-6:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-7:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-8:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-9:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-10:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-11:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-12:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-13:**

The co-leads and Steering Committee look forward to working with East Bay Community Energy during implementation.

**Response 11-14:**

The correct electric power service provider for Oakland is included in the FEIR.

**Response 11-15:**

This sentence was deleted in the FEIR to reflect the correct information as shown in the previous response.

**Response 11-16:**

The provided reference of EBCE's electricity mix was included in the FEIR.

**Response 11-17:**

The strategies in the Plan and in the DEIR are the same. Thank you for your comments on the DEIR.

**NATIVE AMERICAN HERITAGE COMMISSION**
**Cultural and Environmental Department**
**1550 Harbor Blvd., Suite 100**
**West Sacramento, CA 95691 Phone (916) 373-3710**
**Email: nahc@nahc.ca.gov**
**Website: http://www.nahc.ca.gov**
**Twitter: @CA_NAHC**

RECEIVED
2019 MAY 23 AM 9:46
BAY AREA AIR QUALITY MANAGEMENT DISTRICT

May 20, 2019

Ada Marquez
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

RE: SCH# 2019059062 AB 617 West Oakland Community Action Plan, Alameda County

Dear Ms. Marquez:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

**Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   a. A brief description of the project.
   b. The lead agency contact information.
   c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
   d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
   a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
   b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
       i. Planning and construction to avoid the resources and protect the cultural and natural context.
       ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
       i. Protecting the cultural character and integrity of the resource.
       ii. Protecting the traditional use of the resource.
       iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Gayle.Totton@nahc.ca.gov.

Sincerely,

Nancy Gonzalez

for Gayle Totton
Associate Governmental Program Analyst

cc: State Clearinghouse

**NATIVE AMERICAN HERITAGE COMMISSION**
**Cultural and Environmental Department**
**1550 Harbor Blvd., Suite 100**
**West Sacramento, CA 95691 Phone: (916) 373-3710**
**Email: nahc@nahc.ca.gov**
**Website: http://www.nahc.ca.gov**

July 17, 2019

Ada Marquez
Bay Area Air Quality Management District

VIA Email to: amarquez@baaqmd.gov

RE: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, **AB 617 West Oakland Community Action Plan (SCH# 2019059062) Project**; Alameda County, California.

Dear Ms. Marquez:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
   - A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.
2. The results of any archaeological inventory survey that was conducted, including:
   - Any report that may contain site forms, site significance, and suggested mitigation measures. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.
3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission. The request form can be found at http://nahc.ca.gov/wpcontent/uploads/2015/08/Local-Govenment-Tribal-Consultation-List-Request-Form-update.pdf.
4. Any ethnographic studies conducted for any area including all or part of the APE; and
5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, B.S., M.A., Ph D.
Associate Governmental Program Analyst

Attachment

**Native American Heritage Commission**
**Tribal Consultation List**
**Alameda County**
**7/17/2019**

***Amah MutsunTribal Band***
Valentin Lopez, Chairperson
P.O. Box 5272
Galt, CA, 95632
Phone: (916) 743 - 5833
vlopez@amahmutsun.org
Costanoan
Northern Valley Yokut

***Amah MutsunTribal Band of Mission San Juan Bautista***
Irenne Zwierlein, Chairperson
789 Canada Road
Woodside, CA, 94062
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com
Costanoan

***Indian Canyon Mutsun Band of Costanoan***
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyon.org
Costanoan

***Muwekma Ohlone Indian Tribe of the SF Bay Area***
Charlene Nijmeh, Chairperson
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 464 - 2892
cnijmeh@muwekma.org
Costanoan

***Muwekma Ohlone Indian Tribe of the SF Bay Area***
Monica Arellano,
20885 Redwood Road, Suite 232
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Phone: (408) 205 - 9714
marellano@muwekma.org
Costanoan

***North Valley Yokuts Tribe***
Katherine Erolinda Perez, Chairperson
P.O. Box 717
Linden, CA, 95236
Phone: (209) 887 - 3415
canutes@verizon.net
Costanoan
Northern Valley Yokut

***The Ohlone Indian Tribe***
Andrew Galvan,
P.O. Box 3388
Fremont, CA, 94539
Phone: (510) 882 - 0527
Fax: (510) 687-9393
chochenyo@AOL.com
Bay Miwok
Ohlone
Patwin
Plains Miwok

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed AB 617 West Oakland Community Action Plan, Alameda County.