Bay Area Air District

Board of Directors MEETING April 1, 2026

MEETING LOCATION(S) FOR IN-PERSON ATTENDANCE BY COUNCIL MEMBERS AND MEMBERS OF THE PUBLIC

Bay Area Metro Center
1st Floor Board Room
375 Beale Street
San Francisco, CA 94105

Alameda County
Board of Supervisors District 3
101 Callan Ave., Suite 103
San Leandro, CA 94577

Santa Rosa Junior College Campus
Doyle Library, Room 148
1501 Mendocino Ave.
Santa Rosa, CA, 95401

San Mateo County
Board of Supervisors' Office
5th Floor
500 County Center
Redwood City, CA 94063

Office of Alameda County Supervisor
David Haubert
Scott Haggerty House
4501 Pleasanton Avenue
Pleasanton, CA 94566

Office of Contra Costa County
Supervisor John Gioia
Conference Room
11780 San Pablo Ave., Suite D
El Cerrito, CA 94530

Napa County Administration Building
1195 Third Street, Suite 310
County Executive's Office
Napa, CA 94559

THE FOLLOWING STREAMING OPTIONS WILL ALSO BE PROVIDED

These streaming options are provided for convenience only. In the event that streaming connections malfunction for any reason, the Board of Directors reserves the right to conduct the meeting without remote webcast and/or Zoom access.

The public may observe this meeting through the webcast by clicking the link available on the air district's agenda webpage at
https://www.baaqmd.gov/bodagendas

Members of the public may participate remotely via Zoom at
https://bayareametro.zoom.us/j/83134982042
or may join Zoom by phone by dialing (669) 900-6833 or (408) 638-0968.
The Webinar ID for this meeting is:
831 3498 2042

PUBLIC COMMENT ON AGENDA ITEMS

The public may comment on each item on the agenda as the item is taken up. Members of the public who wish to speak on a matter on the agenda will have two minutes each to address the Board on that agenda item, unless a different time limit is established by the Chair. No speaker who has already spoken on an item will be entitled to speak to that item again.

Written public comments can be emailed to comments@baaqmd.gov or through the Air District's website via the "Submit a Comment" feature for this meeting. Written public comments emailed by 10:00 a.m. on the business day prior to this meeting will be provided to the Board members in advance of the meeting. Written public comments emailed after that deadline will be provided to the Board members following the meeting's adjournment. Unless directed by the Chair, written public comments will not be read aloud during the meeting.

The Board welcomes comments, including criticism, about the policies, procedures, programs, or services of the Air District, or of the acts or omissions of the Board. Speakers shall not use threatening, profane, or abusive language which disrupts, disturbs, or otherwise impedes the orderly conduct of a Board meeting. The Air District is committed to maintaining a workplace free of unlawful harassment and is mindful that Air District staff regularly attend Board meetings. Discriminatory statements or conduct that would potentially violate the Fair Employment and Housing Act – i.e., statements or conduct that is hostile, intimidating, oppressive, or abusive – is *per se* disruptive to a meeting and will not be tolerated.

BOARD OF DIRECTORS
MEETING AGENDA

WEDNESDAY, APRIL 1, 2026
10:00 AM

Chairperson, Lynda Hopkins

1. **Call to Order - Roll Call**

   The Board Chair shall call the meeting to order and the Clerk of the Boards shall take roll of the Board members.

2. **Pledge of Allegiance**

CLOSED SESSION

NOTE FOR MEMBERS OF THE PUBLIC INTERESTED IN ATTENDING OPEN SESSION ITEMS: OPEN SESSION WILL NOT RESUME BEFORE 11:00 A.M.

3. Conference with Legal Counsel re Initiation of Litigation (Government Code Sections 54956.9(a) and (d)(4))

   Pursuant to Government Code Sections 54956.9(a) and (d)(4), the Board of Directors will meet in closed session with legal counsel to consider whether to initiate litigation: Two cases.

4. Conference with Legal Counsel re Anticipated Litigation Pursuant to Government Code Sections 54956.9(a), (d)(2) and (e)(3)

   Pursuant to Government Code Sections 54956.9(a), (d)(2) and (e)(3), the Board of Directors will meet in closed session with legal counsel to discuss a significant exposure to litigation regarding the government code claim of Anthony Domingo Bico received by the Air District on February 27, 2026.

5. Conference with Labor Negotiators Pursuant to Government Code Section 54957.6

   Agency Designated Representatives:
   Laura A. Izon, Atkinson, Andelson, Loya, Ruud & Romo
   Hyacinth Hinojosa, Deputy Executive Officer of Finance and Administration
   Lisa Baker, Director of Human Resources

   Employee Organization: BAAQMD Employees Association

OPEN SESSION - OPEN SESSION WILL NOT RESUME BEFORE 11:00 A.M.

OPENING ITEM(S)

6. **Special Orders of the Day**

CONSENT CALENDAR (Items 7 - 13)

The Consent Calendar consists of routine items that may be approved together as a group by one action of the Board. Any Board member or member of the public may request that an item be removed and considered separately.

7. Approval of the Draft Minutes of the Board of Directors Meeting of March 4, 2026

   The Board of Directors will consider approving the Draft Minutes of the Board of Directors Meeting of March 4, 2026.

8. Board Communications Received from March 4, 2026, through March 31, 2026

   A copy of communications directed to the Board of Directors received by the Air District from March 4, 2026, through March 31, 2026, if any, will be distributed to the Board Members by way of email.

9. Notices of Violations Issued and Settlements in Excess of $10,000 in the Month of February 2026

   In accordance with Board Resolution No. 2012-08, staff will provide the Board of Directors with a list of all Notices of Violations issued, and all settlements for amounts in excess of $10,000, during the month of February 2026.

10. Personnel Out-of-State Business Travel Report for February 2026

    In accordance with Section 1.1.3 of the Air District's Employee Travel and Business Expense Policy, the Board of Directors will be notified of Air District personnel who have traveled on out-of-state business.

11. Report of the Community Equity, Health, and Justice Committee Meeting of March 11, 2026

    The Board of Directors will receive a report of the Community Equity, Health, and Justice Committee meeting of March 11, 2026.

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

12. Report of the Policy, Grants, and Technology Committee Meeting of March 18, 2026

The Board of Directors will receive a report of the Policy, Grants, and Technology Committee meeting of March 18, 2026.

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

13. Report of the Finance and Administration Committee Meeting of March 18, 2026

The Board of Directors will receive a report of the Finance and Administration Committee meeting of March 18, 2026.

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

INFORMATIONAL ITEM

14. Community Advisory Council's Compliance and Enforcement Recommendations

The Board of Directors will discuss seven recommendations from the Community Advisory Council to improve coordination, documentation, and communication in compliance and enforcement efforts to increase efficiency and improve emission reduction outcomes, and will consider providing direction to Air District staff regarding the recommendations. The Community Equity, Health, and Justice Committee discussed this item at its meeting on March 11, 2026, and recommended it to the Board for discussion. This item will be presented by Community Advisory Council Member Ken Szutu and Community Advisory Council Co-Chair Patrick Messac.

ACTION ITEM(S)

15. Final Draft Community Emissions Reduction Plan for East Oakland

The Board of Directors will consider adopting the Final Draft Community Emissions Reduction Plan for East Oakland and approving the determination that adoption of the Community Emissions Reduction Plan is exempt from the California Environmental Quality Act. This item will be presented by Manuel Oliva, Community Planning Manager in the Planning and Climate Protection Division and Anna Lee, Manager in the Environmental Justice Division. The Community Equity, Health, and Justice Committee recommended this item at its meeting on March 11, 2026.

16. Annual Report, Budget, and Director Appointments of the Bay Area Clean Air Foundation

The Board of Directors will discuss the 2025 annual report of the Bay Area Clean Air Foundation and will consider (i) approving the adoption of the Foundation's 2027 budget and (ii) reappointing Arsenio Mataka and appointing Emi Wang to two-year terms as Directors of the Foundation. This item will be presented by Minda Berbeco, PhD, Consultant to the Bay Area Clean Air Foundation.

17. Consideration of State Legislation

The Board will consider adopting positions on pending state legislative bills where appropriate, including, but not limited to the following bills:

Recommendations from the Policy, Grants, and Technology Committee at its meeting on March 18, 2026:

SUPPORT	***OPPOSE***	***WATCH***
Assembly Bill 2313 (Berman)	*Assembly Bill 1791 (Sanchez)*	*Assembly Bill 2752 (Ávila Farías)*
Senate Bill 299 (Cabaldon)	*Senate Bill 1392 (Cortese)*	
Senate Bill 954 (Blakespear)		

Recommendation from Air District staff based on amended bill language:

OPPOSE
Assembly Bill 2752 (Ávila Farías)

This item will be presented by Alan Abbs, Legislative Officer in the Legislative and Government Affairs Division.

INFORMATIONAL ITEM

18. Update on Bay Area Regional Climate Action Plan

The Board will consider and discuss an update on the Air-District-led Bay Area Regional Climate Action Plan. The Air District received a $1 million grant from the United States Environmental Protection Agency to lead a multi-agency climate planning effort. This item will be presented by Jamesine Rogers Gibson, Senior Advanced Projects Advisor in the Planning and Climate Protection Division.

OTHER BUSINESS

19. Public Comment on Non-Agenda Matters

Pursuant to Government Code Section 54954.3, members of the public who wish to speak on matters not on the agenda will be given an opportunity to address the Board of Directors. Members of the public will have two minutes each to address the Board, unless a different time limit is established by the Chair. The Board welcomes comments, including criticism, about the policies, procedures, programs, or services of the Air District, or of the acts or omissions of the Board. Speakers shall not use threatening, profane, or abusive language which disrupts, disturbs, or otherwise impedes the orderly conduct of a Board meeting. The Air District is committed to maintaining a workplace free of unlawful harassment and is mindful that Air District staff regularly attend Board meetings. Discriminatory statements or conduct that would potentially violate the Fair Employment and Housing Act – i.e., statements or conduct that is hostile, intimidating, oppressive, or abusive – is per se disruptive to a meeting and will not be tolerated.

20. Board Member Comments

Any member of the Board, or its staff, on their own initiative or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on their 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)

21. Report of the Executive Officer/APCO

22. Chairperson's Report

23. Time and Place of Next Meeting

Wednesday, April 29, 2026, at 10:00 a.m. The meeting will be held in-person at the Bay Area Metro Center and at satellite locations as may be specified on the meeting agenda using a remote teleconferencing link. Members of the Board of Directors and the public may attend at any of those in-person locations, and members of the public may also attend virtually via webcast.

24. 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 **Air District homepage:**
www.baaqmd.gov

- 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 less than 72 hours before the meeting shall be made available at the Air 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, Kimberly Leefatt, Civil Rights Officer at 415-749-4610 or by email at non-discriminationcoordinator@baaqmd.gov.

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

EXECUTIVE OFFICE:
MONTHLY CALENDAR OF AIR DISTRICT MEETINGS

APRIL 2026

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Meeting	Wednesday	1	10:00 a.m.	1st Floor Board Room
Board of Directors Stationary Source Committee	Wednesday	8	10:00 a.m.	1st Floor, Yerba Buena Room
Board of Directors Community Equity, Health, and Justice Committee	Wednesday	8	1:00 p.m.	1st Floor, Yerba Buena Room
Board of Directors Policy, Grants and Technology Committee	Wednesday	15	10:00 a.m.	1st Floor Board Room
Board of Directors Finance and Administration Committee	Wednesday	15	1:00 p.m.	1st Floor Board Room
Board of Directors Special Meeting Budget Hearing	Wednesday	29	10:00 a.m.	1st Floor Board Room
Board of Directors Special Meeting	Wednesday	29	11:00 a.m.	1st Floor Board Room

Mv 3/23/26 – 6:55 a.m. G/Board/Executive Office/Moncal

BAY AREA AIR DISTRICT
Memorandum

To: Chairperson Lynda Hopkins and Members of the Board of Directors

From: Philip M. Fine
Executive Officer/APCO

Date: April 1, 2026

Re: Approval of the Draft Minutes of the Board of Directors Meeting of March 4, 2026

RECOMMENDED ACTION

Approve the attached Draft Minutes of the Board of Directors Meeting of March 4, 2026.

BACKGROUND

None.

DISCUSSION

Attached for your review and approval are the Draft Minutes of the Board of Directors Meeting of March 4, 2026.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Marcy Hiratzka
Reviewed by: Vanessa Johnson

ATTACHMENT(S):

1. Draft Minutes of the Board of Directors Meeting of March 4, 2026

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

Board of Directors Meeting
Wednesday, March 4, 2026

DRAFT MINUTES

This meeting was webcast, and a video recording is available on the website of the Bay Area Air District at
www.baaqmd.gov/bodagendas

CALL TO ORDER

1. **Opening Comments:** Board of Directors (Board) Chairperson, Lynda Hopkins, called the meeting to order at 10:01 a.m.

   Roll Call:

   Present, In-Person (Bay Area Metro Center, 375 Beale Street, 1st Floor Board Room, San Francisco, CA, 94105): Chairperson Lynda Hopkins; Vice Chairperson Vicki Veenker; and Directors Dionne Adams, Ken Carlson, Brian Colbert, Juan González III, Tyrone Jue, Bilal Mahmood, Gabe Quinto, Linda Sell, Shamann Walton, and Steve Young.

   Present, In-Person Satellite Location (Office of Santa Clara County, 70 W. Hedding St, 10th Floor Conference Room, San Jose, CA 95110): Directors Margaret Abe-Koga and Otto Lee.

   Present, In-Person Satellite Location (Alameda County Board of Supervisors District 3, 101 Callan Ave., Suite 103, San Leandro, CA 94577): Director Lena Tam.

   Present, In-Person Satellite Location (San Mateo County Board of Supervisors' Office, 5th Floor, 500 County Center, Redwood City, CA 94063): Directors Noelia Corzo, Rico E. Medina, and Ray Mueller.

   Present, In-Person Satellite Location (Santa Rosa Junior College Campus, Doyle Library, Room 148, 1501 Mendocino Ave., Santa Rosa, CA 95401): Director Brian Barnacle.

   Present, In-Person Satellite Location (Office of Contra Costa County Supervisor John Gioia, Conference Room, 11780 San Pablo Ave., Suite D, El Cerrito, CA 94530): Director John Gioia.

   Present, In-Person Satellite Location (Office of Alameda County Supervisor David Haubert, Scott Haggerty House, 4501 Pleasanton Avenue, Pleasanton, CA 94566): Director David Haubert.

Absent: Directors Monica Brown, Joelle Gallagher, and Mark Salinas.

2. **PLEDGE OF ALLEGIANCE**

CLOSED SESSION (ITEMS 3 – 5) (10:07 a.m.)

Public Comments

Regarding Item 5, public comments were given by Geraldina Grunbaum, a former Air District employee who provided comments in her personal capacity.

3. **CONFERENCE WITH LEGAL COUNSEL RE ANTICIPATED LITIGATION PURSUANT TO GOVERNMENT CODE SECTIONS 54956.9(a) AND (d)(2)**

Pursuant to Government Code Sections 54956.9(a), (d)(2) and (e)(3), the Board of Directors met in Closed Session with Legal Counsel to discuss significant exposure to litigation: claim of Ronald Rice.

Reportable Action: Alexandra Kamel, Senior Assistant Counsel, announced that there was nothing to report.

4. **PUBLIC EMPLOYEE EVALUATION PURSUANT TO GOVERNMENT CODE SECTION 54957(b)(1)**

Title: Executive Officer/APCO

Reportable Action: Ms. Kamel announced that there was nothing to report.

5. **CONFERENCE WITH LABOR NEGOTIATORS PURSUANT TO GOVERNMENT CODE SECTION 54957.6**

Agency Designated Representatives:
Laura A. Izon, Atkinson, Andelson, Loya, Ruud & Romo
Hyacinth Hinojosa, Deputy Executive Officer of Finance and Administration
Lisa Baker, Director of Human Resources

Employee Organization: BAAQMD Employees Association

Reportable Action: Ms. Kamel reported that direction was provided to staff.

OPEN SESSION (11:00 a.m.)

NOTED PRESENT: Director Corzo was noted present at 10:08 am.

6. **SPECIAL ORDERS OF THE DAY**

Chair Hopkins welcomed the following new employees: Dr. Azimeh Zare Harofteh, Air Quality Engineer II in the Assessment, Inventory, and Modeling Division; Martina Morelli, Air Quality Specialist I in the Compliance & Enforcement Division; Sarah Raskin, Staff Specialist I, in the

Administrative Resources Division; Isha Oliver, Air Quality Engineer I in the Engineering Division; and Dr. Harold Rickenbacker, Air Quality Specialist in the Compliance & Enforcement Division.

CONSENT CALENDAR (ITEMS 7 – 21)

7. Approval of the Draft Minutes of the Board of Directors Special/Retreat Meeting of January 28, 2026
8. Approval of the Draft Minutes of the Board of Directors Meeting of February 4, 2026
9. Board Communications Received from February 4, 2026, through March 3, 2026
10. Personnel Out-of-State Business Travel Report for January 2026
11. Notices of Violations Issued and Settlements in Excess of $10,000 in the Month of January 2026
12. Fiscal Year 2025-2026 Second Quarter Financial Report, Ending December 31, 2025
13. Fiscal Year 2025-2026 Second Quarter Reporting of Payments for Routine and Recurring Goods/Services Expenses and Contracts Executed under Delegated Authority
14. Authorization to Amend Software Development and Maintenance Contracts for Permitting and Compliance Systems
15. Authorization to Participate in the Climate Heat Impact Response Program
16. Public Hearing to Adopt Determination of Effectiveness of Transportation Fund for Clean Air (TFCA) Project Expenditures for Fiscal Year Ending 2025
17. Report of the Community Advisory Council (CAC) Special Meeting of January 23, 2026
18. Report of the Stationary Source Committee Meeting of February 11, 2026
19. Report of the Community Equity, Health, and Justice Committee Meeting of February 11, 2026
20. Report of the Policy, Grants, and Technology Committee Meeting of February 18, 2026
21. Report of the Finance and Administration Committee Meeting of February 18, 2026

Public Comments

No requests received.

Board Comments

None.

Board Action

Director González made a motion, seconded by Director Young, to approve Consent Calendar Items 7 through 21, inclusive; and the motion **carried** by the following vote of the Board:

AYES:	Abe-Koga, Adams, Barnacle, Carlson, Colbert, Corzo, Gioia, González, Haubert, Hopkins, Jue, Lee, Mahmood, Medina, Mueller, Quinto, Sell, Tam, Veenker, Walton, Young.
ABSTAIN:	None.
NOES:	None.
ABSENT:	Brown, Gallagher, Salinas.

INFORMATIONAL ITEM

22. COMMUNITY PRIORITIES FOR RULE DEVELOPMENT

Note: Members of the Community Advisory Council joined the Board of Directors for discussion of this agenda items pursuant to Section 54952.2(c)(4) of the Ralph M. Brown Act, Cal. Gov't Code § 54952.2(c)(4), which authorizes a majority of the Council members to discuss matters within the Council's jurisdiction as part of the agenda at an open and noticed meeting of the Board of Directors. This item was to be presented at the January 28, 2026, Board of Directors Special / Retreat Meeting, but the meeting concluded prior to its presentation. It was updated with additional information.

The Board of Directors and participating members of the Air District's Community Advisory Council discussed current rule development activities that are derived from community priorities and Assembly Bill (AB) 617 Community Emission Reduction Plans. This included a discussion on current and planned community-focused rulemakings and community efforts for the flaring minimization and dust rulemaking projects, which are both major concerns in environmental justice communities. The Board of Directors and participating members of the Community Advisory Council also discussed methods to effectively incorporate community lived experience and priorities into current rulemaking and planning for future rulemaking.

The following CAC members attended this portion of the meeting: Sejal Babaria, Dominique Brooks, William Goodwin, Arieann Harrison, Patrick Messac, Cynthia Prieto-Diaz, Ken Szutu, Azjargal Tsogtsaikhan, and Latasha Washington.

Bradley Cole, Manager in the Regulatory Development Division, gave the staff presentation *Community Priorities for Rule Development,* including: overview; Strategic Plan goals and strategies; how rules fit in; prioritization criteria; (planned) community-focused rule development; minimize flaring (Rules 12-11 and 12-12); potential flaring amendment concepts; current flaring public engagement; fugitive dust (Rules 6-1 and 6-6); fugitive dust targeted sites; current dust effort public engagement; and ensuring rule development reflects community concerns and input.

Public Comments

Public comments were given by Mark Williams, Jr., Environmental Justice League (EJL); Tyler Szeto, Earthjustice; Collen Fitzgerald, Earthjustice; Katrina Tomas, Earthjustice; Jan Warren, Interfaith Climate Action Network of Contra Costa County; Todd Osterberg, Chevron; Kathy Kerrdige, Benicia resident; Kaitlin Alcontin, Communities for a Better Environment; Ashia Ajani, Sierra Club; Gary Hughes, Biofuelwatch; Maurissa Brown, The Greenlining Institute; and Arieann Harrison, San Francisco resident.

Board Comments

The Board and Air District staff discussed the request that the City of Benicia and communities of Crockett and Rodeo be included to the Air District's list of communities of concern regarding flaring incidents; the demarcation between emergency and non-emergency flaring, whether flaring is a safety measure, concerns from flares appearing as fires, whether the Air District also prioritizes flaring at non-refinery facilities, and public outreach efforts by the Air District regarding flaring incidents; the request for a future presentation on the Air District's current rules regarding fugitive dust from construction sites; the entities (target audience) that the Air District considers to ensure

that rule development reflects community input, and the suggestion that the Air District's CAC be involved in providing input as well; the opinion that reducing visible pollution would help the Air District strengthen public trust; the request for clarity on whether Notices of Violation are being issued in response to violations at concrete batch plants; whether there are examples of Air District rule amendments that resulted from community pushback; the belief that there is a lack of Air District inspectors and enforcement for the amount of permitted facilities in the Air District's jurisdiction; the desire for the Board to receive a status update on policy development for socioeconomic analyses in Air District rulemaking, and the hope that this policy development does not slow down the Air District's rulemaking process; the current status of the Air District's $900,000 fine issued to Chevron (in December 2025) for failing to properly monitor air pollution emissions at its refinery in Richmond; the perception that some Air District rules are difficult to enforce; proactive versus reactive rulemakings; the desire for Air District rules that combine multiple requirements, and challenges with that approach; the belief that there is a representation disparity at Air District meetings between industry and environmental activists; concerns regarding the potential rehabilitation phase of the Permanente Quarry, located in the South Bay, and the desire for Air District public outreach and monitoring of those operations; the desire for more stringent air quality standards in overburdened communities; the desire for mechanisms for small businesses; whether the Air District tracks the effectiveness of their adopted rules and reports them back to the communities; the suggestion that future Air District rules require third-party source testing; and the desire for lived experience to drive the Air District's decision making.

Board Action

No action taken.

ACTION ITEM

23. **2026 LEGISLATIVE PLATFORM AND CONSIDERATION OF STATE AND FEDERAL LEGISLATION**

Due to the shortage of time, Chair Hopkins waived the presentation (*2026 Legislative Platform and Consideration of State and Federal Legislation)* that was to have been presented by Alan Abbs, Legislative Officer.

Public Comments

Public comments were given by Maurissa Brown, The Greenlining Institute.

Board Comments

The Board and Air District staff discussed one Board member's hesitation to vote on this matter without hearing the staff presentation.

Board Action

Director González made a motion, seconded by Vice Chair Veenker, to do the following:

1) adopt the proposed 2026 Legislative Platform, and
2) adopt the following positions on pending state and federal legislative bills:

State Legislation:
- Support Assembly Bill 1777 (Garcia)

Federal Legislation:
- Oppose House of Representatives Bill 161 (Griffith-R-VA-9)
- Oppose House of Representatives Bill 4214 (Allen-R-GA-12)
- Oppose House of Representatives Bill 4218 (Carter-R-GA-1)
- Oppose House of Representatives Bill 6409 (Pfluger-R-TX-11)

The motion **carried** by the following vote of the Board:

AYES:	Adams, Carlson, Colbert, Corzo, Gioia, González, Hopkins, Jue, Medina, Quinto, Sell, Tam, Veenker, Young.
NOES:	None.
ABSTAIN:	Haubert.
ABSENT:	Abe-Koga, Barnacle, Brown, Gallagher, Lee, Mahmood, Mueller, Salinas, Walton.

OTHER BUSINESS

24. PUBLIC COMMENT ON NON-AGENDA MATTERS

Public comments were given by Gerard Manning.

25. BOARD MEMBER COMMENTS

Directors González and Haubert expressed their gratitude for the Air District's ongoing messaging to the public regarding the impacts of woodsmoke.

Director Adams gave her opinion that public outreach regarding the Air District's Community Benefits Fund is effective. She encouraged Air District staff to present on this topic at city council meetings of eligible jurisdictions.

Director Quinto announced that in early February, he attended the California Foundation on the Environment and the Economy's (CFEE) Conference on Energy and Climate in Napa, where he met Lauren Sanchez, Chair of the California Air Resources Board, and had discussions regarding possibility of losing local industry and potential impacts.

Director Sell said that she was impressed with the Air District's focus on environmental justice and inclusion.

26. REPORT OF THE EXECUTIVE OFFICER / Air Pollution Control Officer (APCO)

Dr. Philip M. Fine, Executive Officer / APCO, announced the following:

- **MRC Penalty**
  - On February 18, the joint enforcement case we brought against Martinez Refining Company – together with the Contra Costa District Attorney's Office -- reached a final resolution: a final judgment was signed by Judge Reyes securing a $10 million civil penalty assessment and compelling MRC to come into compliance during startup and shutdown operations. In total, 163 notices of violation are addressed by this penalty, including the November 2022 spent catalyst release incident.

- **Items Coming up at Committee this Month**

  3/11 – Community Equity, Health, and Justice Committee
  - Final Draft Community Emissions Reduction Plan for East Oakland
  - Community Advisory Council's Compliance and Enforcement Recommendations
  - CalEnviroScreen Updates

  3/18 – Policy, Grants, and Technology Committee
  - State Legislative Updates
  - Update on Bay Area Regional Climate Action Plan

  3/18 – Finance and Administration Committee
  - Proposed Fiscal year 2026-2027 Budget and Fee Regulation Amendments

27. **CHAIRPERSON'S REPORT**

Chair Hopkins announced that on February 11, 2026, the Alameda County Mayors' Conference reappointed Director Mark Salinas to the Air District's Board of Directors for another two-year term, from April 13, 2026 to April 13, 2028.

28. **TIME AND PLACE OF NEXT MEETING**

Wednesday, April 1, 2026, at 10:00 a.m. The meeting will be held in-person at the Bay Area Metro Center and at satellite locations as may be specified on the meeting agenda using a remote teleconferencing link. Members of the Board of Directors and the public may attend at any of those in-person locations, and members of the public may also attend virtually via webcast.

29. **ADJOURNMENT**

The meeting was adjourned at 1:33 p.m.

Marcy Hiratzka
Clerk of the Boards

BAY AREA AIR DISTRICT
Memorandum

To: Chairperson Lynda Hopkins and Members of the Board of Directors

From: Philip M. Fine
Executive Officer/APCO

Date: April 1, 2026

Re: Board Communications Received from March 4, 2026, through March 31, 2026

RECOMMENDED ACTION

None; the Board will discuss this item, but no action is requested at this time.

BACKGROUND

None.

DISCUSSION

Copies of communications directed to the Board of Directors received by the Air District from March 4, 2026, through March 31, 2026, if any, will be distributed to the Board Members by way of email.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Aloha de Guzman
Reviewed by: Vanessa Johnson

ATTACHMENT(S):

None

BAY AREA AIR DISTRICT
Memorandum

To: Chairperson Lynda Hopkins and Members of the Board of Directors

From: Philip M. Fine
Executive Officer/APCO

Date: April 1, 2026

Re: Notices of Violations Issued and Settlements in Excess of $10,000 in the Month of February 2026

RECOMMENDED ACTION

None; informational item only, no action is requested at this time.

BACKGROUND

None.

DISCUSSION

In accordance with Resolution No. 2012-08, attached to this Memorandum is a listing of all Notices of Violations issued, and all settlements for amounts in excess of $10,000 during the calendar months prior to this report.

BUDGET CONSIDERATION/FINANCIAL IMPACT

The penalties collected are recorded in the Air District's General Fund. A portion of the penalty funds may be expended in accordance with the Community Benefits Penalty Funds Policy adopted by the Board of Directors on May 1, 2024.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Alexander G. Crockett

ATTACHMENT(S):

1. Notices of Violations Issued and Settlements in Excess of $10,000 - February 2026

NOTICES OF VIOLATIONS ISSUED

The following Notice(s) of Violation(s) were issued in February 2026:

Alameda

Site Name	Site #	City	NOV #	Issuance Date	Regulation	Comment
Allied Storage Containers	E0385	Oakland	A65170A	2/2/26	2-1-302	No Permit to Operate
Dev Builders Inc.	S785803	Fremont	A63628A	2/26/26	11-2-401.5	Asbestos Violation
Tesla, Inc.	A1438	Fremont	A64270A	2/5/26	2-6-307	Title V Requirement/Permit Condition Violation
Tesla, Inc.	A1438	Fremont	A64271A	2/5/26	2-6-307	Title V Requirement/Permit Condition Violation
Tesla, Inc.	A1438	Fremont	A64272A	2/5/26	2-6-307	Title V Requirement/Permit Condition Violation
Tesla, Inc.	A1438	Fremont	A64273A	2/5/26	2-6-307	Title V Requirement/Permit Condition Violation
Tesla, Inc.	A1438	Fremont	A64274A	2/5/26	2-6-307	Title V Requirement/Permit Condition Violation
Vasco Road Landfill	A5095	Livermore	A63481A	2/10/26	2-6-307	Title V Requirement/Permit Condition Violation

Contra Costa

Site Name	Site #	City	NOV #	Issuance Date	Regulation	Comment
BRANAGH DEVELOPMENT	S785490	Lafayette	A64752A	2/19/26	11-2-401.5	Asbestos Violation
Chevron Products Company	A0010	Richmond	A62969A	2/4/26	2-6-307	Title V Requirement/Permit Condition Violation
Chevron Products Company	A0010	Richmond	A64383A	2/2/26	2-6-307	Title V Requirement/Permit Condition Violation
Diamond Construction Inc.	S785473	Lafayette	A64748A	2/19/26	11-2-401.5	Asbestos Violation

Martinez Refining Company LLC	A0011	Martinez	A65276A	2/10/26	2-1-307	Permit Requirement/Condition Violation
Martinez Refining Company LLC	A0011	Martinez	A65277A	2/18/26	2-6-307	Title V Requirement/Permit Condition Violation
Martinez Refining Company LLC	A0011	Martinez	A65978A	2/19/26	9-2-301	Hydrogen Sulfide Violation
Phillips 66 Company - San Francisco Refinery	A0016	Rodeo	A64638A	2/9/26	2-1-307	Permit Requirement/Condition Violation
Phillips 66 Company - San Francisco Refinery	A0016	Rodeo	A64639A	2/9/26	2-1-307	Permit Requirement/Condition Violation
Phillips 66 Company - San Francisco Refinery	A0016	Rodeo	A64640A	2/9/26	2-1-307	Permit Requirement/Condition Violation
Phillips 66 Company - San Francisco Refinery	A0016	Rodeo	A64641A	2/9/26	2-1-307	Permit Requirement/Condition Violation
SFD	S785054	Martinez	A53639A	2/5/26	6-3-301	Fireplace Wood Smoke Violation
SFD	S785140	Walnut Creek	A53640A	2/11/26	6-3-301	Fireplace Wood Smoke Violation
Stop & Save Gasoline	C7223	Richmond	A64968A	2/10/26	2-1-302	No Permit to Operate
Stop & Save Gasoline	C7223	Richmond	A64969A	2/10/26	8-7-314	Gasoline Dispensing Facility Violation

Marin

Site Name	Site #	City	NOV #	Issuance Date	Regulation	Comment
SFD	S785147	Novato	A53642A	2/11/26	6-3-301	Fireplace Wood Smoke Violation

San Francisco

Site Name	Site #	City	NOV #	Issuance Date	Regulation	Comment
200 Paul Avenue LLC, c/o Digital Realty Trust	B3131	San Francisco	A65554A	2/4/26	2-1-307	Permit Requirement/Condition Violation
200 Paul Avenue LLC, c/o Digital Realty Trust	B3131	San Francisco	A65555A	2/4/26	2-1-301	No Authority to Construct and No Permit to Operate
200 Paul Avenue LLC, c/o Digital Realty Trust	B3131	San Francisco	A65555B	2/4/26	2-1-302	No Authority to Construct and No Permit to Operate
Jeremiah's Pick Coffee Company	B0582	San Francisco	A64033A	2/23/26	2-1-307	Permit Requirement/Condition Violation
Nina's Dry Cleaner	A9856	San Francisco	A61000A	2/2/26	1-410	Equipment Registration Violation
Recology San Francisco	A4173	San Francisco	A61002A	2/5/26	2-1-307	Permit Requirement/Condition Violation
Vida Owners Association	E2709	San Francisco	A64031A	2/19/26	2-1-302	No Permit to Operate
WaveDivision Holdings LLC	B4111	San Francisco	A64032A	2/23/26	2-1-302	No Permit to Operate

San Mateo

Site Name	Site #	City	NOV #	Issuance Date	Regulation	Comment
AHMC Seton Medical Center	A1000	Daly City	A65140A	2/25/26	2-1-302	No Permit to Operate
AHMC Seton Medical Center	A1000	Daly City	A65141A	2/25/26	9-7-506	Boiler Emissions Violation
AHMC Seton Medical Center	A1000	Daly City	A65142A	2/25/26	9-7-506	Boiler Emissions Violation
SFD	S785149	South San Francisco	A53643A	2/11/26	6-3-301	Fireplace Wood Smoke Violation

Santa Clara

Site Name	Site #	City	NOV #	Issuance Date	Regulation	Comment
Al's Arco	C4360	Santa Clara	A64923A	2/2/26	8-7-302.3	Gasoline Dispensing Facility Violation
Anytime Construction	S784758	Santa Clara	A64595A	2/3/26	11-2-401.5	Asbestos Violation
International Disposal Corp. of CA	A9013	Milpitas	A64376A	2/19/26	2-6-307	Title V Requirement/Permit Condition Violation
International Disposal Corp. of CA	A9013	Milpitas	A64376B	2/19/26	8-34-301.1	Landfill Violation
International Disposal Corp. of CA	A9013	Milpitas	A64377A	2/19/26	2-6-307	Title V Requirement/Permit Condition Violation
International Disposal Corp. of CA	A9013	Milpitas	A64377B	2/19/26	10	Code of Federal Regulation Violation
International Disposal Corp. of CA	A9013	Milpitas	A65528A	2/19/26	2-6-307	Title V Requirement/Permit Condition Violation
International Disposal Corp. of CA	A9013	Milpitas	A65529A	2/19/26	8-34-414.3	Landfill Violation
International Disposal Corp. of CA	A9013	Milpitas	A65529B	2/19/26	8-34-414.4	Landfill Violation
International Disposal Corp. of CA	A9013	Milpitas	A65530A	2/2/26	8-34-303	Landfill Violation
International Disposal Corp. of CA	A9013	Milpitas	A65530B	2/2/26	10	Code of Federal Regulation Violation
Premier Recycling Company	S785788	San Jose	A64469A	2/11/26	2-1-302	No Permit to Operate
SFD	S784690	San Jose	A53638A	2/3/26	6-3-301	Fireplace Wood Smoke Violation
Zip Thru Car Wash Sunnyvale	S700550	Sunnyvale	A64924A	2/26/26	2-1-307	Permit Requirement/Condition Violation

Solano

Site Name	Site #	City	NOV #	Issuance Date	Regulation	Comment
Valero Refining Company - California	B2626	Benicia	A65320A	2/2/26	6-1-301	Visible Emissions Violation
Valero Refining Company - California	B2626	Benicia	A65321A	2/3/26	6-1-301	Visible Emissions Violation
Valero Refining Company - California	B2626	Benicia	A65322A	2/3/26	6-1-301	Visible Emissions Violation
Valero Refining Company - California	B2626	Benicia	A65323A	2/3/26	6-1-301	Visible Emissions Violation

Sonoma

Site Name	Site #	City	NOV #	Issuance Date	Regulation	Comment
BBT, LLC & Socks, LLC	B9273	Petaluma	A64523A	2/10/26	2-1-302	No Permit to Operate
Republic Services of Sonoma County, Inc.	A2254	Petaluma	A64528A	2/19/26	2-1-301	No Authority to Construct and No Permit to Operate
Republic Services of Sonoma County, Inc.	A2254	Petaluma	A64528B	2/19/26	2-1-302	No Authority to Construct and No Permit Io Operate
Republic Services of Sonoma County, Inc.	A2254	Petaluma	A64528C	2/19/26	2-6-307	Title V Requirement/Permit Condition Violation

Company Address Outside of the Bay Area

Site Name	Site #	City	NOV #	Issuance Date	Regulation	Comment
A V Construction Services Inc.	S785083	North Highlands	A64989A	2/10/26	11-2-401.3	Asbestos Violation
A V Construction Services Inc.	S785083	North Highlands	A64989B	2/10/26	11-2-303.8	Asbestos Violation

SETTLEMENTS FOR $10,000 OR MORE REACHED

There were 4 settlements for $10,000 or more completed in February 2026.

1) On February 1, 2026, the Air District reached a settlement with PRIII/Wood Potrero hill LLC for $10,000, regarding the allegations contained in the following 1 Notice of Violation:

NOV #	Issuance Date	Occurrence Date	Regulation	Comments from Enforcement
A58098A	9/18/25	12/12/20	2-1-307	Permit Requirement/Condition Violation

2) On February 2, 2026, the Air District reached a settlement with Sunnydale Phase 3 Infrastructure LLC for $15,000, regarding the allegations contained in the following 1 Notice of Violation:

NOV #	Issuance Date	Occurrence Date	Regulation	Comments from Enforcement
A64130A	4/21/25	3/31/25	10	Code of Federal Regulation Violation

3) On February 9, 2026, the Air District reached a settlement with BoDean Company Inc. for $1,281,000, regarding the allegations contained in the following 9 Notices of Violations:

NOV #	Issuance Date	Occurrence Date	Regulation	Comments from Enforcement
A59221A	9/15/21	7/15/21	6-1-310	Visible Emissions Violation
A59221B	9/15/21	7/15/21	6-1-311	Visible Emissions Violation
A61560A	8/31/22	8/31/22	2-1-301	No Authority to Construct and No Permit to Operate
A61560B	8/31/22	8/31/22	2-1-302	No Authority to Construct and No Permit to Operate
A61561A	8/31/22	8/30/22	6-1-301	Visible Emissions Violation
A61562A	8/31/22	8/30/22	2-1-307	Permit Requirement/Condition Violation
A61563A	9/1/22	4/22/02	2-1-301	No Authority to Construct and No Permit to Operate
A61563B	9/1/22	4/22/02	2-1-302	No Authority to Construct and No Permit to Operate
A61564A	9/2/22	8/30/22	1-301	Public Nuisance Violation
A61565A	9/21/22	9/20/22	1-301	Public Nuisance Violation

A61566A	10/12/22	6/20/22	2-1-307	Permit Requirement/Condition Violation
A62393A	3/24/25	6/3/24	2-1-301	No Authority to Construct and No Permit to Operate
A62393B	3/24/25	6/3/24	2-1-302	No Authority to Construct and No Permit to Operate

4) On February 27, 2026, the Air District reached a settlement with Vallejo Flood and Wastewater District for $19,000, regarding the allegations contained in the following 2 Notices of Violations:

NOV #	Issuance Date	Occurrence Date	Regulation	Comments from Enforcement
A59924A	6/29/22	6/28/22	2-1-307	Permit Requirement/Condition Violation
A60726A	12/1/21	6/1/20	2-1-301	No Authority to Construct and No Permit to Operate
A60726B	12/1/21	6/1/20	2-1-302	No Authority to Construct and No Permit to Operate

BAY AREA AIR DISTRICT
Memorandum

To: Chairperson Lynda Hopkins and Members of the Board of Directors

From: Philip M. Fine
Executive Officer/APCO

Date: April 1, 2026

Re: Personnel Out-of-State Business Travel Report for February 2026

RECOMMENDED ACTION

No action is requested at this time.

BACKGROUND

Section 1.1.3 of the Air District's Employee Travel and Business Expense Policy (Policy) requires notification to the Board of Directors of Air District personnel who have traveled on out-of-state business. The monthly out-of-state business travel report is presented at a regular Board meeting following travel completion.

DISCUSSION

There were no out-of-state business travel activities that occurred in the month of February 2026.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Michelle Hutson
Reviewed by: Stephanie Osaze

ATTACHMENT(S):

None

AGENDA: 11

BOARD MEETING DATE: April 1, 2026

REPORT: Community Equity, Health, and Justice Committee

SYNOPSIS: The Community Equity, Health, and Justice Committee (Committee) held a meeting on Wednesday, March 11, 2026. The following is a summary of the meeting.

RECOMMENDED ACTION:

This item is provided for the Board's information and awareness; no action is requested at this time.

John Gioia, Chair
Community Equity, Health, and Justice Committee

JG:mh

Community Equity, Health, and Justice (Committee) Chairperson, John Gioia, called the meeting to order at 1:04 p.m.

Roll Call:

Present, In-Person (Bay Area Metro Center, 375 Beale Street, 1st Yerba Buena Room, San Francisco, CA, 94105): Directors Monica Brown, Linda Sell, and Shamann Walton.

Present, In-Person Satellite Location: Napa County Administration Building, 1195 Third Street, Suite 310, Crystal Conference Room, Napa, CA 94559): Director Joelle Gallagher.

Present, In-Person Satellite Location: (Office of Contra Costa County Supervisor John Gioia, Conference Room, 11780 San Pablo Ave., Suite D, El Cerrito, CA 94530): Chairperson Gioia.

Present, In-Person Satellite Location: (Pittsburg City Hall, 65 Civic Ave., Room, 301A, Pittsburg, CA 94565): Vice Chairperson Dionne Adams.

Absent: Director Steve Young.

For additional details of the Community Equity, Health, and Justice Committee Meeting, please refer to the webcast, which can be found here. Please use the webcast's index to view specific agenda items.

CONSENT CALENDAR

3. APPROVAL OF THE DRAFT MINUTES OF THE COMMUNITY EQUITY, HEALTH, AND JUSTICE COMMITTEE MEETING OF FEBRUARY 11, 2026

Public Comments

No requests received.

Committee Comments

None.

Committee Action

Director Gallagher made a motion, seconded by Director Sell, to approve the Draft Minutes of the Community Equity, Health, and Justice Committee Meeting of February 11, 2026; and the motion carried by the following vote of the Committee:

AYES:	Adams, Brown, Gioia, Gallagher, Sell, Walton.
NOES:	None.
ABSTAIN:	None.
ABSENT:	Young.

ACTION ITEMS

4. FINAL DRAFT COMMUNITY EMISSIONS REDUCTION PLAN (CERP) FOR EAST OAKLAND

Manuel Oliva, Community Planning Manager, and Anna Lee, Environmental Justice Manager, gave the staff presentation *Final Draft Community Emissions Reduction Plan for East Oakland,* including: recommended action; East Oakland Assembly Bill (AB) 617 community; East Oakland Community Steering Committee (CSC); CERP development process; East Oakland community engagement; Final Draft CERP goals; Final Draft CERP strategy development; Final Draft CERP focus areas; community concerns and action highlights; CERP public review; CSC approval; California Environmental Quality Act (CEQA) compliance; and recommended actions.

Members of the East Oakland CSC were then invited to share their reflections and statement of support (Mr. Charles Reed, Marina Munoz, Cecilia Cunningham, Njeri McGee-Tyner, and Aiyahnna Johnson).

Public Comments

Public comments were given by Mr. Charles Reed, Oakland resident; and Patrick Messack, Oakland resident.

Committee Comments

The Committee and staff discussed the desire for improved public engagement/outreach and access to East Oakland CERP meetings; the Air District-generated emissions inventory that analyzed East Oakland air pollution from local stationary and mobile sources, including data for nearly 400 permitted facilities, and whether inventories have been generated for the other Bay Area designated AB 617 communities (Richmond, West Oakland, and Bayview Hunters Point); the desire for a balance of qualitative versus qualitative goals; the suggestion of using local industrial pollution sources for baseline monitoring, and how the Air District would reduce emissions if they were found to be high; whether the proposed Draft CERP focus area of "public health and community wellness" is quantifiable; and whether the Air District conducts modeling analyses of exposures from all known sources in all Bay Area communities.

Committee Action

Director Gallagher made a motion, seconded by Director Walton, to recommend the Board (i) adopt the Final Draft Community Emissions Reduction Plan for East Oakland and (ii) approve the determination that adoption of the Community Emissions Reduction Plan is exempt from the California Environmental Quality Act; and the motion carried by the following vote of the Committee:

AYES: Adams, Brown, Gallagher, Sell, Walton.
NOES: None.
ABSTAIN: None.
ABSENT: Gioia, Young.

5. **COMMUNITY ADVISORY COUNCIL'S (CAC) COMPLIANCE AND ENFORCEMENT RECOMMENDATIONS**

The Committee reviewed seven Community Advisory Council recommendations that aim to improve coordination, documentation, and communication in compliance and enforcement efforts to increase efficiency and emission reduction outcomes. The Committee considered forwarding them to the Board of Directors for consideration and potential direction to staff. At its meeting on November 20, 2025, the Community Advisory Council recommended this item to the Community Equity, Health, and Justice Committee.

Air District Community Advisory Council Members, Ken Szutu and Patrick Messac, gave the presentation *Community Advisory Council's Compliance and Enforcement Recommendations,* including: outline; recommended action; Crown Hill Materials: community experience; why a case study; case study resources; community perspective: complaint report; complaints without consequences; Recommendation #1 (Customer-Centered Complaint Process); enforcement gap: rules vs results; Recommendation #2 (Enforceable Rules); Recommendation #3 (Modernize Evidence Collection); Recommendation #4 (Transparent Permitting); impact over intention; Recommendation #5 (Protective Permitting Safeguards); Recommendation #6 (Strengthen Learning through Case Studies); beyond Crown Hill Materials: continuous improvement; Recommendation #7 (Top Community Concerns Framework); and recommended action.

Public Comments

Public comments were given by Aiyahnna Johnson, Oakland resident; Mr. Charles Reed, Oakland resident; and Marina Munoz, Oakland resident.

Committee Comments

The Committee and staff discussed the Air District's response to the proposed recommendations (desire for high-level prioritization); and the anticipated timeframe of when the recommendations will come before the full Board.

Committee Action

Director Gallagher made a motion, seconded by Director Sell, to recommend the Board consider the following seven recommendations that were proposed by the Air District's Community Advisory Council, and provide potential direction to staff:

1. Implement a customer-centered complaint process that provides clear communication, feedback, and closure to complainants
2. Adopt and implement rules that can be enforced more consistently and effectively
3. Evaluate opportunities to incorporate modern technology for real-time evidence collection where legally and operationally appropriate
4. Improve public access to permitting and exemption information for facilities under Air District jurisdiction by publishing facility permits and exemptions online through a community-facing dashboard
5. Revise permitting regulations to incorporate stronger safeguards for fenceline communities by ensuring that permit and exemption determinations are based on verified equipment capacity data and enforceable operational limits
6. Partner with overburdened communities to co-develop a "Top Community Concerns" list, by county, that combines community feedback with agency data such as complaints, inspections, emissions, health indicators, and facility operations to identify recurring air quality issues and guide proactive enforcement
7. Institutionalize the CAC's case-study approach as a structured framework for learning, transparency, and ongoing program improvement across Air District programs, applying it to permitting in 2026

The motion carried by the following vote of the Committee:

AYES:	Adams, Brown, Gallagher, Sell, Walton.
NOES:	None.
ABSTAIN:	None.
ABSENT:	Gioia, Young.

INFORMATONAL ITEM

6. CALENVIROSCREEN UPDATES

Dr. David Holstius, Senior Advanced Projects Advisor, gave the staff presentation *CalEnviroScreen Updates,* including: background on CalEnviroScreen; CalEnviroScreen internals; applications at the Air District; community designations; unpacking and accounting for changes; and Air District engagement.

Public Comments

Public comments were given by Jan Warren, Interfaith Climate Action Network of Contra Costa County; Patrick Messac, Oakland resident; and Mr. Charles Reed, Oakland resident.

Committee Comments

The Committee and staff discussed interpreting map changes of Contra Costa County.

Committee Action

No action taken.

OTHER BUSINESS

7. PUBLIC COMMENT ON NON-AGENDA MATTERS

Roger Lin, Center for Biological Diversity; Meya Saenz Zagar, Center for Biological Diversity; Aiyahnna Johnson, Oakland resident; Jan Warren, Interfaith Climate Action Network of Contra Costa County; Masheika Allgood, Sunnyvale resident; and Marina Munoz, Oakland resident.

8. COMMITTEE MEMBER COMMENTS

None.

9. REPORT OF THE DEPUTY EXECUTIVE OFFICER OF EQUITY AND COMMUNITY PROGRAMS

Arsenio Mataka, Deputy Executive Officer of Equity and Community Programs, made the following announcements:

- The Air District has hired an Officer of Civil Rights, Kimberly Leefatt, and Temporary Designated Officer for the CAC, Anyania Muse.
- The People's Air Grant Program supports projects in impacted communities that improve air quality and reduce local air pollution disparities, equip impacted communities with tools and resources to reduce air pollution and improve public health outcomes, and support health care resources and services for people experiencing health impacts related to air pollution exposure. The maximum amount

for an individual grant is $400,000 over two years. **Applications are now open.** Community-based groups, local 501(c)(3) nonprofit organizations, public agencies, and California Native American Tribes serving Bay Area environmental justice communities are encouraged to apply. **Applications are due by 5:00 PM Pacific Time on Friday, May 29, 2026.** For questions or assistance with the application, please contact peoplesairgrant@baaqmd.gov.

- The date of the CAC's next meeting will take place on March 19, 2026, at 6:00 pm, at Juntos Fruitvale - Unity Auditorium. 3357 International Boulevard, Oakland, CA 94601.

10. **TIME AND PLACE OF NEXT MEETING**

Wednesday, April 8, 2026, at 1:00 p.m. The meeting will be held in-person at the Bay Area Metro Center and at satellite locations as may be specified on the meeting agenda using a remote teleconferencing link. Members of the Community Equity, Health, and Justice Committee and the public may attend at any of those in-person locations, and members of the public may also attend virtually via webcast.

The meeting was adjourned at 3:23 p.m.

Attachments

#3 – Approval of the Draft Minutes of the Community Equity, Health, and Justice Committee Meeting of February 11, 2026
#4 – Final Draft Community Emissions Reduction Plan (Cerp) For East Oakland
#5 – Community Advisory Council's Compliance And Enforcement Recommendations
#6 – CalEnviroScreen Updates

AGENDA: 12

BOARD MEETING DATE: April 1, 2026

REPORT: Policy, Grants, and Technology Committee

SYNOPSIS: The Policy, Grants, and Technology Committee (Committee) held a meeting on Wednesday, March 18, 2026. The following is a summary of the meeting.

RECOMMENDED ACTION:

This item is provided for the Board's information and awareness; no action is requested at this time.

Vicki Veenker, Chair
Policy, Grants, and Technology Committee

VV:mh

Policy, Grants, and Technology Committee (Committee) Chairperson, Vicki Veenker, called the meeting to order at 10:00 a.m.

Roll Call:

Present, In-Person (Bay Area Metro Center, 375 Beale Street, 1st Floor Board Room, San Francisco, CA, 94105): Chairperson Vicki Veenker; and Directors Ken Carlson and Brian Colbert.

Present, In-Person Satellite Location: (Napa County Administration Building, 1195 Third Street, Suite 310, Crystal Conference Room, Napa, CA 94559): Director Joelle Gallagher.

Present, In-Person Satellite Location: (San Mateo County Board of Supervisors Offices, 500 County Center, 5th Floor, Redwood City, CA 94063): Director Ray Mueller.

Present, In-Person Satellite Location: (County of Santa Clara Board of Supervisor's Office, 70 West Hedding Street, 10th Floor, San Jose, CA 95110): Director Margaret Abe-Koga.

Present, In-Person Satellite Location: (Alameda County Board of Supervisors District 3, 101 Callan Ave., Suite 103, San Leandro, CA 94577): Director Lena Tam.

Present, In-Person Satellite Location: (City of San Bruno, 567 El Camino Real, Room 138, San Bruno, CA 94066): Director Rico E. Medina.

Absent: Vice Chairperson Juan González III; and Directors Noelia Corzo, Mark Salinas.

For additional details of the Policy, Grants, and Technology Committee Meeting, please refer to the webcast, which can be found here. Please use the webcast's index to view specific agenda items.

CONSENT CALENDAR

3. APPROVAL OF THE DRAFT MINUTES OF THE POLICY, GRANTS, AND TECHNOLOGY COMMITTEE MEETING OF FEBRUARY 18, 2026

Public Comments

No requests received.

Committee Comments

None.

Committee Action

Director Carlson made a motion, seconded by Director Colbet, to approve the Draft Minutes of the Policy, Grants, and Technology Committee Meeting of February 18, 2026; and the motion carried by the following vote of the Committee:

AYES:	Abe-Koga, Carlson, Colbert, Gallagher, Medina, Tam, Veenker.
NOES:	None.
ABSTAIN:	None.
ABSENT:	Corzo, González, Mueller, Salinas.

ACTION ITEM

4. STATE LEGISLATIVE UPDATES

Alan Abbs, Legislative Officer, gave the staff presentation *State Legislative Updates,* including: abbreviations; recommended action; 2026 Legislative Session; Board-approved-position bills – Senate Bill (SB) 222 (Wiener), Assembly Bill (AB) 907 (Chen), and AB 1777 (Garcia); Ai District staff recommendations - AB 1791 (Sanchez), AB 2313 (Berman), AB 2752 (Avila Farias), SB 299 (Cabaldon), SB 954 (Blakespear), and SB 1392 (Cortese); additional bills for discussion – AB 2046 (Ransom), AB 2102 (DeMaio), AB 2635 (C. Rodriguez), SB 875 (Wiener), SB 1075 (Reyes), SB 1097 (Wiener), and SB 1259 (Blakespear); and recap of recommended action.

NOTED PRESENT: Director Mueller was noted present at 10:20 a.m.

Public Comments

No requests received.

Committee Comments

The Committee and staff discussed comments on supporting SB 299 (Cabaldon) to avoid incentivizing daycare and childcare facilities into industrial zones with high air pollution; supporting AB 2313 (Berman) and clarifying the consequences if a customer opts into the program and electrifies instead; SB 875 (Wiener), noting that while it is outside the Air District's jurisdiction, the implications for utility ownership that could influence air quality efforts and regulations; the contradictory logic of SB 1392 (Cortese) noting that if a vehicle is truly a restored classic or collector car, it should generally be able to meet existing smog-check standards; whether to change the AB 2752 (Ávila Farías) position from oppose to watch and whether the language shift focus from the core public health mission of the Air District; why AB 2752 applies only to Bay Area and South Coast Air Districts, given the broader implications of refinery regulation; supporting staff's recommendation to oppose AB 1791 (Sanchez) and added that tying Air District rules to a fixed gasoline cost cap is impractical in a highly volatile fuel market; and that since the Air District already conducts socioeconomic and cost-effectiveness analyses under the Health and Safety Code, AB 1791 bill appears redundant.

Committee Action

Director Gallagher made a motion, seconded by Director Colbert, to recommend the Board adopt positions on the following pending state legislative bills:

SUPPORT	**OPPOSE**
Assembly Bill 2313 (Berman)	Assembly Bill 1791 (Sanchez)
Senate Bill 299 (Cabaldon)	Assembly Bill 2752 (Ávila Farías)
Senate Bill 954 (Blakespear)	Senate Bill 1392 (Cortese)

After motion was made, Director Carlson offered the friendly amendment of holding two separate votes for this item; one vote that would recommend the Board adopt the aforementioned positions on the aforementioned pending state legislative bills, ***except for Assembly Bill 2752 (Ávila Farías),*** and a second vote that would consider Assembly Bill 2752 (Ávila Farías) on its own. The motioner and seconder agreed to this change.

Therefore, Director Gallagher made a motion, seconded by Director Colbert, to recommend the Board adopt positions on the following pending state legislative bills:

SUPPORT	**OPPOSE**
Assembly Bill 2313 (Berman)	Assembly Bill 1791 (Sanchez)
Senate Bill 299 (Cabaldon)	Senate Bill 1392 (Cortese)
Senate Bill 954 (Blakespear)	

The motion carried by the following vote of the Committee:

AYES: Abe-Koga, Carlson, Colbert, Gallagher, Medina, Mueller, Tam, Veenker.
NOES: None.
ABSTAIN: None.
ABSENT: Corzo, González, Salinas.

Director Carlson made a motion, seconded by Director Mueller, to recommend the Board **adopt** a "WATCH" position regarding Assembly Bill 2752 (Ávila Farías); and the motion carried by the following vote of the Committee:

AYES: Abe-Koga, Carlson, Colbert, Medina, Mueller, Tam.
NOES: Gallagher, Veenker.
ABSTAIN: None.
ABSENT: Corzo, González, Salinas.

INFORMATIONAL ITEM

5. UPDATE ON BAY AREA REGIONAL CLIMATE ACTION PLAN

Jamesine Rogers Gibson, Senior Advanced Projects Advisor, gave the staff presentation *Update on Bay Area Regional Climate Action Plan,* including: Bay Area Regional Climate Action Plan (BARCAP) overview; goals of the BARCAP; BARCAP greenhouse gas and carbon stock inventories; BARCAP snapshot; transportation; buildings; power; waste an materials management; natural and working lands; Advisory Work Group for BARCAP; BARCAP engagement highlights; BARCAP deliverables benefit the region; sample funding roadmap; Air District role in implementation; next steps; and Santa Clara County.

Prior to the conclusion of the presentation, Janani Chandrasekar, Management Analyst with the Santa Clara County Office of Sustainability and Resilience, gave comments on her partnership with Air District staff on this.

Public Comments

Public comments were given by Jan Warren, Interfaith Climate Action Network of Contra Costa County.

Committee Comments

The Committee and staff discussed the status of Napa County's approval of its Regional Climate Action Plan, and questions on how to coordinate and align that work with the Bay Area Regional Climate Action Plan; questions about metrics to track anticipated impacts of the plan, and whether there are lessons learned from other regions in the world that could inform how the Bay Area measures and improves its results; the importance of the waste and clean composting measures; and whether all counties have similar recycling and waste reduction commissions, and if so, how their data and activities are incorporated into the Bay Area Regional Climate Action Plan and other related county climate plans.

Committee Action

No action taken.

OTHER BUSINESS

6. PUBLIC COMMENT ON NON-AGENDA MATTERS

No requests received.

7. COMMITTEE MEMBER COMMENTS

None.

8. TIME AND PLACE OF NEXT MEETING

Wednesday, April 15, 2026, at 10:00 a.m. The meeting will be held in-person at the Bay Area Metro Center and at satellite locations as may be specified on the meeting agenda using a remote teleconferencing link. Members of the Policy, Grants, and Technology Committee and the public may attend at any of those in-person locations, and members of the public may also attend virtually via webcast.

Adjournment
The meeting was adjourned at 11:28 a.m.

Attachments
#3 – Approval of the Draft Minutes of the Policy, Grants, and Technology Committee Meeting of February 18, 2026
#4 – State Legislative Updates
#5 – Update on Bay Area Regional Climate Action Plan

AGENDA: 13

BOARD MEETING DATE: April 1, 2026

REPORT: Finance and Administration Committee

SYNOPSIS: The Finance and Administration Committee (Committee) held a meeting on Wednesday, March 18, 2026. The following is a summary of the meeting.

RECOMMENDED ACTION:

This item is provided for the Board's information and awareness; no action is requested at this time.

Lynda Hopkins, Chair
Finance and Administration Committee

LH:mh

Finance and Administration (Committee) Chairperson, Lynda Hopkins, called the meeting to order at 1:12 p.m.

Roll Call:

Present, In-Person (Bay Area Metro Center, 375 Beale Street, 1st Floor Board Room, San Francisco, CA, 94105): Chairperson Lynda Hopkins; and Directors Brian Colbert, Tyrone Jue, and Vicki Veenker.

Present, In-Person Satellite Location: (Office of Alameda County Supervisor David Haubert, Scott Haggerty House, 4501 Pleasanton Avenue, Pleasanton, CA 94566): Director Haubert.

Absent: Vice Chairperson Juan González; and Directors Noelia Corozo and Linda Sell.

For additional details of the Finance and Administration Committee Meeting, please refer to the webcast, which can be found here. Please use the webcast's index to view specific agenda items.

CONSENT CALENDAR

3. APPROVAL OF THE DRAFT MINUTES OF THE FINANCE AND ADMINISTRATION COMMITTEE MEETING OF FEBRUARY 18, 2026

Public Comments

No requests received.

Committee Comments

None.

Committee Action

Director Jue made a motion, seconded by Director Veenker, to **approve** the Draft Minutes of the Finance and Administration Committee Meeting Of February 18, 2026; and the motion carried by the following vote of the Committee:

AYES: Colbert, Haubert, Hopkins, Jue, Veenker.
NOES:None.
ABSTAIN: None.
ABSENT: Corzo, González, Sell.

ACTION ITEM

4. **PROPOSED FISCAL YEAR 2026-2027 BUDGET AND FEE REGULATION AMENDMENTS**

Hyacinth Hinojosa, Deputy Executive Officer of Finance and Administration, Stephanie Osaze, Director of Finance, Fred Tanaka, Engineering Manager, and Mark Gage, Principal Air Quality Engineer, gave the staff presentation *Proposed Fiscal Year 2026-2027 Budget and Fee Regulation Amendments,* including: outline; recommended action; budget highlights; FY 2026-2027 all funds budget by revenue and expense type; FY 2026-2027 General Fund budget by type; financial forecast; budget summary- ongoing investments; budget summary- new investments; budget summary- other considerations; budget summary- sources and uses; General Fund reserves trend; General Fund reserve proposed designations and uses; medical retiree plan funding status/policy; pension plan funding status/policy; FY 2026-2027 budget by service area; service area: engineering & compliance; service area: equity & community programs; service area: finance and administration; service area: general counsel; service area: information management; service area: policy; service area: public affairs; service area: science; staff overview; organizational efficiency add/delete positions; BaREATHE study: Bay Area Regional Evaluation of Air Toxics and Health Effects; cost recovery background; cost recovery limitations; cost recovery background: trends; cost recovery background: trends example; cost recovery strategies; proposed fee regulation amendments; other proposed changes – general; other proposed changes – new fee; other proposed changes – fee reduction; other proposed changes – fee removal; other proposed changes – reclassification; impact on large facilities – permit renewal; impact on small facilities – permit renewal; budget & fee regulation schedule; recommended action; questions and discussion.

Public Comments

Public comments were given by Bob Brown, Western States Petroleum Association; and Peter Okurowski, California Council for Environmental and Economic Balance.

Committee Comments

The Committee and staff discussed the proposal for the Committee to focus their questions and comments on the proposed budget, and that the fee schedule be brought back to the Committee for additional deliberation at a future meeting, given several public comments focused on the fee schedule; the appreciation for the proposed budget's alignment with the Air District's strategic plan and priorities, highlighting its focus on reducing permitting backlog,

investing in technology, supporting impacted communities, and maintaining long-term fiscal discipline; the request for clarification of the "off-ramp" for reserve funded limited-term contract employees (LTCEs) being used to address the permitting backlog; comments on the use of reserves, noting the one-time and ongoing reserve funding investments (including LTCEs, refinery community air monitoring program, and the Community Investments Office; and questions on how these expenses would be sustainably funded in the future without relying on reserves indefinitely and whether they were intended to be short-term or ongoing costs.

Committee Action

Director Veenker made a motion, seconded by Director Colbert, to recommend that the Board **adopt** the Fiscal Year 2026-2027 Proposed Budget with proposed staffing recommendations (fee regulation amendments will be considered separately, in the future)**;** and the motion carried by the following vote of the Committee:

AYES: Colbert, Haubert, Hopkins, Jue, Veenker.
NOES:None.
ABSTAIN: None.
ABSENT: Corzo, González, Sell.

OTHER BUSINESS

5. PUBLIC COMMENT ON NON-AGENDA MATTERS

No requests received.

6. COMMITTEE MEMBER COMMENTS

None.

7. TIME AND PLACE OF NEXT MEETING

Wednesday, April 15, 2026, at 1:00 p.m. The meeting will be held in-person at the Bay Area Metro Center and at satellite locations as may be specified on the meeting agenda using a remote teleconferencing link. Members of the Finance and Administration Committee and the public may attend at any of those in-person locations, and members of the public may also attend virtually via webcast.

Adjournment
The meeting was adjourned at 1:59 p.m.

Attachments
#3 – Approval of the Draft Minutes of the Finance and Administration Committee Meeting of February 18, 2026
#4 – Proposed Fiscal Year 2026-2027 Budget And Fee Regulation Amendments

BAY AREA AIR DISTRICT
Memorandum

To: Chairperson Lynda Hopkins and Members of the Board of Directors

From: Philip M. Fine
Executive Officer/APCO

Date: April 1, 2026

Re: Community Advisory Council's Compliance and Enforcement Recommendations

RECOMMENDED ACTION

This is an informational item only with no action requested from the Board of Directors, but the Board may wish to provide direction to Air District staff regarding the Community Advisory Council's recommendations to improve coordination, documentation, and communication in the Air District's compliance and enforcement efforts.

BACKGROUND

The Community Advisory Council's Compliance and Enforcement Ad Hoc Committee (Ad Hoc Committee) was established to identify key compliance and enforcement topics for Council discussion, and to strengthen communication between the Air District, the Council, and impacted communities. The Ad Hoc Committee completed its work and concluded in November 2025.

To inform its work, the Ad Hoc Committee examined the Crown Hill Materials case in Vallejo, a concrete batch operation located within a mixed industrial–residential area, as a real-world example of how community concerns begin to move through the Air District's enforcement process.

The Ad Hoc Committee met regularly with Air District staff and residents to review publicly available complaints, inspection reports, and permitting documentation, and to analyze how coordination and communication shaped the outcome. This work highlighted both the strengths and challenges of the current system, including how collaboration between residents and the Air District led to enforcement action coordination with the City of Vallejo and potential legal action.

Insights from this process informed the Community Advisory Council's seven final recommendations to enhance transparency, effectiveness, and equity within the Air District's compliance and enforcement programs. The Community Advisory Council's recommendations reflect the Air District's "One Air District" approach and align with

Strategic Plan goals focused on community experience, cross-divisional collaboration, and accountability.

DISCUSSION

To strengthen understanding and communication around compliance and enforcement, the Community Advisory Council's Ad Hoc Committee conducted a structured review of how community experience can inform process improvement. Its examination of the Crown Hill Materials case provided a real-time learning opportunity to trace one community issue through the early part of the enforcement process and to identify barriers that can slow or complicate outcomes.

Through this effort, the Ad Hoc Committee gained insight into how coordination, documentation, and communication influence enforcement results. The case study highlighted the importance of clear procedures, timely communication, and consistent coordination to support equitable outcomes. Building on these lessons, the Ad Hoc Committee developed seven recommendations that were approved by the full Community Advisory Council to strengthen transparency, collaboration, and continuous improvement across the Air District's compliance and enforcement programs consistent with a "One Air District" approach:

1. Implement a customer-centered complaint process that provides clear communication, feedback, and closure to complainants.
2. Adopt and implement rules that can be enforced more consistently and effectively.
3. Evaluate opportunities to incorporate modern technology for real-time evidence collection where legally and operationally appropriate.
4. Improve public access to permitting and exemption information for facilities under Air District jurisdiction by publishing facility permits and exemptions online through a community-facing dashboard.
5. Revise permitting regulations to incorporate stronger safeguards for fenceline communities by ensuring that permit and exemption determinations are based on verified equipment capacity data and enforceable operational limits.
6. Partner with overburdened communities to co-develop a “Top Community Concerns” list, by county, that combines community feedback with agency data such as complaints, inspections, emissions, health indicators, and facility operations to identify recurring air quality issues and guide proactive enforcement.
7. Institutionalize the CAC’s case-study approach as a structured framework for learning, transparency, and ongoing program improvement across Air District programs, applying it to permitting in 2026.

Together, these recommendations from the Community Advisory Council translate lessons learned into actionable steps and strengthen compliance and enforcement practices across the Air District. The Community Equity, Health, and Justice Committee reviewed these compliance and enforcement recommendations on March 11, 2026, and recommended discussion of this item at a Board of Directors meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Amy Smith
Reviewed by: Diana Ruiz

ATTACHMENT(S):

1. Compliance and Enforcement Ad Hoc Final Report 11.2025
2. Community Advisory Council's Compliance and Enforcement Recommendations Presentation

Community Advisory Council
Compliance & Enforcement Ad Hoc Committee
Final Report
November 2025

1. Executive Summary

The CAC Compliance & Enforcement Ad Hoc Committee (C&E Ad Hoc) undertook the Crown Hill Materials (CHM) case in Vallejo as a case study to trace a persistent community concern through the resolution of the issue.

After more than five years of community complaints about heavy dust fallout, the Air District issued a Cease-and-Desist Letter on August 18, 2025, effectively halting CHM's operation. This outcome demonstrated that partnership between residents and the Air District can deliver real change. It also revealed that achieving such an outcome required extraordinary persistence from both community members and staff, a level of effort that is not sustainable or equitable.

The CHM case provided a valuable opportunity to assess the Air District's permitting and compliance and enforcement processes, identify lessons learned, and inform actionable recommendations. This report distills those lessons into seven recommendations designed to strengthen transparency, consistency, and equity in the Air District's permitting, compliance and enforcement programs.

2. Purpose and Scope

This case study brings real community experience and on-the-ground challenges directly into the Air District's improvement process. The effort pilots a case-study methodology tracing how an actual complaint moves through enforcement, permitting, and engineering processes to identify systemic barriers and opportunities for improvement. The goal is to produce actionable recommendations for the Air District.

The scope focused on complaint handling, inspection, and permitting practices as demonstrated in the CHM case; internal and external communication between community, staff, and leadership; and cross-divisional coordination, responsiveness, and data transparency.

This work supports Strategy 1.2 of the Strategic Plan: "Strengthen cross-divisional collaboration and learning to improve outcomes. It also advances the Strategic Plan's 'One Air District' vision by connecting community insight with operational improvement across divisions.

3. Background: The Crown Hill Materials Case

CHM operated a concrete batching facility in a mixed industrial–residential zone in Vallejo beginning around 2019. Residents quickly noticed persistent dust and early-morning noise.

By early 2024, the issue was formally brought to the Community Advisory Council's attention and taken up as a focus for the C&E Ad Hoc, which applied a case-study approach to understand system barriers to community responsiveness and timely enforcement.

The C&E Ad Hoc met frequently with community members and Air District staff, reviewing complaints, inspection logs, and correspondence, and hosting community meetings with Air District leadership. After twenty months, this collaboration resulted in a Cease-and-Desist Letter being issued August 18, 2025, which halted operations and led to a sharp drop in dust complaints and visible air quality improvement.

4. Case-Study Methodology

This case study tested a structured, evidence-based learning process designed to advance the "One Air District" goal. Each step of the process corresponded to a real phase of Air District workflow:

1. Identify a real community problem experienced firsthand — not a theoretical issue or staff initiative.
2. Gather primary documents, including complaints, inspection logs, permits, and correspondence.
3. Trace the early part of the enforcement process, identifying decision points, hand-offs, and bottlenecks.
4. Analyze system behavior to understand what helped, what slowed progress, and what was missing.
5. Synthesize lessons to transform observations into structured recommendations.

This approach begins where the problem is felt — in the community. Each case study becomes a feedback engine: connecting divisions, reducing duplication, and ensuring that improvements arise from lived experience rather than paperwork — turning frustration into a learning process that improves the system.

5. Key Findings and Lessons Learned

The CHM case revealed how real-world community experiences illuminate systemic challenges within the Air District's engineering and compliance and enforcement process. By studying the CHM case, the C&E Ad Hoc surfaced specific operational gaps, as well as important lessons about transparency, coordination, and sustainability. The key findings below summarize what the case made visible and where improvements are most needed.

1. Complaint loops lacked closure.
2. Rules didn't provide real-world protection.
3. Oversight relied on industry self-reporting.
4. Facility records were difficult to access.
5. Permits didn't reflect actual capacity.
6. Community concerns weren't systematically prioritized.
7. A framework for systematic learning was absent.

The CHM experience shows that even when collaboration succeeds, it requires extraordinary persistence. The process took more than a year and a half. This level of effort is not sustainable. A stronger system should deliver these results through normal operations — without requiring special committees, repeated follow-ups, or executive intervention.

6. The Seven Recommendations

Building on the lessons from the CHM case so far, the C&E Ad Hoc developed seven recommendations to enhance transparency, consistency, and equity in enforcement:

1. Customer-Centered Complaint Process

Complaints are the public's front door to enforcement. Yet in the CHM case, community members experienced years of unresolved complaints, many closed as "Unconfirmed" or "No Visible Emissions Observed," according to CHM inspection reports.

The C&E Ad Hoc recommends establishing a customer-centered complaint process that treats complainants as partners in resolution. This includes:

- Publishing an online complaint log associated with each facility in Air District jurisdiction showing the status and outcome of complaints,
- Providing direct follow-up to complainants once investigations are complete.
- Offering customer feedback opportunities (e.g., short satisfaction surveys) to evaluate responsiveness and quality of follow-up.
- Enabling cross-agency coordination where complaints involve multiple jurisdictions.

This would help close the feedback loop, rebuild trust, and ensure that the complaint process is transparent, responsive, and data informed.

2. Strengthen Rule Enforceability

The Crown Hill Materials case showed that even when inspectors observe clear and repeated impacts, existing rules sometimes lack specific, enforceable provisions. This gap leaves both inspectors and the public without adequate tools for timely corrective action.

The C&E Ad Hoc recommends a real-world approach to rule development to ensure that field observations can directly inform regulatory outcomes:

- Engage inspectors and impacted communities early in the rulemaking process to ensure that rules are practical and enforceable in the field.
- Conduct a comprehensive analysis of current rules to identify provisions that are difficult to enforce in the field and amend them to clarify observable, measurable standards.
- Integrate field data and complaint patterns into future rule amendments to strengthen consistency between policy intent and implementation.

These steps will further bridge the gap between policy design and operational enforcement, ensuring that Air District rules are both scientifically sound and actionable in practice.

3. Enforceable Evidence

The CHM case showed that evidence collection and verification depend too heavily on industry self-reporting and outdated methods.

The C&E Ad Hoc recommends modernizing enforcement through a stronger, more evidence-driven approach:

- Leverage technology (e.g., remote sensors, real-time monitoring, mobile reporting tools) to gather objective data.
- Training community members on how to collect enforceable evidence, including clear documentation standards for photos and videos.
- Simplify evidence submission, allowing residents to upload documentation through an online portal linked to the complaint system.

This recommendation seeks to transform community-sourced data from anecdotal evidence into enforceable evidence that can withstand regulatory and legal scrutiny.

4. Transparent Permits

The CHM case exposed barriers to accessing basic facility information. Community members were unable to obtain permit exemption documents without submitting Public Records Act (PRA) requests, delaying transparency and eroding trust.

The C&E Ad Hoc recommends a transparent, community-facing permit system that allows residents to understand what is permitted near them and how compliance is verified.

Key elements include:

- Publishing permits and permit exemption data online.
- Prioritizing environmentally burdened communities, such as AB 617 areas, for early implementation.
- Developing a publicly accessible “Community Pollution Dashboard”, visualizing all permitted and unpermitted facilities, including complaint history and inspection status.
- Streamlining PRA requests by proactively disclosing non-confidential permit data.

This recommendation builds transparency and accountability while reducing administrative burden.

5. Protective Permits

The CHM case revealed two structural limitations in the current permitting and exemption framework. First, Regulation 2-1-115’s exemption threshold treats each concrete batching unit separately instead of using cumulative throughput. This allowed multiple units on the same site to qualify for exemption even though their combined capacity far exceeded the 15-cubic-yard-per-hour threshold.

Second, the Letter of Exemption was issued based on CHM's self-reported custom maximum rated capacity. Specifications later obtained through a Public Records Act request showed that the equipment was capable of 120–200 cubic yards per hour — an order of magnitude above the 12 cubic yards listed in the application.

To make permitting protective of fenceline communities, the C&E Ad Hoc recommends:

- Using cumulative throughput when evaluating permit exemption thresholds.
- Basing determinations on actual maximum rated capacity versus self-reported maximum rated capacity.
- Independently verifying manufacturer specifications during permit and exemption review.
- Requiring field-verifiable operating limits (e.g., non-resettable counters or meters).
- Auditing exemptions and permits to ensure consistency with actual operations.

These steps close loopholes, prevent misclassification, and ensure permits reflect the true scale of operations impacting nearby communities.

6. Publish Top Concerns

Community members often report recurring problems — odors, dust, smoke — that point to broader, systemic issues. However, these concerns are not always aggregated or analyzed to guide proactive enforcement.

The C&E Ad Hoc recommends developing a "Top Community Concerns" list by county, using existing data to identify emerging trends and focus resources.

This list would integrate:

- Complaint data, inspection records, and air monitoring results.
- Health and demographic indicators to identify disproportionately affected communities.
- Community and civic input through workshops and surveys.

The list should be updated annually and made public, serving as a shared roadmap for enforcement, permitting, and rule development priorities.

7. Institutionalize Case Study Learning

The CHM case demonstrated the value of analyzing a real enforcement issue as a structured learning tool. The C&E Ad Hoc's evidence-based approach revealed systemic bottlenecks that are difficult to detect through routine operations.

The C&E Ad Hoc recommends formalizing this case-study approach as an ongoing organizational learning process that continuously connects community experience to operational improvement.

Implementation should include:

- Dedicated staff support to compile documents, data, and outcomes for each selected case.
- Formal recognition and collaboration opportunities for community "case champions" who help document and track issues.
- Cross-divisional participation to ensure shared learning across the Air District.
- Integration of findings into training, strategic planning, and rule development.

This approach transforms one-off community concerns into sustained institutional learning, advancing the "One Air District" vision of transparency, accountability, and continuous improvement.

7. Implementation & Next Steps

Formal CAC Action: Consider approving this report and its seven recommendations, and if approved, transmit them to the Community Equity, Health & Justice (CEHJ) Committee for review and possible advancement to the Board of Directors.

Institutional Adoption: Integrate the case-study methodology across divisions—not only within Compliance & Enforcement—as a tool to advance Goal 1: One Air District and Goal 2: Center Community Experience, and to foster ongoing learning and transparency through real-world cases.

Tracking Progress: The CAC will request periodic updates from staff on implementation milestones and identify pathways for collaboration between staff and community members as the recommendations move forward.

Top Community Concerns Initiative: Develop a "Top Community Concerns List" that is informed by complaint data, inspection records, and health indicators to guide proactive enforcement.

Resource Efficiency: Build processes that resolve future community issues quickly and fairly through normal operations—without requiring ad hoc committees or executive intervention.

By institutionalizing these tools, the Air District can create a self-propelling improvement system in which each resolved case becomes a data point that accelerates the next. This approach supports a transparent, efficient, and community centered "One Air District" framework.

Bay Area Air District

Community Advisory Council's Compliance and Enforcement Recommendations

Board of Directors

April 1, 2026

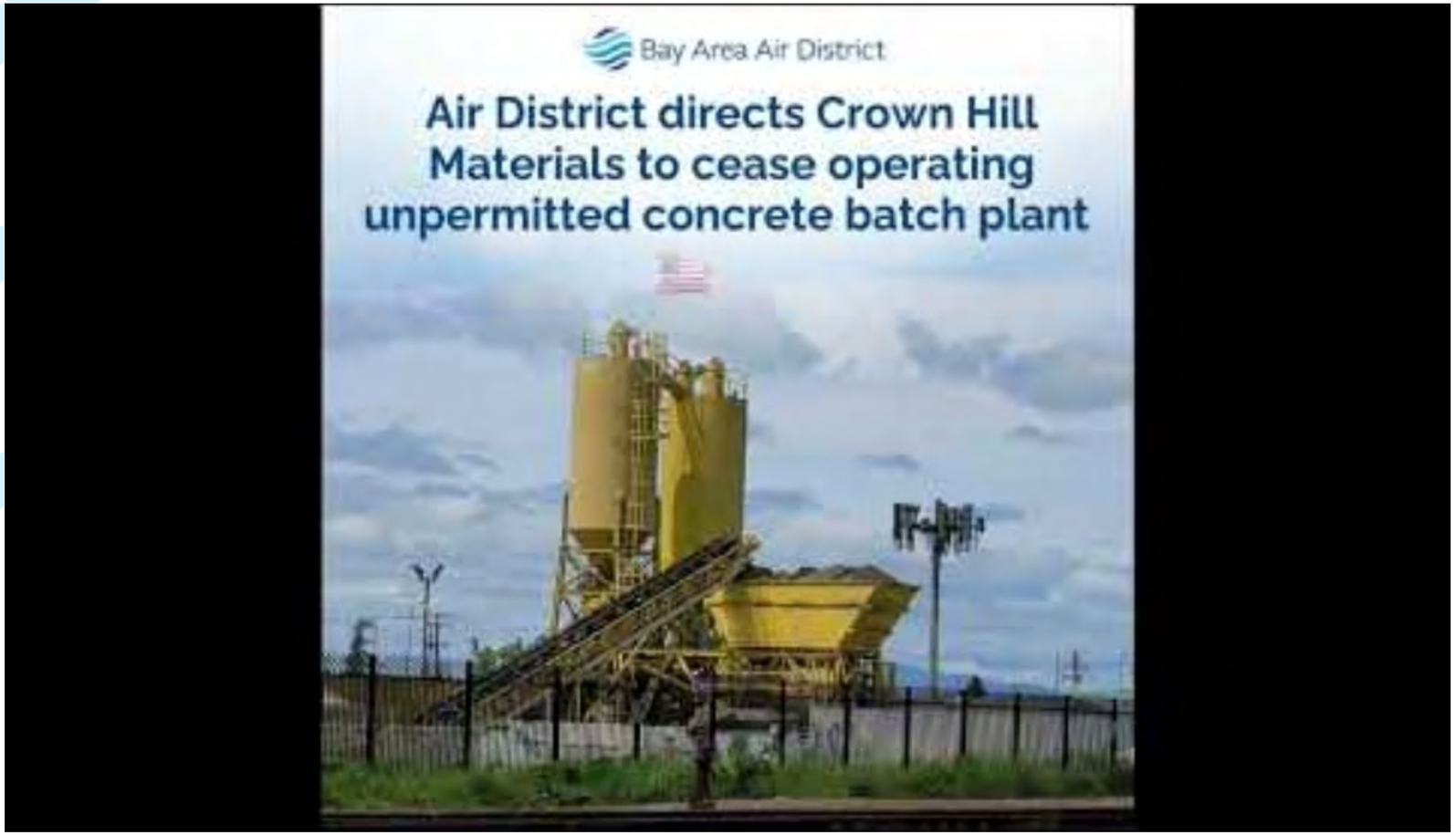
Patrick Messac, Community Advisory Council, Co-Chair

Ken Szutu, Community Advisory Council, Councilmember

Presentation Outline

- Community Experience
- Why a case study?
- Seven Recommended Actions from Crown Hill Case Study
- Discussion

Crown Hill Materials: Community Experience



https://youtu.be/YNLPgLIdeio?si=tccumiN2MhdFaRUs



A layer of dust on fence line table

Crown Hill Materials: Why a Case Study?

What is a case study?

Following one real issue through complaint, inspection, permitting, and enforcement to see how the system actually works.

Why Crown Hill Materials?

Five years of visible dust

Dozens of complaints, no confirmed violations

January 2024: Community Advisory Council (CAC) elevated fenceline concerns

Case Study Resources

What followed?

- 25 inspections
- Compliance & Enforcement Ad Hoc Meetings
- 2 community meetings
- Public records request
- **August 2025:** District issues Cease-and-Desist



Community meeting with CHM residents

Key Takeaway: With strong District support, the community got relief. The system should not require 20 months to work.

Community Perspective: Complaint Report

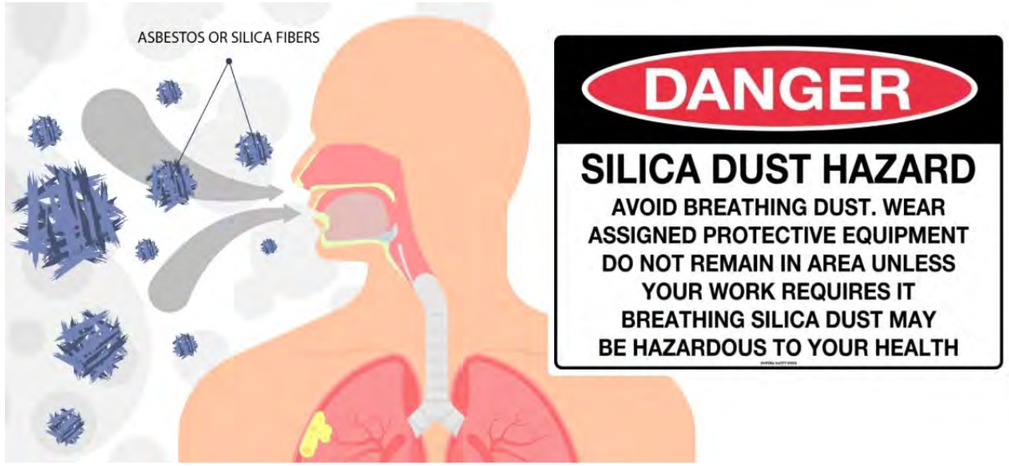
Complaint Investigation Report

Complaint Description: “Cement Dust is blowing into our house and car. The air is really hard to breathe because of this fine dust. This is really a health issue. I have been **complaining since July 4, 2024**, and they are still mixing and making dust. **I have not received one single written report on the outcome of this problem**.”

Complaint Status: “Unconfirmed – Emission was no longer present”

Complaints without Consequences

Crown Hill Materials (2024)
23 complaints
0 confirmed
0 Notices of Violation



Health risks associated with silica dust inhalation

District reiterated to Crown Hill Materials personnel the importance of being “a good neighbor”

Dust sampling did not include a health assessment

Recommendation #1: Customer-Centered Complaint Process

- Publish complaint logs tied to facilities
- Provide clear summaries to complainants
- Solicit feedback to improve communication

Enforcement Gap: Rules vs. Results

- **Regulation 6, Rule 1** – Visible Emissions
- **Regulation 6, Rule 6** – Trackout
- **Regulation 1-301 –** Public Nuisance

Crown Hill Materials (2024)

25 Inspections

0 visible emissions violations

0 trackout violations

0 nuisance violations





Illustration of the Ringelmann Scale

Inspection Observation (4/2/25)

"Batch plant not operating. Light dust observed in bad sun position, no dust after moving to good sun position."

Recommendation #2: Enforceable Rules

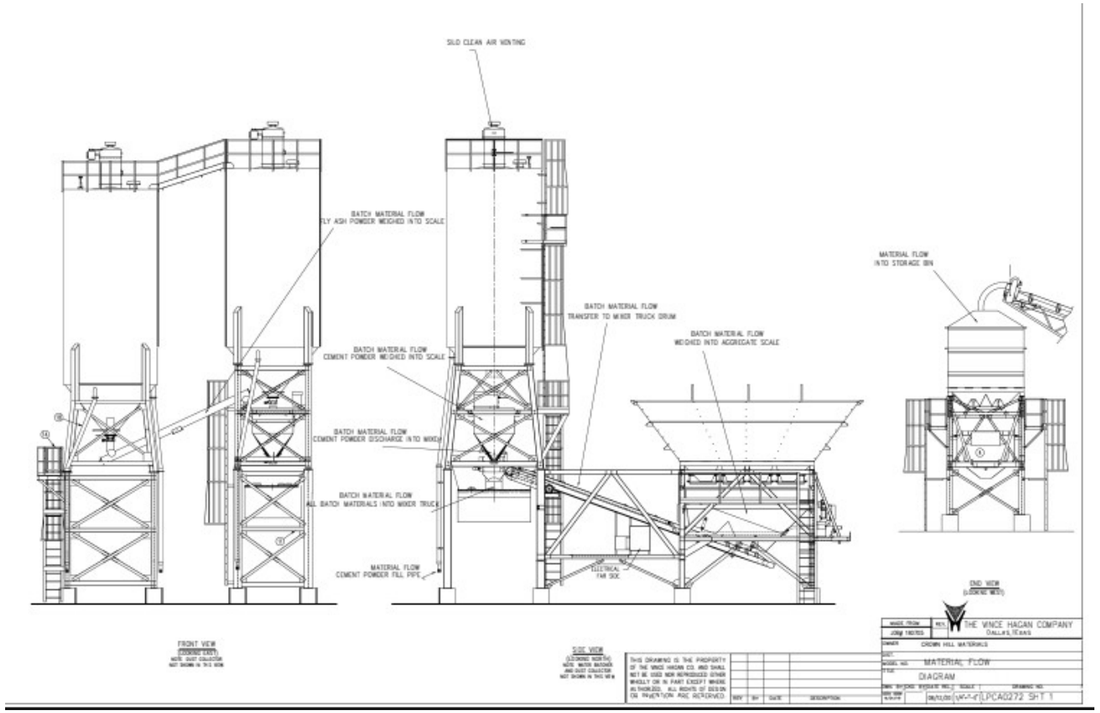
- Analyze rule efficacy and violation trends
- Update rules that rarely produce enforceable outcomes
- Align rule design with field conditions

Recommendation #3: Modernize Evidence Collection

- Strategically use monitoring tools where appropriate
- Provide guidance on enforceable documentation
- Modernize digital evidence submission

Recommendation #4: Transparent Permitting

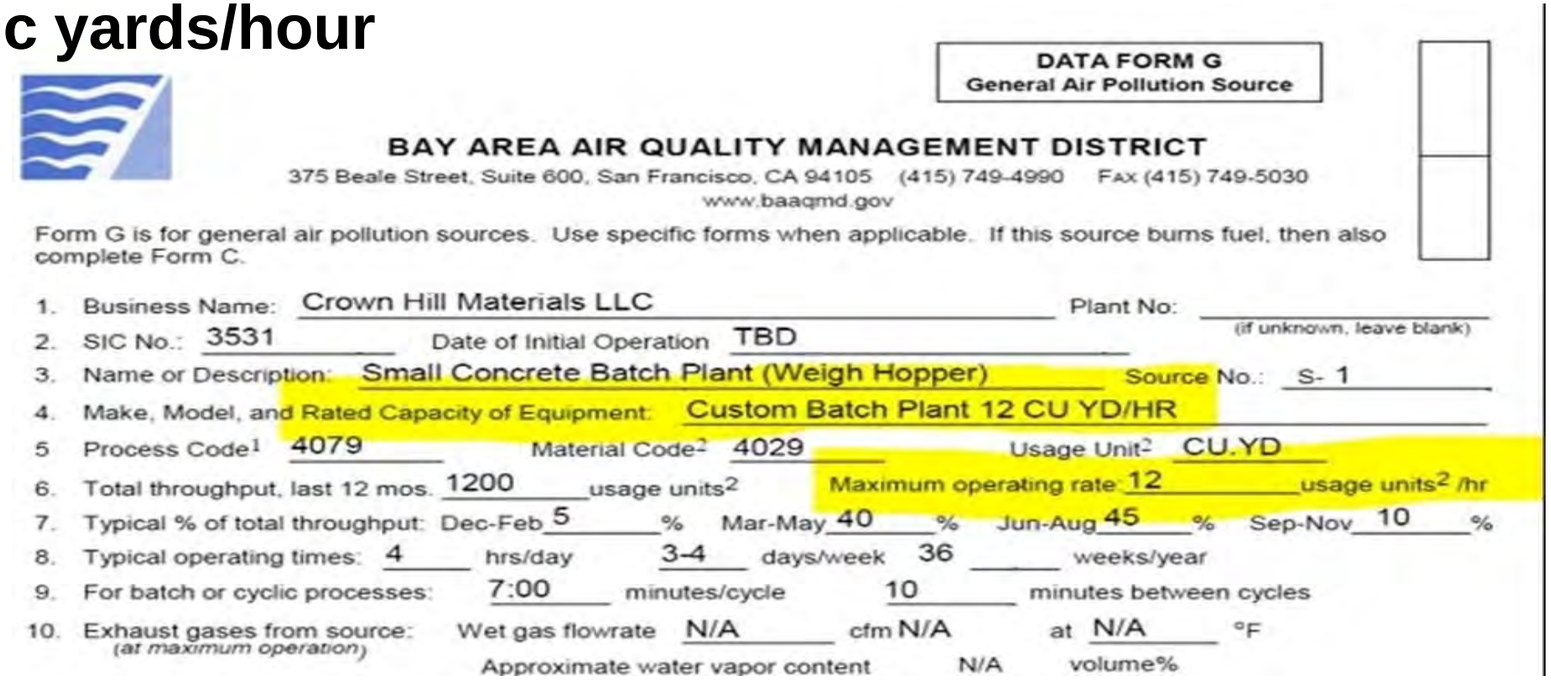
- Publish permits and exemptions online
- Prioritize rollout in overburdened communities
- Provide accessible, facility-level information



Impact over Intention

Regulation 2-1-115 Exemption applies only to facilities with **maximum rated capacity under 15 cubic yards per hour**

- Crown Hill Materials: Application listed:
  12 cubic yards/hour



DATA FORM G
General Air Pollution Source

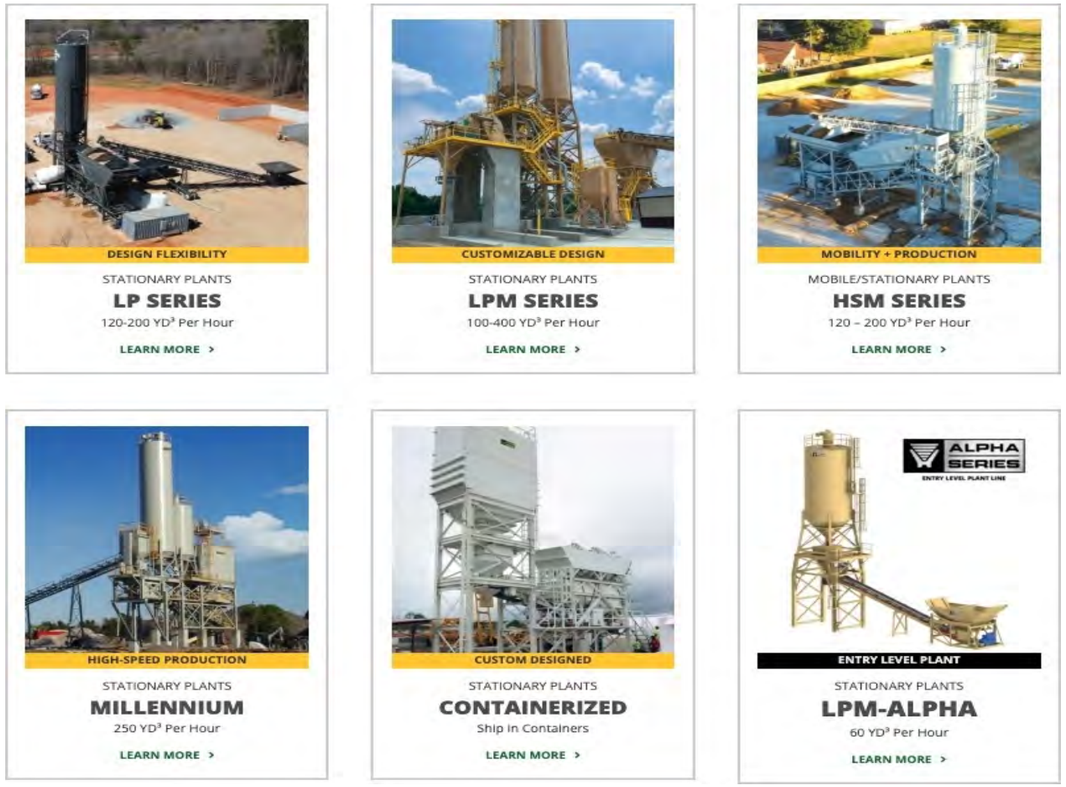
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
375 Beale Street, Suite 600, San Francisco, CA 94105 (415) 749-4990 FAX (415) 749-5030
www.baaqmd.gov

Form G is for general air pollution sources. Use specific forms when applicable. If this source burns fuel, then also complete Form C.

1. Business Name: Crown Hill Materials LLC Plant No: _____ (if unknown, leave blank)
2. SIC No.: 3531 Date of Initial Operation TBD
3. Name or Description: Small Concrete Batch Plant (Weigh Hopper) Source No.: S- 1
4. Make, Model, and Rated Capacity of Equipment: Custom Batch Plant 12 CU YD/HR
5. Process Code[1] 4079 Material Code[2] 4029 Usage Unit[2] CU.YD
6. Total throughput, last 12 mos. 1200 usage units[2] Maximum operating rate: 12 usage units[2] /hr
7. Typical % of total throughput: Dec-Feb 5 % Mar-May 40 % Jun-Aug 45 % Sep-Nov 10 %
8. Typical operating times: 4 hrs/day 3-4 days/week 36 weeks/year
9. For batch or cyclic processes: 7:00 minutes/cycle 10 minutes between cycles
10. Exhaust gases from source: (at maximum operation) Wet gas flowrate N/A cfm N/A at N/A °F
    Approximate water vapor content N/A volume%

Impact over Intention (cont.)

- Manufacturer specification indicated: models **>60 cubic yards/hour**



Screenshot from Vince Hagan website

Recommendation #5: Protective Permitting Safeguards

- Verify maximum rated production capacity independently
- Evaluate like operations cumulatively when applying exemptions
- Ensure meaningful deterrence for operating without a permit

Recommendation #6: Strengthen Learning through Case Studies

- Resource CAC case studies as a valuable tool for transparency and system improvement
- Support continued collaboration between CAC and Air District staff
- Apply lesson learning across “One Air District”

Beyond Crown Hill Materials: Continuous Improvement

Isolated Success

- Reactive handling
- Resolving a single community concern
- Episodic CAC involvement

VS.

Structure Method

- Formal case study framework
- Improve System Performance
- CAC as structure bridge with District staff & management support

Recommendation #7: Top Community Concerns Framework

- Identify top recurring air quality concerns by county
- Integrate complaint, inspection, emissions, and health data
- Use findings to guide proactive enforcement priorities

Community Advisory Council Recommendations in Review

1. Implement a customer-centered complaint process that provides clear communication, feedback, and closure to complainants.
2. Adopt and implement rules that can be enforced more consistently and effectively.
3. Evaluate opportunities to incorporate modern technology for real-time evidence collection where legally and operationally appropriate.
4. Improve public access to permitting and exemption information for facilities under Air District jurisdiction by publishing facility permits and exemptions online through a community-facing dashboard.

Community Advisory Council Recommendations in Review (cont.)

5. Revise permitting regulations to incorporate stronger safeguards for fenceline communities by ensuring that permit and exemption determinations are based on verified equipment capacity data and enforceable operational limits.

6. Partner with overburdened communities to co-develop a “Top Community Concerns” list, by county, that combines community feedback with agency data such as complaints, inspections, emissions, health indicators, and facility operations to identify recurring air quality issues and guide proactive enforcement.

Community Advisory Council Recommendations in Review (cont.)

7. Institutionalize the CAC's case-study approach as a structured framework for learning, transparency, and ongoing program improvement across Air District programs, applying it to permitting in 2026.

Questions & Discussion

For more information:

communityadvisorycouncil@baaqmd.gov

BAY AREA AIR DISTRICT
Memorandum

To: Chairperson Lynda Hopkins and Members of the Board of Directors

From: Philip M. Fine
Executive Officer/APCO

Date: April 1, 2026

Re: Final Draft Community Emissions Reduction Plan for East Oakland

RECOMMENDED ACTION

Adopt the Final Draft Community Emissions Reduction Plan for East Oaklan; and approve the determination that adoption of the Final Draft Community Emissions Reduction Plan is exempt from the California Environmental Quality Act. The Community Equity, Health, and Justice Committee recommended this item at its meeting on March 11, 2026.

BACKGROUND

Assembly Bill (AB) 617, signed into law in 2017 and implemented by the California Air Resources Board (CARB), focuses on improving local air quality and health in disproportionately impacted communities. CARB approved East Oakland for the development of a Community Emissions Reduction Plan (CERP) in February 2022. The Air District has been working collaboratively with a Community Steering Committee (CSC) and community-based organization (CBO) partner, Communities for a Better Environment (CBE), to develop a CERP that includes community-informed strategies to address the longstanding air pollution burden, cumulative impacts, and health disparities experienced by East Oakland community members. CBE is the Co-lead in the process and is an environmental justice organization that has worked in East Oakland for decades, building community capacity in air quality planning and reducing air pollution.

The East Oakland CERP, named by the CSC “Right to Breathe: East Oakland Community Air Quality Justice Plan”, is attached to this memo as Attachment 1 and publicly available on the East Oakland CERP webpage.

DISCUSSION

Overview
In 2021, CBE and the Air District recommended CARB designate East Oakland as the next Bay Area CERP community. East Oakland was recommended for the development of a CERP due to the high health-burden of residents in East Oakland neighborhoods, who experience disproportionately high exposure to air pollution. Contributions to the pollution burden of the area include: the Oakland San Francisco Bay Airport, large warehouse distribution centers, high-volume freeways and roadways (I-880, I-238, I-580, Highway 92), truck routes, transit buses, industrial equipment, and freight and passenger rail. In addition, waste facilities, crematories, and small to medium industrial and manufacturing operations are located throughout the area.

The CERP defines the East Oakland project area as encompassing 20 square miles, approximately 36% of Oakland's total land area of 56 square miles. The defined area is bordered by I-580 and MacArthur Boulevard to the north, the Oakland city limit to the southeast, Oakland San Francisco Bay Airport to the southwest, and 13th Avenue to the west.

Goals
The plan goals were developed through Air District and CBE facilitated group activities that invited CSC members to envision the future of East Oakland's air quality and identify the community concerns that stand in the way of achieving this future. These goals describe the desired outcomes of the CERP and address the current challenges facing the community:

1. **Goal #1:** Reduce East Oaklanders' exposure to air pollution by decreasing emissions from sources identified by the community as top concerns.

2. **Goal #2:** Prioritize actions that have the opportunity to reduce disproportionately high health impacts associated with air pollution affecting East Oakland residents to achieve improvements in community health.

3. **Goal #3:** Empower East Oakland residents to participate in holding polluters accountable by combining their local knowledge with an understanding of emission sources, health impacts, air pollution regulations, and reporting mechanisms.

Air Pollution Overview
The plan is based on a comprehensive technical assessment of air pollution in the East Oakland project area. The Air District generated an emissions inventory that analyzed air pollution from local stationary and mobile sources, including data for nearly 400 permitted facilities. The emission inventory provides detailed air pollution information, specifically regarding Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs),

within the project area that supported the development of the plan's strategies and actions. Some of the key findings include:

- Air monitoring data from the Air District's Oakland - East monitoring site show that while levels of certain air pollutants have been in compliance with federal air quality standards, those levels have not improved over the last ten years.
- Data from Air District monitoring sites and from numerous studies show higher levels of black carbon (BC), ultrafine particles (UFPs), and other pollutants associated with traffic in locations near busy roadways.
- A community-based monitoring study conducted by CBE in 2008 found that residents of East Oakland were exposed to higher levels of fine particulate matter ($PM_{2.5}$) due to the proximity of industrial areas and corridors with high diesel truck traffic compared to average exposure levels for residents across Alameda County.
- A 2021 emissions inventory for East Oakland shows that key fine $PM_{2.5}$ sources include residential fuel combustion, road dust, construction activities, and permitted facilities like Davis Street Transfer Station and Miller Milling Company.
- Mobile sources such as cars, trucks, aircraft and construction equipment are significant sources of several key TACs in East Oakland, including diesel particulate matter (DPM), 1,3-butadiene, benzene, and acrolein.
- Though permitted facilities make a relatively small contribution to the overall TAC inventory, individual facilities or groups of facilities may still be important emitters, especially if they are located near sensitive populations such as schools or senior centers.
- Oakland San Francisco Bay Airport is a significant air pollution source in East Oakland, accounting for over one-third of local emissions of nitrogen oxides (NO_X). A review of monitoring studies conducted around different airports have shown that elevated levels of UFP, $PM_{2.5}$, BC, and other pollutants occur in and around airports.

East Oakland Strategy Framework

Over several months, the Co-Leads, guided by the CSC Co-Chairs engaged in data gathering and information sharing activities to identify CERP focus areas and prepare the CSC for strategy discussions. These preliminary activities included developing the technical assessment previously discussed, developing a community-identified list of facilities of concern, and conducting a community mapping project to identify the community's concerns. This was followed by several months of collaborative strategy development involving the CSC, Air District technical experts, and external agency partners to develop focus areas, community concern statements, strategies, and actions.

The development of focus areas provides a framework based on the community's concerns that was used to organize the plan's strategies and actions. The six focus areas developed are the following:

1. **Built Environment and Land Use:** Older housing and proximity to polluting sources expose residents - especially sensitive receptors such as children - to harmful air pollutants, triggering asthma and other health problems. Addressing these conditions is vital for ensuring East Oakland residents have the same clean, safe, and healthy living environments as wealthier communities.
2. **Commercial and Industrial Sources:** East Oakland residents are disproportionately exposed to harmful air pollution from nearby commercial and industrial sources due to the historic industrial nature of the area and a legacy of discriminatory zoning. This focus area serves critical health-protective functions by reducing toxic emissions, fugitive dust, and localized air pollution in East Oakland neighborhoods.
3. **Illegal Dumping, Trash, and Odors:** Illegal dumping is a major concern for East Oakland residents, harming public health, lowering quality of life, showing signs of institutional neglect, and contributing to feeling unsafe in the community. The community is passionate about the importance of this focus area to address widespread trash, odors, and pollution through stronger enforcement and city collaboration.
4. **Public Health and Community Wellness:** East Oakland residents face health disparities—like lower life expectancy and higher rates of asthma, heart disease, and cancer. This focus area aims to improve community health through interagency collaboration and outreach efforts.
5. **Transportation and Mobile Sources:** East Oakland residents are heavily impacted by air pollution from cars, trucks, and airport operations due to their proximity to major transit corridors like I-880 and the Oakland International Airport. This focus area will help reduce harmful emissions and noise through cleaner technologies, policy changes, and proactive enforcement.
6. **Urban Greening and Workforce Development:** East Oakland faces a lack of tree cover and poorly maintained green spaces compared to wealthier areas, impacting residents' health, comfort, and access to nature. This focus area aims to advance environmental equity and economic opportunity through urban greening and local green job creation.

The CERP has 32 strategies and 107 actions across six focus areas. The actions include rulemaking, permitting, enforcement, incentives, monitoring, education, community engagement, research, and tracking policies. Each action names the lead implementing agency or organization along with an anticipated time frame.

CSC and Community Engagement

The Air District and CBE began convening the CSC regularly in September 2022. The convened CSC consisted of 26 members, including five non-voting members, all of whom informed the development of the CERP. As of September 2025, the East Oakland CSC consists of 24 total members. These include five youth members and four

non-voting members with one alternate. Members either live or work in East Oakland, representing one or more of the following sectors: CBOs, non-profits, youth and youth organizations, faith communities, education, government, health, or business/industry representatives. CSC members selected three Co-Chairs, who provided additional guidance to the Co-Leads in the CERP process.

The CSC and Co-Leads actively began working on CERP strategies and actions in September 2024. In addition to CSC meetings dedicated to collaborating on preliminary draft CERP elements, the Co-Leads launched a robust effort to conduct outreach to East Oakland community members to increase community inclusion, accessibility, and participation in the CERP review process. As part of this effort, the Air District awarded two rounds of mini-grants to four local non-profit organizations to conduct community outreach and engagement focused on the CERP. The first round was in 2023 to support engagement for the Community Mapping Project and the second round was in 2024 to support the Community Organizing Project to garner feedback on early elements of the CERP.

In August 2025, the CSC reviewed the preliminary draft CERP and provided comments. The Air District revised the CERP to address CSC comments and published the Public Review Draft CERP on November 3, 2025. Outreach to expand awareness of and public comment on the Public Review Draft CERP included the distribution of a community flyer, an eblast email notice, updates to the East Oakland CERP webpage, and promotional posts on the Air District's social media channels (X, LinkedIn, and Facebook) and tabling at several community events.

Public Comment and CSC Approval of the Final Draft CERP

On November 3, 2025, the Air District and the CSC released the Public Review Draft CERP. The public comment period extended for four weeks from November 3 to December 7, 2025. A public Open House was held on November 13, 2025, at Youth UpRising in East Oakland.

A total of 11 members of the public commented on the Public Review Draft CERP including individuals, representatives of local non-profits, international think tanks, local businesses and the Port of Oakland. An additional 119 members of the public commented on behalf of the Stop Oakland Airport Expansion Coalition, focused on opposing the Oakland San Francisco Bay Airport expansion project.

As outlined in the Response to Comments attached to this memo as Attachment 2, the Air District made non-substantive clerical edits to the plan, added clarification in certain chapters and added new actions and a new metric in response to public comments.

The CSC voted to approve the Final Draft CERP on February 5, 2026.

On March 11, 2026 the Community Equity, Health, and Justice Committee recommended that the Board of Directors adopt the Final Draft CERP and approve the determination that adoption of the Final Draft Community Emissions Reduction Plan is

exempt from the California Environmental Quality Act.

Compliance with the California Environmental Quality Act (CEQA)
Air District staff have reviewed all aspects of the Final Draft CERP and determined that it is exempt from CEQA.

First, as an overall matter, the Final Draft CERP is being adopted to benefit the environment and the health of residents of East Oakland, and all the action items within the Final Draft CERP support this goal. Because the Final Draft CERP's goal is to protect air quality and public health, its adoption is exempt from CEQA review under Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment.

Second, all the individual strategies set forth in the Final Draft CERP would be exempt if they were implemented on their own, apart from adoption of the Final Draft CERP. Strategies that would either not cause any physical changes to the environment or involve such minimal physical changes that it can be seen with certainty that there is no possibility that the proposed project may have a significant adverse effect on the environment fall within the commonsense exemption in CEQA Guidelines section 15061(b)(3). Strategies that call for feasibility and planning studies are exempt under Public Resources Code section 21150 and CEQA Guidelines section 15262. Strategies that would result only in the modification of existing facilities or the construction of new minor facilities are exempt under CEQA Guidelines sections 15301 ("Existing Facilities"; class 1) and 15303 ("New Construction or Conversion of Small Structures"; class 3). Strategies that call for information collection, inspections, enforcement, education, and workplace regulations are exempt under CEQA Guidelines sections 15306 ("Information Collection"; class 6), 15309 ("Inspections"; class 9), 15321 ("Enforcement Actions by Regulatory Agencies"; class 21), 15322 ("Educational or Training Programs Involving No Physical Changes"; class 22), and 15324 ("Regulations of Working Conditions").

Appendix G of the Final Draft CERP Applicability Analysis for California Environmental Quality Act is attached to this memo as Attachment 3.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Resources to prepare the Final Draft CERP are included in the Fiscal Year End (FYE) 2026 budget. Initial implementation of the approved CERP is resourced in the FYE 2026 budget, however, ongoing implementation will require additional resources from the state, Air District, and others.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Manuel Oliva
Reviewed by: Wendy Goodfriend and Diana Ruiz

ATTACHMENT(S):

1. Attachment 1 Final Draft CERP Plus Appendices
2. Attachment 2 Response to Comments
3. Attachment 3 CEQA Analysis
4. East Oakland Community Emissions Reduction Plan Presentation

Bay Area Air District

COMMUNITIES FOR A BETTER ENVIRONMENT
established 1978

Final Draft

Right to Breathe: East Oakland Community Air Quality Justice Plan

February 2026



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Executive Summary

Assembly Bill 617 (AB617), signed into law in 2017 and administered by the California Air Resources Board (CARB), directs local air districts to partner with community to develop emissions reductions plans. These plans focus on improving community health by reducing emissions from and exposure to local air pollution sources in the most impacted neighborhoods. In 2021, the Bay Area Air District (Air District) recommended East Oakland for the development of a Community Emissions Reduction Plan (CERP) due to the high health-burden of residents in East Oakland neighborhoods, who experience disproportionately high exposure to air pollution. Waste facilities, crematories, and small to medium industrial and manufacturing operations are located throughout the area. Along with the Oakland San Francisco Bay Airport, large warehouse distribution centers, high-volume freeways and roadways (I-880, I-238, I-580, Highway 92), truck routes, transit buses, industrial equipment, and freight and passenger rail all contribute to the pollution burden of the area.

The Air District began the work of developing the East Oakland Community Emissions Reduction Plan (Plan) by selecting Communities for a Better Environment (CBE), an environmental justice organization, as the co-lead for the project due to the organization's strong community ties and extensive experience building community capacity in air quality planning in East Oakland. The "Co-Leads" (Air District and CBE) then selected the East Oakland Community Steering Committee (CSC) members. The CSC is a diverse group of individuals who live, work, or go to school in the East Oakland community. CSC members represent a wide range of sectors, including faith-based organizations, youth, community-based organizations, local businesses, industry, government, residents, and seniors. Upon the selection of the CSC in 2022, the Co-Leads and the CSC began the process of developing a shared understanding of local air quality issues.

As an early step to understanding air quality issues, Communities for a Better Environment (CBE) and the CSC identified facilities of concern in East Oakland – industrial businesses with repeat violations, visible dust, or odors which may cause impacts on community members. A community mapping project enabled CSC members and community members to visit an online map and add pins and comments to provide further insight into the locations of air pollution concerns, community assets and gathering places important to residents in East Oakland. Additionally, several CSC meetings were dedicated to brainstorming activities to uncover community concerns.

The themes emerging from these activities, particularly the community mapping project, led to the six Plan **focus areas**. Focus areas are the overarching categories of the East Oakland community's pollution concerns that organized Plan strategy development, listed as follows:

1. **Built Environment and Land Use:** Older housing and proximity to polluting sources expose residents – especially sensitive receptors such as children – to harmful air pollutants, triggering asthma and other health problems. Addressing these conditions is vital for ensuring East Oakland residents have the same clean, safe, and healthy living environments as wealthier communities.

2. **Commercial and Industrial Sources:** East Oakland residents are disproportionately exposed to harmful air pollution from nearby commercial and industrial sources due to the historic industrial nature of the area and a legacy of discriminatory zoning. This focus area serves critical health-protective functions by reducing exposure to toxic emissions, fugitive dust, and localized air pollution in East Oakland neighborhoods.

3. **Illegal Dumping, Trash, and Odors:** Illegal dumping is a major concern for East Oakland residents, lowering quality of life, showing signs of institutional neglect and contributing to feeling unsafe in the community. The community is passionate about the importance of this focus area to address widespread trash, odors, and pollution through stronger enforcement and city collaboration.

4. **Public Health and Community Wellness:** East Oakland residents face health disparities – like lower life expectancy and higher rates of asthma, heart disease, and cancer. This focus area aims to improve community health through interagency collaboration.

5. **Transportation and Mobile Sources:** East Oakland residents are heavily impacted by air pollution from cars, trucks, and airport operations due to their proximity to major transit corridors like I-880 and the Oakland San Francisco Bay Airport. This focus area will help reduce harmful emissions and noise through cleaner technologies, policy changes, and proactive enforcement.

6. **Urban Greening and Workforce Development:** East Oakland faces a lack of tree cover and poorly maintained green spaces compared to wealthier areas, impacting residents' health, comfort, and access to nature. This focus area aims to advance environmental equity and economic opportunity through urban greening and local green job creation.

In addition to community-identified issues and challenges, the Plan is based on a comprehensive technical assessment. The Air District generated an emissions inventory for East Oakland that analyzed local stationary and mobile sources, included data for nearly 400 permitted facilities, and reported on Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs). These provide critical information about pollution and sources that supported the development of Plan strategies and actions.

The Plan documents the racial, ethnic and socio-economic composition of the area and provides an analysis of the health outcomes of East Oakland residents. East Oakland is predominantly Latinx/Hispanic and Black/African American, and it serves as a significant cultural hub. However, higher rates of illness and premature death persist. Asthma-related emergency visits and hospitalizations are more common among East Oakland residents than in the city or county as a whole, and rates of mortality due to heart disease, lung cancer and chronic obstructive pulmonary disease are higher in East Oakland.

At the core of the Plan are strategies and actions to reduce air pollution and improve health in East Oakland. Community concerns provided the foundation for strategy and action development. The technical analysis provided critical information about pollution and sources that supported the development of strategies and actions. Additionally, research into best practices and an inventory of current programs, policies and initiatives was assembled to create a package of strategies and actions to address East Oakland's unique air quality challenges. Through an iterative process, the Co-Leads presented the draft strategies and actions to CSC members for feedback between fall of 2024 and spring of 2025. The draft strategies and actions were also vetted with technical experts and implementing partners to help ensure alignment with the work of partner agencies such as the Port of Oakland, the City of Oakland, Alameda County Public Health Department (ACPHD), Caltrans and the California Office of Environmental Health and Hazard Assessment (OEHHA).

The Plan's 32 strategies and 105 actions aim to achieve the following goals:

- Goal #1: Reduce East Oaklanders' exposure to air pollution by decreasing emissions from sources identified by the community as top concerns.
- Goal #2: Prioritize actions that have the opportunity to reduce disproportionately high health impacts associated with air pollution affecting East Oakland residents to achieve improvements in community health.
- Goal #3: Empower East Oakland residents to participate in holding polluters accountable by combining their local knowledge with an understanding of emission sources, health impacts, air pollution regulations and reporting mechanisms.

Collaboration between the Air District and the CSC will continue throughout Plan implementation. Each year the Air District and the CSC will co-create an Implementation Schedule that outlines priority topics for the upcoming year and related strategies and actions. This schedule will be developed in coordination with relevant Air District, government agency, and partner implementors. Annual progress reports will serve as the primary tool for evaluating the implementation of the Plan, including providing an opportunity to update the Plan as needed to reflect progress and evolving priorities. At the fifth-year anniversary of Plan adoption, the Co-Leads, CSC, and selected agency partners will evaluate their work together and determine progress towards achieving the plan goals.

Chapter 1: Introduction

In 2017, the California Legislature passed Assembly Bill 617 (AB617) with the goal of improving air quality in communities most affected by pollution. The law requires local air districts to work collaboratively with these communities to develop a Community Emissions Reduction Plan (CERP) focused on identifying and implementing strategies to reduce harmful emissions and exposure.

In February 2022, the California Air Resources Board (CARB) approved a partnership between the Bay Area Air District (Air District) and the East Oakland community to begin developing a CERP. East Oakland is an area in the eastern part of the City of Oakland, which sits in the heart of the San Francisco Bay Area, a nine-county region in Northern California, along the San Francisco Bay waterfront in Alameda County. With support and resources from CARB, the Air District and local community leaders have since worked together to create the East Oakland Community Emissions Reduction Plan (Plan).

Developed through a collaborative process with strong community partnership, the Plan focuses on addressing the long-standing high air pollution burden, cumulative impacts, and health disparities experienced by East Oakland residents. Central to this effort was the formation of an East Oakland Community Steering Committee (CSC), composed of residents, leaders of community-based organizations, and local stakeholders, which played a lead role in shaping the priorities and direction of the Plan.

Through a collaborative process, the CSC confirmed the community boundary, adjusting the initial boundary to ensure the inclusion of committee-identified community assets, as these contribute to the economy and social fabric of the community. This collaborative effort determined that the Plan area is bordered by I-580 and MacArthur Boulevard to the north, the Oakland city limit to the southeast, Oakland San Francisco Bay Airport to the southwest, and 12th Avenue to the west.

Throughout the Plan process, the Bay Area Air District (Air District), in close collaboration with the community-based organization and Co-Lead partner Communities for a Better Environment (CBE), and partner local government agencies, worked to identify solutions that reflect community priorities and address long-standing environmental and health concerns. A key component of this work was the development of community concern statements, which capture the primary challenges and priority issues shared by residents across multiple focus areas. These statements are grounded in community experience, supported by technical information, and articulate each focus area’s connection to air quality and community health outcomes. They serve as a foundation for the Plan’s strategies and actions, helping ensure that proposed solutions are targeted, meaningful, and responsive to community needs.

Guided by these concerns, the Plan outlines objectives that define the desired outcomes for each focus area, strategies, and actions that detail the specific steps needed to achieve those objectives. Together, the objectives, strategies, and actions form a roadmap to reduce harmful emissions and improve conditions for East Oakland community members. Partnering with the CSC ensures that the Plan is both reflective of and responsive to the community’s priorities, and that the solutions put forward are informed by local knowledge, lived experience, and a shared vision for a healthier future.

East Oakland Community Emissions Reduction Plan Overview

Chapter 1 Introduction and Overview describes the purpose and scope of the Plan explaining the framework of Assembly Bill 617 (AB617) for reducing air pollution through state resources and local collaboration.

Chapter 2 Community Partnerships, Outreach and Engagement describes how the Air District partnered with Communities for a Better Environment (CBE) as a Co-Lead partner to facilitate community engagement and outreach and support the CSC in strengthening public participation in the development of the plan, and the CSC structure and process.

Chapter 3 Visions, Principles, and Plan-level Goals explains how the plan-level goals were developed through collaborative activities with the CSC used to guide implementation, measure progress, and advance environmental justice to achieve reductions in pollution exposure.

Chapter 4 Community Description describes the history of environmental and social justice in East Oakland and provides an analysis of population, socioeconomic, and health factors within the CERP community. It provides the geographic and physical context of land use patterns and identifies polluting sources and their impacts on community health.

Chapter 5 Air Pollution Overview identifies contributions to East Oakland air quality conditions by leveraging data from the Air District's East Oakland air monitoring site, community emissions inventory, and permitted facilities to assess federal compliance and changes in emission levels for fine particulate matter ($PM_{2.5}$), diesel particulate matter (DPM), ultrafine particles (UFP), and toxic air contaminants (TACs).

Chapter 6 Enforcement Overview and Findings identifies the responsibility of the Air District and the California Air Resources Board (CARB) in carrying out enforcement duties such as inspections to ensure regulatory compliance of stationery and mobile sources.

Chapter 7 Focus Areas, Strategies, and Actions explains how the Co-Leads collaborated with the CSC to prepare strategies and actions that achieve the plan-level goals by participating in a series of data-gathering activities such as the community mapping project, technical assessments, and identifying community facilities of concern. It details the framework for developing community concern statements and how they are used to determine focus areas: Built Environment and Land Use (BE), Transportation and Mobile Sources (T&M), Commercial and Industrial Sources (C&I), Public Health and Wellness (PH), Illegal Dumping, Trash, and Odors (ID), Urban Greening, and Workforce Development (UGW). It also lays out Plan strategies and actions arranged by focus area.

Chapter 8 CARB Statewide Strategies explains CARB's air quality and climate plan strategies for reducing emissions, addressing pollution concerns specific to East Oakland.

Chapter 9 Implementation and Reporting outlines the roles and responsibilities of the Air District and partner agencies in carrying out the implementation of the Plan strategies and actions, and how each agency will be leading efforts to meet the goals, vision, and principles of the Plan.

Appendices of the Plan detail the enforcement findings and include a list of permitted facilities within the CERP community boundary, data on the notice of violations, and reported air quality complaints.

Chapter 2: Community Partnership, Outreach and Engagement

Co-Lead Partnership and Community Outreach

In 2021, Communities for a Better Environment (CBE) and the Bay Area Air District (Air District) recommended that the California Air Resources Board (CARB) name East Oakland as the next Bay Area community to create an Assembly Bill 617 (AB617) CERP. CBE is an environmental justice organization that has worked in East Oakland for decades, building community capacity in air quality planning and reducing air pollution. The Air District selected CBE as a Co-Lead for this process because of CBE's strong community ties and extensive experience providing legal, scientific, policy, and technical support.

As the Air District's Co-Lead in the CERP development process to create the East Oakland Plan, CBE is responsible for supporting the Air District with community engagement, CSC member outreach, and CSC meeting preparation and facilitation. To assist with recruiting CSC members, CBE engaged local residents, its network of members and partners, and conducted extensive outreach in East Oakland.

The Air District and CBE conducted joint outreach to increase East Oakland community member engagement in the East Oakland Plan development and review process. Representatives from the Air District and CBE attended community events and conducted surveys. Additionally, the Air District provided grants to community-based organizations to increase public participation. To learn more about the community outreach process during Plan development, please see Appendix A: Community Steering Committee, Public Process, and Community Outreach.

CBE also supported the Air District with strategy research, writing and technical analysis during the strategy development phase of the East Oakland Plan.

Community Steering Committee

The CSC is a diverse group of individuals who live, work, or go to school in the East Oakland community. CSC members represent a wide range of sectors, including faith-based organizations, youth, community-based organizations, local businesses, industry, government, residents, and seniors.

In 2022, the Co-Leads selected CSC members through an application process. To ensure membership diversity, the membership application asked individuals to share their neighborhood of residency, interest in the project, community affiliations, and strategy interests.

The Co-Leads decided that the CSC would have a maximum number of 26 and a minimum number of 19 participants. Of these members, the CSC has up to 5 non-voting members representing local government, business, and Port of Oakland representatives. Table 2-1 below lists the CSC members in first name alphabetical order with their sector (as of March 2025). Sectors include community-based organizations (CBOs), youth organizations, non-profits, faith communities, education, government, health, and business representatives from the East Oakland area.

Table 2-1: CSC members in first-name alphabetical order, with their affiliations/sector (as of March 2025)

Name	Sector
Aiyahnna Johnson (Co-Chair)	Faith-Based
Andrea Pineda	Youth
Andria Blackmon	Resident
Carol Corr	Resident
Charles Reed (Co-Chair)	CBO
Cynthia Gutierrez	Resident
Danny Scott	Resident
Erika Pascual	Youth
Gabrielle Sloane-Law	CBO
Jamaica Sowell	CBO
Jamie Schecter	Resident
Khalilha Haynes (non-voting member)	Government
Marina Muñoz	Resident
Merika Goolsby	Local Business
Ms. Cecilia Cunningham	Senior
Mykela Patton (Co-Chair)	Youth
Njeri McGee-Tyner	CBO
Shamar Theus	Resident
Susan Goolsby	Senior
Huan (Katie) Liang	Youth
Rebecca Bantum	Youth
William Crotinger (non-voting member)	Industry/Workforce
Kimi Watkins-Tartt (non-voting member)	Government (Alameda County Department of Public Health (ACPHD))
Tram Nguyen (Kimi Watkins-Tartt Alternate) (non-voting member)	Government (Alameda County Department of Public Health (ACPHD))
Colleen Liang (non-voting member)	Government (Port of Oakland)

After CSC member selection, the CSC adopted the East Oakland Community Steering Committee Charter Agreement ("Charter"). The Charter describes the CSC's statement of purpose, roles and responsibilities, and meeting procedures. For the complete Charter language, see Appendix B: Community Steering Committee Charter.

The CSC selected three Co-Chairs to guide and lead the CSC and Co-Leads. Throughout the East Oakland Plan development process, Co-Chairs met with the Co-Leads weekly to provide input on monthly CSC meetings, set meeting agendas and review meeting materials.

Community Steering Committee Meetings

In September 2022, the CSC began meeting remotely, due to the COVID pandemic. In March 2024, the Co-Leads began hosting monthly meetings in a hybrid format at Youth UpRising in East Oakland. Virtual participants continue to join on Zoom. The CSC did not meet in January 2023, 2024, and 2025.

CSC meetings are public meetings from 6:00 PM to 8:00 PM on the second Thursday of the month. Co-Leads share meeting agendas, presentations and other supporting information with the CSC in advance of CSC meetings and provide printed copies to in-person meeting participants. All materials are posted on the Air District webpage in English, Spanish and Chinese. The Air District posts video recordings of CSC meetings on the Air District webpage.

The Air District partnered with Just Cities, a racial equity planning firm, to help coordinate logistics, facilitate, and provide translation and interpretation for monthly CSC meetings.

To learn more about the CSC, please see Appendix A: Community Steering Committee, Public Process and Community Outreach.

Community Perspectives

East Oakland has a rich history of environmental justice advocacy (see Chapter 4). In Fall 2023, five members of the CSC—Ms. Cecilia Cunningham, Co-Chair Aiyahnna Johnson, Marina Muñoz, Co-Chair Mr. Charles Reed, and Gabrielle Sloane-Law—were interviewed to honor East Oakland's legacy of environmental justice activism and to learn from their collective experience as community leaders and CSC members.

These interviews offered a powerful window into the lived experiences and deep-rooted commitments of CSC members. Each leader spoke about their personal connection to East Oakland, and the impact of air pollution on the health of their families and neighbors. They offered valuable insights on how community members, agency partners, and organizations can work together to improve air quality in East Oakland.

During the interviews, CSC members shared vivid accounts of how air pollution directly affects their lives and the lives of those around them. They described firsthand the harmful effects on children, seniors, and other vulnerable groups. While recounting the toll pollution has taken on their families, friends, and neighbors, they also identified deeper systemic causes—such as racism and historic discriminatory practices like redlining. They expressed deep concern about the long-term health consequences and emphasized the urgent need for action to protect the health and well-being of the most vulnerable.

Although a long history of systemic racism has created deep mistrust in institutions, the leaders expressed cautious optimism, emphasizing that the CSC could become a valuable platform for

residents to actively influence decisions impacting their neighborhoods. Through this platform, they envision a transformed East Oakland—one with cleaner air, improved infrastructure, affordable housing, and better access to green spaces. They stressed that achieving this vision depends on inclusive community engagement, shared power, and collaboration.

CSC members also noted that lasting change requires reducing barriers to participation and engaging a broad spectrum of voices. They highlighted the importance of honoring the community's linguistic diversity and supporting leadership that reflects it. They also called for using clear, accessible language when discussing technical topics, so all residents can fully engage in decision-making processes. Additionally, they emphasized the crucial role of community-based organizations and the responsibility of government agencies to listen to and recognize the lived experiences of East Oakland residents.

Together, these community leaders' stories illustrate the tangible impacts pollution has on the health of community members and stress the importance of sustained efforts to improve air quality. Through their voices, we come to understand the critical importance of collective action, community empowerment, and accountability in the fight for clean air and a healthier East Oakland.

Ms. Cecilia Cunningham, CSC Member



“If you can't breathe, you're in trouble. You got to be able to breathe clean air.”

Ms. Cecilia Cunningham is a dedicated advocate for clean air and a healthy environment. She has lived in Oakland for over six decades and is also a member of Communities for a Better Environment (CBE). She emphasizes the negative impact of pollution on community members' health, specifically mentioning the devastating prevalence of asthma and emphysema.

Ms. Cecilia is experienced and committed to collective action for a healthier, pollution-free environment in East Oakland. She opposes polluting industries that release toxic emissions, recognizing the severe health consequences they have on community members. Ms. Cecilia calls for collaborative efforts among community leaders, government partners, and the media. She brings attention to the needs of seniors, children, and future generations in her advocacy for a pollution-free environment.

Aiyahnna Johnson, Co-Chair

Co-Chair Aiyahnna Johnson is deeply connected to East Oakland and has witnessed firsthand the struggles that individuals with respiratory illnesses face on a daily basis.

Aiyahnna is concerned about the enduring repercussions of air pollution and wonders if community members will be able to maintain their homes in East Oakland. She emphasizes the need for agencies to understand how pollution directly affects the daily lives of community members, advocating for a more empathetic and inclusive approach to policy making.

Aiyahnna envisions the East Oakland Plan as a catalyst for positive change, emphasizing the importance of collaboration between community members and agencies.



"My family's been a long intricate part of the East Oakland community for a couple of decades, since about the sixties. It's a place where everybody knows your name. This is my people; this is my home."

Gabrielle Sloane-Law, CSC Member



“I think the first priority is making sure we can breathe. You can't do anything else, if you don't do that.”

Gabrielle’s activism in East Oakland began in 2016 with the Alliance of Californians for Community Empowerment (ACCE), and later with Communities for a Better Environment (CBE).

Gabrielle witnessed the profound impact of air pollution on her and her child's health. Their struggles with respiratory issues, exacerbated by noxious odors, became an urgent call to action. Following the closure of the AB&I foundry, Gabrielle's health took a turn for the better. Her family can now enjoy time outdoors – gardening and growing vegetables – free from the burden of noxious odors.

Gabrielle highlights institutional neglect and racism experienced by the community, which manifests in the built environment as unsafe roads, dirty parks, and the persistent presence of police helicopters.

Marina Muñoz, CSC Member



“We need a big change for our communities because we need to live without pollution. We need to live with clean air.”

Marina Muñoz, a community leader in East Oakland, is committed to environmental health and the well-being of her community. Her personal experiences with pollution, including allergies and her daughter's severe asthma, propelled her through 22 years of advocacy.

Marina champions holding companies accountable and enforcing strong environmental regulations to protect the community's health. She calls for pollution-emitting industries to offer benefits to people who become ill due to exposure to those pollutants. This could include funds to help pay for medications, prioritizing green jobs for youth and other community members, as well as access to healthy, organic and affordable food.

She underscores the importance of a holistic monitoring approach that accounts for cumulative health burdens, in addition to monitoring emissions from traditional sources of air pollution, such as the freeway, airport, and the crematorium.

Mr. Charles T. Reed, Co-Chair

Co-Chair Mr. Charles T. Reed, a native of East Oakland, is dedicated to his community. Mr. Charles' activism took root in the Emerald New Deal campaign, a movement to direct marijuana tax funds towards marginalized areas affected by the War on Drugs.

Motivated by a profound love for Oakland, Mr. Charles emphasizes the necessity of genuine community engagement, and using everyday language to define technical terms, making policymaking processes more accessible.

For Mr. Charles, power sharing is a fundamental aspect of policy change. He envisions a future where community voices and leadership become the driving force behind environmental change.



“Agencies’ true commitment to Environmental Justice and Communities of Concern should reflect in the faces of their Community Engagement teams and hiring policies. Otherwise, the process and the People will continue to suffer from a lack of Cultural Communication and Understanding!"

Chapter 3: Vision, Principles, and Plan-level Goals

Development and Use of Vision and Principles

The CSC began learning about how to develop the Plan's Vision and Principles at CSC Meeting #6 (March 2023). The Vision empowers the community by illustrating their future and identifying their purpose, values, and shared aspirations for the Plan. The Principles provide core process guidance on how to operationalize the Plan's vision. Together, the Vision and Principles speak to the shared values of strengthening the community to create the change that they would like to see, fostering unity and trust by reflecting what matters most to the community, and identifying Plan priorities to help guide continued investments.

The Vision and Principles were then developed through a collaborative process. Co-Chairs partnered with Air District staff to facilitate a Vision and Principles brainstorming activity. This activity prompted CSC members to discuss ways the CSC would work together, share past experiences as leaders and/or participants that would help guide their work, and reflect on the vision for improving air quality in East Oakland. Co-Leads and Co-Chairs reviewed the thoughts and reflections shared by the CSC, developed draft Vision and Principles statements, and presented these during CSC Meeting #8 in May 2023.

CSC members were asked to consider what was missing or if there was anything included that was unacceptable. The CSC then voted to approve the final Vision and Principles statements at CSC Meeting #9 in June 2023.



CSC Meeting #36 in May 2025 CSC Members, Co-Leads, and members of the public and partner agencies

Vision and Principles Guide Plan Development and Implementation

During the development of the Plan, the Vison and Principles provided a framework for decision-making to ensure alignment and consistency with the Plan's core values and objectives.

Upon approval and adoption of the Plan, the Vision and Principles will serve as the roadmap for adhering to the Plan's core values. The Principles will uphold the Plan's aspirations to advance environmental justice and equity by uplifting community voices, fostering community collaboration, and ensuring accountability and restorative justice for East Oakland residents.

As the Plan enters implementation, the Air District and partner agencies will work to address community needs by carrying out the strategies and actions. This work will be informed by the Vision and Principles.

Vision Statement

We seek to create a future East Oakland that includes health, accountability, transparency, and justice. Our vision includes healthy and clean air, streets, schools, industries, and parks. In this vision, industry and other polluters are held accountable for their actions and are committed to reducing the harm they have caused to impacted and neglected East Oakland neighborhoods. Government agencies are accountable to us and transparent in their actions by enforcing health-protective laws and collaborating with us to remove existing pollution and future pollution sources from our neighborhoods. We prioritize justice and equity in our community by working to end structural racism, such as the impacts of redlining, and to create a more equitable society where everyone benefits from progress and environmental justice. Ultimately, we envision a future where transparency, trust, and mutual responsibility is realized, and where every resident can live, work, and play in a healthy and sustainable East Oakland.

Principles

The CSC is committed to these Principles as a foundation for our work together and building an East Oakland Community Emissions Reduction Plan (Plan) that expresses:

Justice and Equity

We believe in the Principles of Environmental Justice, [1] our right to raise our children in a healthy environment, and supporting those who have been harmed by pollution in East Oakland. We seek equitable investment in communities and respect for East Oakland neighborhood identity and culture. We recognize what we do now affects future generations.

Collaboration and Communication

We are stronger when we work together. Our partners include all members of the East Oakland community, government agencies, and industry. The Plan is a community-driven decision-making process. We are working together to define equity and build a cleaner and healthier future for all.

Information Sharing and Transparency

We are committed to building trust and understanding through education, transparency, and information sharing. We value the different experiences and perspectives of our fellow community members. To build our Plan, we strive to have clear communication about timelines,

[1] First National People of Color Environmental Leadership Summit, The Principles of Environmental Justice (EJ): https://www.ejnet.org/ej/principles.pdf.

resources, and logistics that are effectively communicated and relayed back to community members.

Accountability and Solutions

We believe in holding individuals, government, and industries accountable for their actions. By promoting transparency and mutual responsibility, we can move towards our shared goals and a Plan that addresses community concerns and identifies strategies that reduce pollution in East Oakland.

Plan-Level Goals

Plan-Level Goals capture the outcomes or results of what the CSC envisions for the Plan to achieve. At the fifth-year anniversary of Plan adoption, the Co-Leads, CSC, Air District, and selected agency partners will evaluate their work together and determine progress towards achieving the Plan-level Goals.

During CSC Meeting #12 in September 2023, the CSC was introduced to the concept of Plan-Level Goals. This meeting explained the purpose of the goals and provided examples of goals prepared for other CERPs. Later, Co-Leads facilitated group activities to support the development of Plan-Level Goals during CSC Meeting #28 in April 2025. The Co-Leads and CSC Co-Chairs' designed an activity to invite CSC members to envision the future of East Oakland through open-ended questions. To guide their responses, CSC members were asked to answer the following questions:

- When I think about the future of East Oakland air quality, I see…_____
- I hope that the CERP can address this community concern first: _____

CSC responses helped prioritize issues captured in the community concern statements and ensured the Plan-Level Goals aligned with the Vision and Principles.

Goal #1: Reduce East Oaklanders' exposure to air pollution by decreasing emissions from sources identified by the community as top concerns.

Goal #2: Prioritize actions that have the opportunity to reduce disproportionately high health impacts associated with air pollution affecting East Oakland residents to achieve improvements in community health.

Goal #3: Empower East Oakland residents to participate in holding polluters accountable by combining their local knowledge with an understanding of emission sources, health impacts, air pollution regulations and reporting mechanisms.

Chapter 4: Community Description

East Oakland has a remarkable sense of community. The ability to form connections and share stories across differences in life experiences and perspectives is a source of pride for the community. East Oakland residents proudly assert that it feels like they've known each other for a lifetime. It is a place where history, creativity, and diversity combine to create a vibrant culture that makes East Oakland truly unique. This profound sense of connection fosters resilience in the community, even in the face of a rising cost of living, gentrification pressures, and environmental racism.

In East Oakland, support for one another is a way of life. Families in need find a network of caring neighbors ready to lend a helping hand. The elderly have access to reliable transportation options – such as Bay Area Rapid Transit (BART), Paratransit, and AC Transit – which are important resources that help them remain independent and continue living in their own homes and communities. This foundation of support provides a safety net that community members value.

Communities in East Oakland have been deeply impacted by racist policies like redlining, which restricted Black, Indigenous, and People of Color (BIPOC) to living in areas near major sources of air pollution such as freeways and heavily polluting industries. As a result, families have few alternatives but to send their children to schools and rely on outdoor spaces located in heavily polluted areas, further amplifying health and environmental injustices. These policies also led to disinvestment in public services and over-policing in predominantly BIPOC neighborhoods in both East and West Oakland.

However, the East Oakland community has responded with resilience and activism, and this history is deeply valued. The persistent community organizing and advocacy of organizations like Communities for a Better Environment (CBE) have led to important victories in the fight for clean air. Other organizations, such as Cypress Mandela, have played pivotal roles in expanding access to employment opportunities. In addition, the activism of East Oakland residents and community-based organizations has led to a legacy of progressive change in housing rights, and community-driven planning, such as the Healthy Development Guidelines and the East Oakland Neighborhoods Initiative (EONI).

The community members of East Oakland demonstrate resilience and innovation in response to systemic issues and are ready to drive transformational change.

Section 1: Community Location

East Oakland is an area in the eastern part of the City of Oakland, which sits in the heart of the San Francisco Bay Area, a nine-county region in Northern California. Located along the East Bay waterfront in Alameda County (see Figure 4-1), East Oakland is connected to the broader region by major transportation corridors, including Interstates 580 and 880, as well as BART, the Bay Area's regional rail system, and AC Transit, the local bus network.

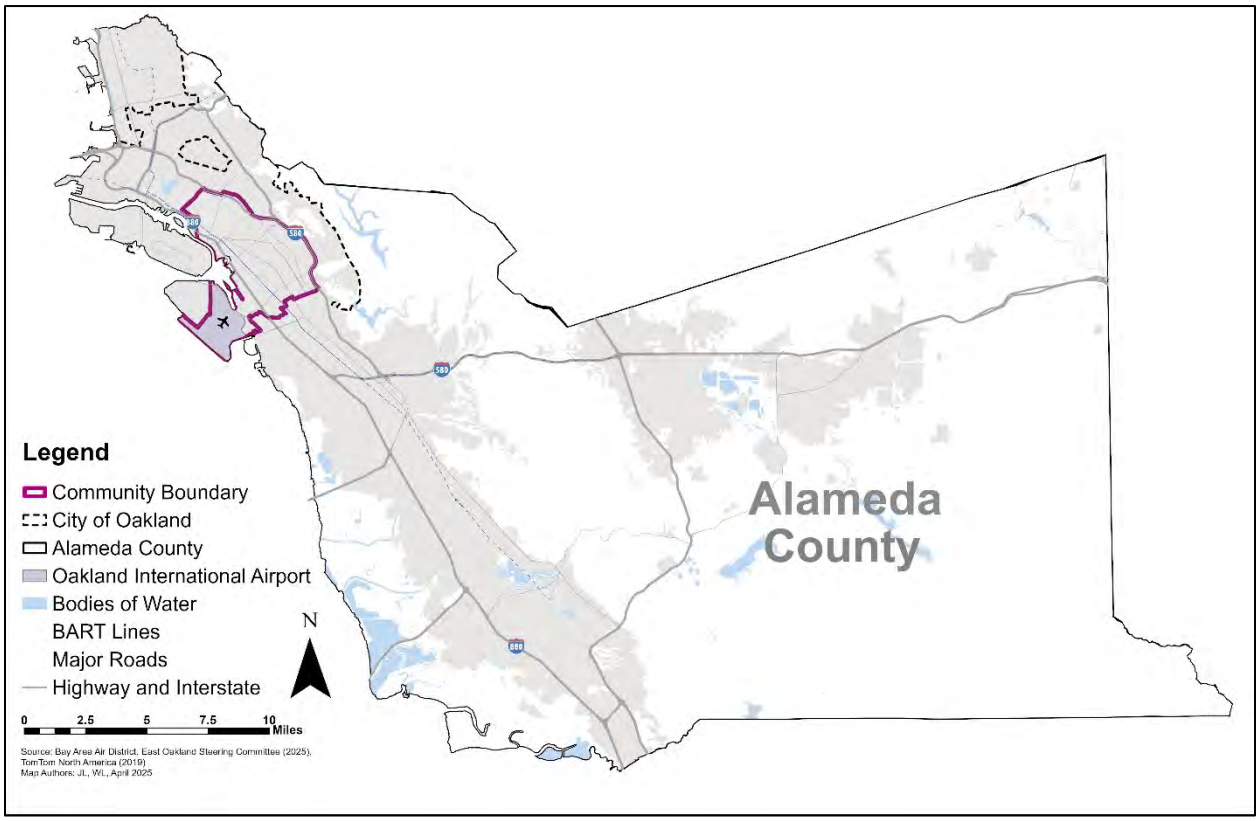


Figure 4-1: East Oakland CERP Community Boundary. Map showing the East Oakland CERP Community Boundary, highlighted with a bold dark magenta outline, located within Alameda County. Sources: See the reference list at the end of this chapter.

East Oakland CERP Community Boundary

The map below (see Figure 4-2) outlines the CERP Community Boundary, which spans 20.1 square miles, approximately 36% of Oakland's total land area of 55.9 square miles.[2] In this chapter, all references to East Oakland specifically refer to the area within this boundary. The defined area is bordered by I-580 and MacArthur Boulevard to the north, the Oakland city limit to the southeast, Oakland San Francisco Bay Airport to the southwest, and 13th Avenue to the west.

[2] U.S. Census Bureau. "QuickFacts: Oakland City, California." Accessed March 4, 2025. https://www.census.gov/quickfacts/fact/table/oaklandcitycalifornia/PST045224.

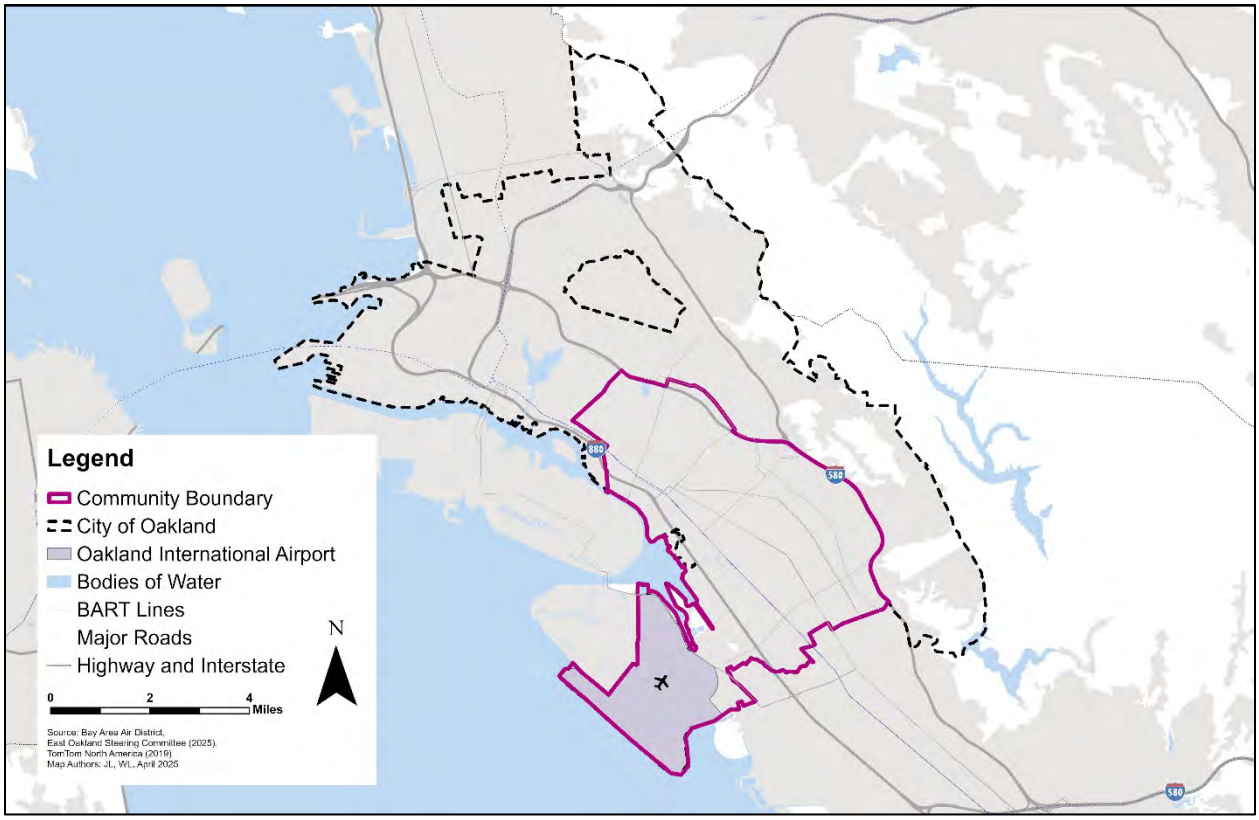


Figure 4-2: Detailed View of the East Oakland CERP Community Boundary, within the City of Oakland. Map providing a more detailed view of the East Oakland CERP Community Boundary, highlighted with a bold dark magenta outline, situated within the City of Oakland's jurisdiction. Sources: See the reference list at the end of this chapter.

East Oakland is home to a major freight corridor where goods are transported by rail and via congested freeways and truck routes located near residential neighborhoods. East Oakland also includes key transportation infrastructure, such as freeways, railways, and an international airport, alongside industrial and logistics businesses. It is defined by extensive freight activity, numerous truck routes, and industrial zones with businesses that generate high levels of truck activity.

For a more detailed overview of the land use patterns and transportation infrastructure in East Oakland, please see Section 6: Land Use, Transportation, and Housing Conditions.

Neighborhoods

East Oakland is a diverse and culturally vibrant area with unique neighborhoods, each with its own history, character, and challenges. It is one of the most culturally rich parts of the Bay Area, home to Indigenous, Latinx/Hispanic, Black/African American, Southeast Asian, and other communities.

The I-880 freeway, also called the Nimitz Freeway, runs through the western portion of East Oakland, significantly affecting the neighborhoods along its route. These areas face distinct challenges due to their proximity to a major highway with a high volume of diesel freight trucks, which are banned from using the nearby I-580. Some of the neighborhoods adjacent to I-880 in

East Oakland include Elmhurst, Columbia Gardens, Melrose, Fruitvale, Brookfield Village, Sobrante Park, and the Coliseum neighborhood.

Section 2: Community History: Then and Now

Environmental racism harms BIPOC communities in many ways. Dr. Robert Bullard, the father of Environmental Justice, defines environmental racism as “any policy, practice, or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups, or communities based on race.” [3]

Across the U.S., BIPOC communities face higher levels of air pollution, no matter their income. Research shows that even though air quality in the U.S. has generally improved in recent decades, Black and Latinx/Hispanic Americans are still exposed to more air pollution than the national average. [4] For many years, racist policies and practices, including discriminatory siting of hazardous facilities, have led these communities to live in areas with high pollution levels. They often live near major roads, toxic waste sites, landfills, or chemical plants. They are also more likely to live in lower-quality housing, which means greater exposure to harmful conditions. [5] Over time, this pollution builds up and leads to serious health risks. These inequalities, like many other environmental justice issues, come from a long history of systemic racism and exclusion.

To better understand the root causes of racial and place-based inequities in pollution burdens and health outcomes, it is important to study the history of policymaking and development that have contributed to these disparities. It is equally important to recognize the long history of community resistance and activism in response to these injustices. Highlighting these efforts not only honors the leadership and resilience of impacted communities but also helps inform more just and effective solutions moving forward.

Oakland's Indigenous Roots

Oakland, founded in 1852, sits on land originally inhabited by the Chochenyo-speaking Ohlone people, who have lived here for thousands of years. [6] This land remains deeply significant to the Ohlone, whose culture and traditions continue to thrive despite the impacts of colonization and genocide. The Ohlone are part of a group of around 50 tribes, each with its own language, with Chochenyo being spoken in the East Bay. [7]

Colonization in California began with Spanish military expeditions and Catholic missions in the 1700s, which forcibly removed Indigenous people from their land. After California became part of the U.S. in 1850, the state government supported violent policies that led to the mass genocide of Indigenous peoples, particularly after the Gold Rush. By 1852, the Ohlone

[3] Bullard, Robert D. “Environment and Morality: Confronting Environmental Racism in the United States.” United Nations Research Institute for Social Development, 2004. https://www.csu.edu/cerc/documents/EnvironmentandMorality-ConfrontingEnvironmentalRacismInTheUnitedStates-Bullard2004.pdf.
[4] Lane, Haley M., Rachel Morello-Frosch, Julian D. Marshall, and Joshua S. Apte. “Historical Redlining Is Associated with Present-Day Air Pollution Disparities in U.S. Cities.” Environmental Science and Technology Letters 9, no. 4 (April 12, 2022): 345–50. https://pubs.acs.org/doi/10.1021/acs.estlett.1c01012.
[5] Kaufman, Joel D., and Anjum Hajat. “Confronting Environmental Racism.” Environmental Health Perspectives 129, no. 5 (May 20, 2021): 051001. https://ehp.niehs.nih.gov/doi/10.1289/EHP9511.
[6] Schwarzer, Mitchell. Hella Town: Oakland’s History of Development and Disruption. University of California Press, 2021.
[7] UC Berkeley. “Ohlone Land.” Centers for Educational Justice and Community Engagement. Accessed March 4, 2025. https://cejce.berkeley.edu/ohloneland.

population had dropped by 90%, and by the 1880s, the Bay Area Ohlone population was severely reduced.[8] Despite enduring violence, forced labor, and the suppression of their identity, the Ohlone persisted, rebuilding communities after and continuing their struggle for sovereignty.[9]

In the 1950's, the U.S. government designated the Bay Area as one of several relocation sites under the Indian Relocation Act of 1956, which aimed to move Native Americans from reservations to urban areas with promises of job training, housing, and employment—promises that largely went unfulfilled. As a result, tribes from across the country migrated to the Bay Area, contributing to one of the largest Intertribal Indian populations in the country. This displacement led to the founding of Intertribal Friendship House, one of the nation's oldest urban Indian community centers, which became a vital gathering place for Indigenous people seeking connection and social services. Intertribal Friendship House remains active in Oakland today.[10]

Native communities are actively working to preserve and revitalize their cultures. For the Ohlone people, one powerful path toward healing from centuries of oppression is land rematriation—the process of returning Indigenous land to its original caretakers. This effort is not only about reclaiming territory but also about restoring cultural practices disrupted by settler colonialism.[11]

Sogorea Te' Land Trust, an urban Indigenous women-led organization, is leading this work by facilitating the return of land to Indigenous people. In East Oakland, the Lisjan site—a traditional Ohlone village—became the first piece of land rematriated by Sogorea Te' within the territory of Huchiun, which includes present-day Oakland, Berkeley, Alameda, Piedmont, Emeryville, and Albany.[12]

A History of Disinvestment and Segregation in Oakland

Throughout Oakland's history, social, economic, and environmental disparities have persisted, especially during periods of industrial growth. As factories and industrial jobs expanded, so did policies that reinforced racial segregation in housing.[13]

"I think [the steering committee] presents a chance for people that have lived here for generations who have experienced years of racism and redlining. That's really who needs to decide what happens here." - Gabrielle Sloane-Law, CSC Member

Oakland was once a popular place for working-class people and immigrants because it had plenty of jobs and affordable housing. During the Great Migration, many African Americans moved from the South to cities like Oakland, hoping for better job opportunities and living conditions. This movement, which peaked between the two World Wars, played a big role in shaping Oakland's workforce and communities. Between 1940 and 1950, Oakland's Black population grew from 8,462 to 47,562 and reached 83,618 by 1960.[14] Although census data is

[8] Bay Area Equity Atlas. "Indigenous Populations in the Bay Area." Accessed March 18, 2025. https://bayareaequityatlas.org/about/indigenous-populations-in-the-bay-area.
[9] Stanford University. "First Inhabitants: The Ohlone of the Peninsula." Cantor Arts Center. Accessed March 4, 2025. https://museum.stanford.edu/exhibitions/melancholy-museum-love-death-and-mourning-stanford/first-inhabitants-essay.
[10] Bay Area Equity Atlas. "Indigenous Populations in the Bay Area." Accessed March 18, 2025. https://bayareaequityatlas.org/about/indigenous-populations-in-the-bay-area.
[11] Sogorea Te' Land Trust. "What Is Rematriation?," November 5, 2024. https://sogoreate-landtrust.org/.
[12] Sogorea Te' Land Trust. "Lisjan," November 5, 2024. https://sogoreate-landtrust.org/lisjan/.
[13] City of Oakland. "Environmental Justice and Racial Equity Baseline," March 2022. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Equity-Baseline_revised4.15.22.pdf.
[14] Montojo, Nicole. "Understanding Rising Inequality and Displacement in Oakland." PBS, September 13, 2017.

limited, records show that other communities of color, including Latinx/Hispanics and Asians/Pacific Islanders, also grew during this time. [15] However, racist housing policies deliberately excluded Back people – and other communities of color – from living in many parts of the city, forcing them into specific neighborhoods that later became important cultural and ethnic hubs.

In the 1930s, a discriminatory practice called redlining was introduced. In 1933, the federal government created the Home Owners' Loan Corporation (HOLC) to help more people buy homes as part of the recovery from the Great Depression. To decide who could get a mortgage, HOLC created racially-coded maps of at least 239 U.S. cities. [16] These maps used color codes to rate neighborhoods based on how risky they were for investment (see Figure 4-3).

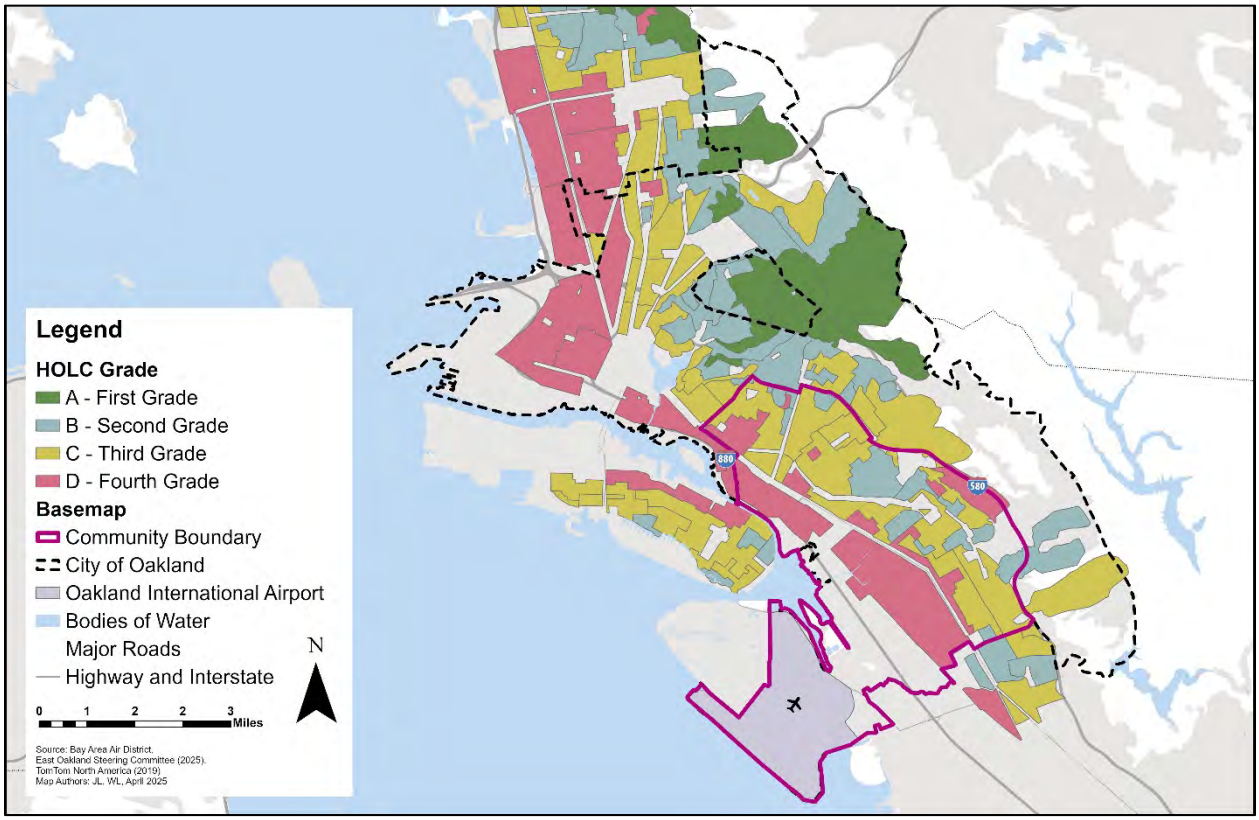


Figure 4-3: Historical Home Owners' Loan Corporation (HOLC) Redlining Map of Oakland. This map shows how neighborhoods in East Oakland were rated by the Home Owners' Loan Corporation. Areas outlined in red were labeled as "high-risk" or "Hazardous," a practice known as redlining. Sources: See the reference list at the end of this chapter.

Predominantly Black, Latinx/Hispanic, and Asian neighborhoods were marked in red and labeled as "hazardous." In contrast, mostly white neighborhoods were marked in green and labeled as "best," making it easier for residents there to get home loans and investments. [17] In Oakland, like in many cities across the nation, these policies entrenched racial segregation and made it harder for BIPOC residents to get mortgages, leaving them vulnerable to unfair loan

https://www.pbssocal.org/shows/city-rising/understanding-rising-inequality-and-displacement-in-oakland.

[15] Ibid.

[16] Decades of Disinvestment: Historic Redlining and Mortgage Lending Since 1981. National Community Reinvestment Coalition. May 2024, https://www.ncrc.org/decades-of-disinvestment/.

[17] Ibid.

terms and preventing them from building wealth through homeownership.[18] Because of redlining, BIPOC living in areas like West Oakland and East Oakland were denied home loans and financial support. This led to a cycle of disinvestment, economic decline, and long-term poverty.

At the same time, white homeowners and real estate developers created racially restrictive covenants, which were legal agreements that prevented Black people and people of color from buying homes in certain neighborhoods. These barriers further concentrated racial segregation.[19]

In the 1950s and 1960s, many historically Black, Asian, and immigrant communities in Oakland faced another major challenge: urban renewal projects. The construction of freeways, BART rail lines, and new developments tore through neighborhoods like West Oakland and Chinatown. As a result, families lost their homes, businesses were forced to close, and tight-knit communities were broken apart. During this time, many African American families were displaced from West Oakland and moved to East Oakland, particularly the Elmhurst district and nearby areas. At the same time, Latinx/Hispanic families relocated to the Fruitvale neighborhood.[20]

While Black, Latinx/Hispanic, and Asian families began moving into more areas of East and North Oakland in the 1950s, these neighborhoods were already suffering from disinvestment. The decline of industrial jobs meant fewer employment opportunities. Main commercial streets that once thrived with businesses saw empty storefronts as wealthier white residents moved elsewhere to live and shop.[21]

From the 1950s to the 1990s, Oakland experienced decades of disinvestment. Factories closed, stores shut down, and large areas remained vacant for years. Most redevelopment efforts focused on downtown and transportation projects rather than improving housing or community spaces. In many flatland neighborhoods, single-family homes were abandoned, public housing deteriorated, and redlining continued, making it difficult for residents to access loans and insurance.[22]

These economic struggles led to worsening living conditions: poorly maintained streets, underfunded schools, high unemployment, limited healthcare access, and rising crime. The government's response to drug-related issues, such as the War on Drugs and the crack cocaine epidemic, disproportionately led to the mass incarceration of Black community members. Public health crises like HIV/AIDS also deeply affected the community, with few resources available to help those in need.[23]

Oakland's history of segregation and disinvestment still affects many communities today. This history helps explain the structural and systemic factors driving inequities experienced by BIPOC communities and the ongoing need for policies that promote racial and environmental

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[18] Bailey, Zinzi D., Justin M. Feldman, and Mary T. Bassett. "How Structural Racism Works — Racist Policies as a Root Cause of U.S. Racial Health Inequities." *New England Journal of Medicine* 384, no. 8 (February 25, 2021): 768–73. https://doi.org/10.1056/NEJMms2025396.
[19] City of Oakland. "Environmental Justice and Racial Equity Baseline," March 2022. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Equity-Baseline_revised4.15.22.pdf.
[20] City of Oakland. "Oakland's History of Resistance to Racism." Accessed February 20, 2025. https://www.oaklandca.gov/topics/oaklands-history-of-resistance-to-racism.
[21] City of Oakland. "Environmental Justice and Racial Equity Baseline," March 2022. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Equity-Baseline_revised4.15.22.pdf.
[22] Ibid.
[23] Ibid.

justice.

Building Community Power: Environmental Justice and Activism in East Oakland

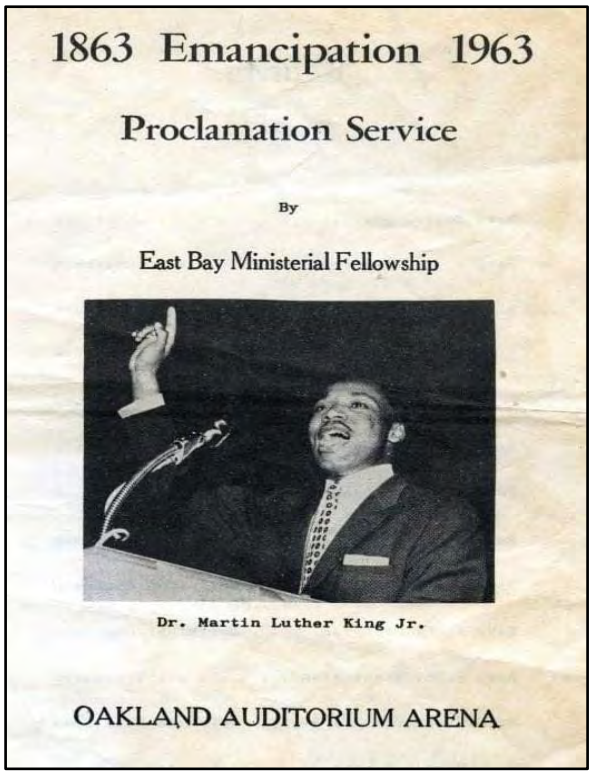


Figure 4-4: Program from Dr. Martin Luther King Jr.'s Emancipation Proclamation address at the Oakland Auditorium Arena on January 1, 1963. Source: African American Museum and Library at Oakland, Vertical File Collection (MS 179), Oakland Public Library.

East Oakland has long been a hub for social and environmental justice advocacy in response to decades of racial segregation, disinvestment, over-policing, and discriminatory land use policies. This section highlights the ongoing work of both historic and contemporary organizations partnering with the community to foster a healthier, more equitable environment.

Oakland played a pivotal role in both the Civil Rights and Black Power movements, becoming a national center for activism, self-determination, and community empowerment. In the 1960s, large protests and civil unrest led to the passage of the Civil Rights Act, which outlawed discrimination in employment and housing based on race, color, sex, religion, or national origin. During this time, Dr. Martin Luther King Jr. visited Oakland multiple times and delivered a historic address at the Oakland Civic Auditorium on January 1, 1963, before an audience of more than 7,000 people (see Figure 4-4). [24]

Although the passage of the Civil Rights Act was a landmark achievement, it soon became evident that deeper action was needed to dismantle the structural inequities created by decades of exclusionary policies. [25]

Black communities in Oakland mobilized to challenge racial discrimination, police violence, and economic inequality, giving rise to influential organizations that played a vital role in advocating for social and economic justice. Among these was the Black Panther Party (BPP), founded in 1966 by Huey Newton and Bobby Seale, students at Merritt College. [26] The BPP became one of the most impactful organizations of the era.

Alongside the BPP, groups such as Oakland Community Organizations, Unity Council, and

[24] Dickerson, Sean. “Dr. King Visits Oakland.” Oakland Public Library, January 14, 2022. https://oaklandlibrary.org/blogs/post/dr-king-visits-oakland.
[25] City of Oakland. “Oakland’s History of Resistance to Racism.” Accessed February 20, 2025. https://www.oaklandca.gov/topics/oaklands-history-of-resistance-to-racism.
[26] National Archives. “The Black Panther Party.” African American Heritage, August 25, 2016. https://www.archives.gov/research/african-americans/black-power/black-panthers.

Intertribal Friendship House emerged to fight for equal access to jobs, housing, transportation, and essential services, while addressing the lasting effects of systemic discrimination and economic disinvestment. [27]

One of the Black Panther Party's most significant contributions to education was the establishment of the Oakland Community School (OCS) in September of 1973. Located at 6118 East 14th Street in East Oakland, the school focused on addressing the systemic educational inequities faced by Black children. [28]

Multimedia: This **video** explores the Oakland Community School, a school founded by the Black Panther Party. It features a student-led interview with Huey P. Newton and a tour of the school, highlighting its unique programs in Black history, self-defense, and multilingual learning. [29]

The impact of the Black Power movement in Oakland continues to resonate today. Many local organizations still draw inspiration from the Panthers' legacy, advocating for racial justice, police reform, and economic opportunities for Black communities across the country.



Figure 4-5: César Chávez, Bobby Seale, and Richard Ybarra (from left) greeting children in Oakland. Source: César Chávez Foundation. [30]

Latinx/Hispanic communities, particularly in neighborhoods like Fruitvale, have also played a vital role in Oakland's history of organizing, power-building, and movement-building. Although the U.S. Census did not officially recognize "Hispanic" as a racial and ethnic category until the 1970s, Latinx/Hispanic people were already an integral part of Oakland's social fabric. [31]

By the 1960s and '70s, Chicano activism flourished in Fruitvale, with leaders like César Chávez and Dolores Huerta frequently visiting East Oakland (see Figure 4-5 of

[27] City of Oakland. "Oakland's History of Resistance to Racism." Accessed February 20, 2025. https://www.oaklandca.gov/topics/oaklands-history-of-resistance-to-racism.
[28] Harshaw, Pendarvis. "Celebrating The Black Panthers' Oakland Community School." KQED, January 11, 2024. https://www.kqed.org/arts/13940221/black-panthers-oakland-community-school-50th-anniversary.
[29] "Oakland Community Learning Center [founded by the Black Panther Party] 1977." Accessed July 9, 2025. https://www.youtube.com/watch?v=9dYsjDqUdr0&t=9s.
[30] "A Shared Vision: Cesar Chavez and the Black Panthers", 2024. César Chávez Foundation. https://chavezfoundation.org/2024/02/19/cesar-chavez-and-the-black-panthers.
[31] Cohn, D'Vera. "Census History: Counting Hispanics." *Pew Research Center* (blog), March 3, 2010. https://www.pewresearch.org/social-trends/2010/03/03/census-history-counting-hispanics-2/.

César Chávez, Bobby Seale, and Richard Ybarra greeting children in Oakland). The Oakland chapter of the Community Service Organization (CSO) played a key role in training leaders, providing voter education, and offering legal and community organizing support. [32]

Frustrated by government inaction in addressing demands for better access to education and social services, many Latinx/Hispanic students and activists took matters into their own hands, establishing essential social services for their communities. Two key organizations that emerged during this time in East Oakland were Centro Legal de la Raza and La Clínica de la Raza, both of which continue to serve the community today. [33]

The legacy of these movements endures, shaping ongoing conversations around racial justice, activism, and community empowerment in East Oakland and beyond.

Community-Driven Planning

Local organizations in East Oakland have been instrumental in addressing inequities in planning outcomes that disproportionately impact communities of color. Groups like Communities for a Better Environment (CBE) and others have collaborated for years on community-driven planning initiatives. These initiatives have strengthened community capacity and resilience through projects such as the Healthy Development Guidelines (HDG), and the East Oakland Neighborhoods Initiative (EONI).

"We can help influence policy. That's how you empower people, as long as our voice is actually being valued, listened to, and acted upon and not just heard but ignored. We've been through that for too long." – Mr. Charles Reed, Co-Chair

The Healthy Development Guidelines (HDG) were created, in 2014, by a coalition of residents, community organizers, and leaders, spearheaded by East Oakland Building Healthy Communities (EOBHC). The HDG aims to empower community members to address planning, policy, and public health challenges in their neighborhoods, with the goal of ensuring that no community or demographic group bears the negative effects of development that worsens health disparities. In addition to directly contributing to the development of the City of Oakland's first-ever Environmental Justice Element, the Oakland City Council recognized the guidelines through a resolution, applauding the coalition's collaborative efforts and active engagement with the community. [34]

The East Oakland Neighborhood Initiative (EONI), completed in 2019, was a community-driven planning process carried out in partnership with the City of Oakland. The plan outlines key goals and action steps to address important issues such as public safety, affordable housing, job opportunities, and education. It also includes strategies for enhancing the neighborhood's environment, expanding parks and green spaces, adding sustainable infrastructure, and improving transportation options. [35]

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[32] Ibid.
[33] East Bay Community Foundation. "Oakland: The Home of Latinx-Led Power Building," September 30, 2022. https://www.ebcf.org/post/oakland-the-home-of-latinx-led-power-building/.
[34] Lee, Anna, Nehanda Imara, Mario Balcita, Esther Goolsby, Sophia DeWitt, and Darin Ranelletti. "Healthy Development Guidelines: A Process for Equity in Oakland." Governor's Office of Planning and Research, 2020. https://lci.ca.gov/docs/20200624-Healthy_Development_Guidelines-case-study.pdf.
[35] City of Oakland. "East Oakland Neighborhoods Initiative." Accessed March 6, 2025. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/Neighborhood-and-Citywide-Plans/East-Oakland-Neighborhoods-Initiative.

Multimedia: The *History of Oakland Virtual Walking Tour*, created by David Peters as part of the Oakland General Plan Update (GPU), highlights the city's cultural heritage, activism, and hidden landmarks. [36]

[36] Peters, David. “History of Oakland Virtual Walking Tour.” City of Oakland, Cultural Strategist-In-Government Program, 2023. https://storymaps.arcgis.com/stories/94ea4517030446889 74dee148298dc8e.

Section 3: Cumulative Impacts

Many low-income communities, like East Oakland, continue to face a disproportionate burden of pollution. These communities often experience additional hardships, such as socioeconomic stressors and pre-existing health conditions, which increase their vulnerability to the impacts of pollution. [37]

"What devices are we going to need to be able to measure all this pollution? I would like us to put those devices, those computers that would be monitoring, in multiple places. We can tell the neighbors to lend us a space. They also need to know what we are doing, that we care about their health." - Marina Muñoz, CSC Member

According to the Office of Environmental Health Hazard Assessment (OEHHA), cumulative impacts mean the "exposures and public health or environmental effects from all sources of pollution in a geographic area. Cumulative impacts also take into account groups of people that are especially sensitive to pollution's effects, such as young children and people with asthma, and socioeconomic factors, such as poverty, race and ethnicity, and education." [38]

The U.S. EPA defines cumulative impacts as "the totality of exposures to combinations of chemical and non-chemical stressors and their effects on health, well-being, and quality of life outcomes." [39] Chemical and non-chemical stressors can come from the built, natural, and social environments. Chemical stressors affect people through exposure to pollutants in the air, water, and land, while non-chemical stressors impact individuals and communities by limiting access to essential social determinants of health, such as safe housing, healthy food, and green spaces. Non-chemical stressors also include the negative effects of extreme weather events, such as heatwaves, flooding, and wildfires, which are becoming more frequent and severe due to climate change. [40]

Now that we have defined cumulative impacts, let's explore how they can affect different people and communities, and how we can measure these effects at various scales.

Cumulative impacts take into account the "totality of exposures" experienced over a person's lifetime. [41] Some communities may face a higher concentration of stressors—like pollution, limited healthcare access, poverty, or inadequate housing—compared to others. Cumulative impacts can affect people both directly and indirectly. They can be assessed within specific geographic areas (such as neighborhoods or cities), or across distinct population groups (such as those defined by age, race, or income). [42]

To help address the cumulative impacts facing California communities, the Office of Environmental Health Hazard Assessment (OEHHA) developed CalEnviroScreen (CES). [43] This

[37] "CalEnviroScreen 4.0." 2021. Office of Environmental Health Hazard Assessment. https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf.
[38] About CalEnviroScreen. "What Are Cumulative Impacts?" Office of Environmental Health Hazard Assessment (OEHHA). Accessed March 17, 2025. https://oehha.ca.gov/calenviroscreen/about-calenviroscreen.
[39] U.S. Environmental Protection Agency. "Cumulative Impacts Research: Recommendations for EPA's Office of Research and Development," September 30, 2022. https://19january2025snapshot.epa.gov/system/files/documents/2022-09/Cumulative%20Impacts%20Research%20Final%20Report_FINAL-EPA%20600-R-22-014a.pdf.
[40] Ibid.
[41] Ibid.
[42] Ibid.
[43] State of California Office of Environmental Health Hazard Assessment. "CalEnviroScreen 4.0". 1 May 2023. https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40.

tool uses a place-based cumulative impacts framework to identify overburdened communities across the state, guiding the development and implementation of targeted policies, investments, and programs designed to reduce pollution burdens for the most vulnerable and marginalized communities.

Figure 4-6 shows that 17 of East Oakland's 43 census tracts have CalEnviroScreen (CES) scores at or above the 70th percentile—the threshold used by the Air District to designate Overburdened Communities in the Bay Area.[44] These high-scoring tracts are located near I-880 and areas zoned for industrial use.

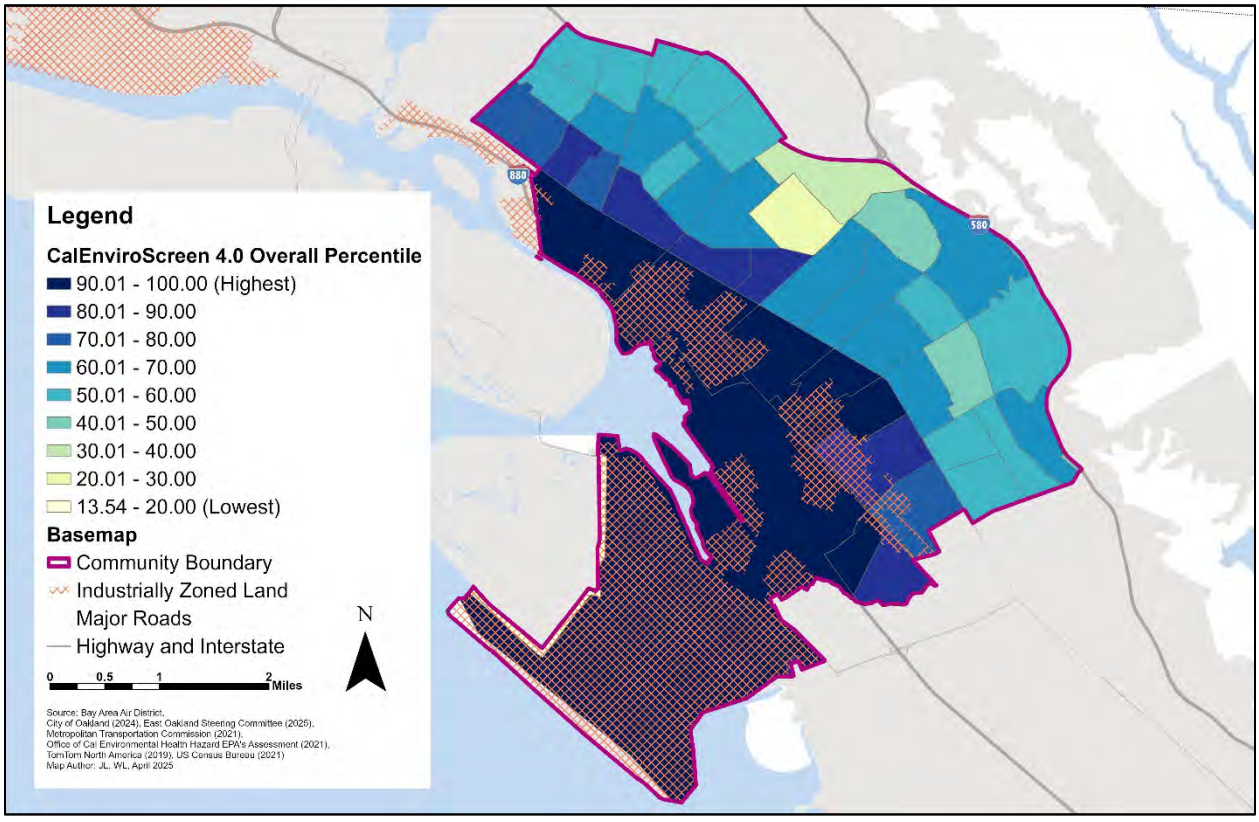


Figure 4-6: CalEnviroScreen Scores and Industrial Zoning in East Oakland. This map shows CalEnviroScreen scores for East Oakland, highlighting areas with industrial zoning in an orange hatch pattern. Census tracts shaded in dark blue experience the highest pollution burden and cumulative impacts, while those in light yellow are the least impacted. Sources: See the reference list at the end of this chapter.

The neighborhoods of Melrose, Columbia Gardens, and Lockwood-Tevis are in three East Oakland census tracts that rank among the top 5% most polluted and impacted tracts in California, according to CalEnviroScreen 4.0. See Appendix C: CalEnviroScreen 4.0 Percentile Scores for East Oakland Census Tracts for a complete list of East Oakland census tracts and their CalEnviroScreen 4.0 scores, ranked relative to other areas in the state.

In the following three sections, we examine local conditions in East Oakland—including

[44] Air District Rule 2-1 defines an Overburdened Community as an area located (i) within a census tract identified by the California Communities Environmental Health Screening Tool (CalEnviroScreen), Version 4.0, as having an overall CalEnviroScreen score at or above the 70th percentile, or (ii) within 1,000 feet of any such census tract. Learn more at https://www.baaqmd.gov/en/news-and-events/page-resources/2021-news/121521-permit-rule.

socioeconomic factors, health outcomes, land use patterns, transportation infrastructure, and housing conditions—that contribute to and reflect the cumulative impacts experienced in the community.

Section 4: Population and Economic Profile

About 195,000 people live in East Oakland.[45] This makes up 45 percent of Oakland's total population of approximately 438,000 people.[46] The population in this area is relatively young. As shown in Figure 4-7, approximately 27% of the population is under the age of 20, while an additional 24% falls between the ages of 20 and 35. Seniors aged 65 and older represent the smallest of the age groups shown below, making up about 11% of the population.

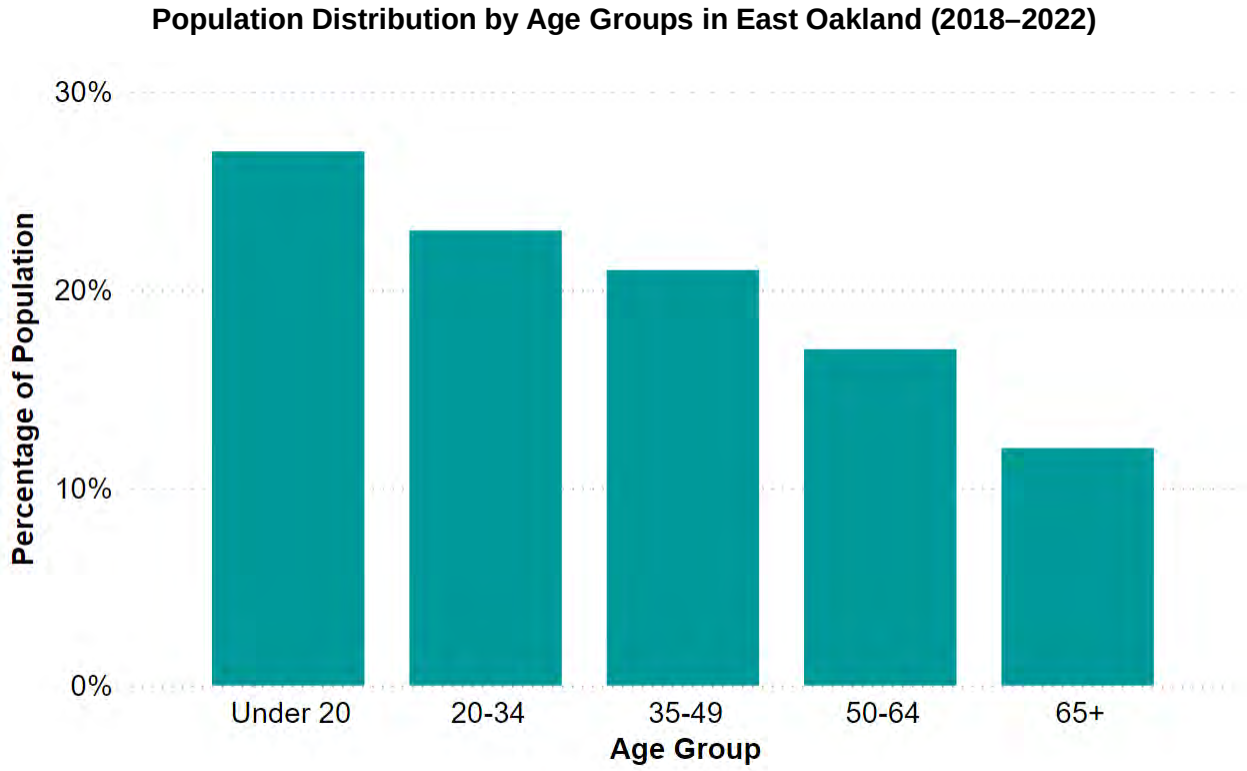


Figure 4-7: This chart shows the percentage of East Oakland residents in each age group. Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table S0101, Age and Sex. Retrieved from https://data.census.gov/.

The East Oakland community is racially and ethnically diverse. As illustrated in Figure 4-8, East Oakland has a considerably higher proportion of Latinx/Hispanic and Black residents compared to Alameda County or the broader Bay Area. Latinx/Hispanic residents make up 45% of East Oakland's population, compared to about 22% of Alameda County's population and 24% of the Bay Area population. Black residents make up 25% of East Oakland's population, compared to about 10% of Alameda County's population and 6% of the Bay Area population.

This disproportionately high concentration of Latinx/Hispanic and Black residents in East

[45] U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table B03002, Hispanic or Latino Origin by Race. Retrieved from https://data.census.gov/.
[46] Ibid.

Oakland underscores the ongoing effects of racial segregation. Systemic racism and historical factors—such as redlining, discriminatory housing practices, economic inequality, and unequal access to resources—have shaped this demographic pattern. These systemic barriers often limit opportunities for BIPOC communities to move to areas with greater economic resources, lower levels of environmental pollution, and access to health-promoting infrastructure, such as parks and walkable streets.

At the same time, East Oakland's demographics highlight its role as a cultural hub, where Latinx/Hispanic and Black communities have built a sense of belonging and established spaces to preserve and celebrate their identities, traditions, and cultures, even in the face of systemic oppression.

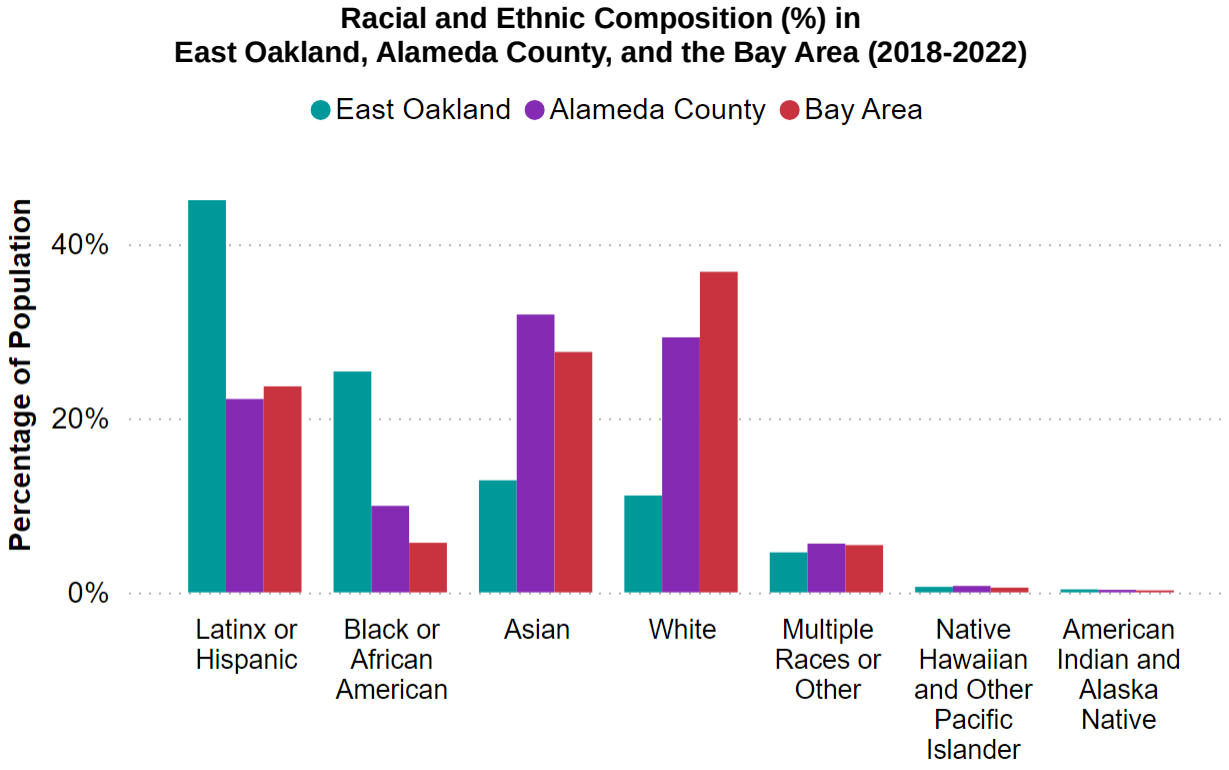


Figure 4-8: This chart shows the percentage of people from different racial and ethnic backgrounds living in East Oakland (green), Alameda County (purple), and the Bay Area (red). From left to right: Latinx or Hispanic, Black or African American, Asian, White, Multiple Races or Other, Native Hawaiian and Other Pacific Islander, and American Indian or Alaska Native. U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table B03002, Hispanic or Latino Origin by Race. Retrieved from https://data.census.gov/.

East Oakland residents experience higher rates of poverty, unemployment, and lower educational attainment compared to Alameda County and the Bay Area overall. This points to substantial economic and educational inequities, highlighting unequal access to opportunities. Approximately 40% of East Oakland's population lives below 200% of the federal poverty level, more than double the rate in Alameda County or the Bay Area (see Figure 4-9).

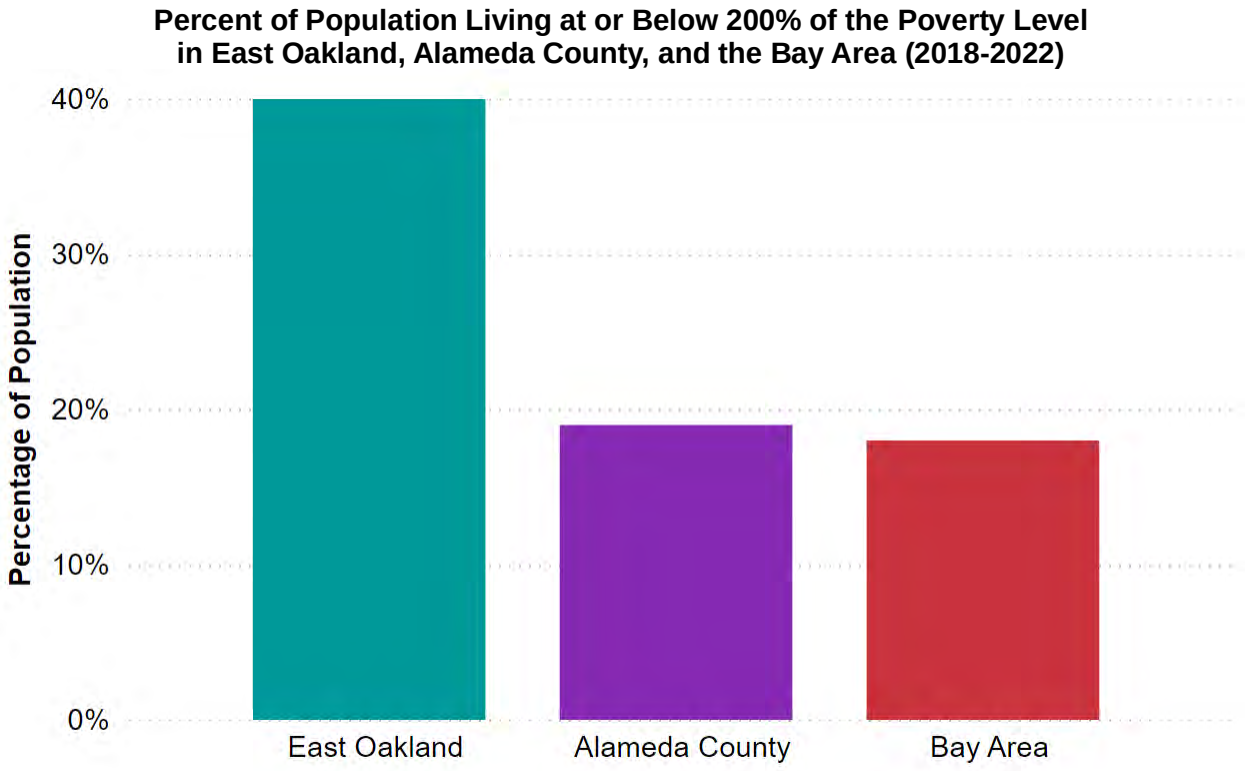


Figure 4-9: Source: This chart illustrates the percentage of residents living at or below 200% of the federal poverty level in East Oakland, Alameda County, and the Bay Area. U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table C17002, Ratio of income to poverty level in the past 12 months. Retrieved from https://data.census.gov/.

The unemployment rate in East Oakland is higher at 4.3%, compared to 3.3% in Alameda County and 3.4% in the Bay Area, highlighting the economic hardship faced by the community (see Figure 4-10). The unemployment rate represents the percentage of people aged 16 and over in the workforce who are unemployed. [47] According to the U.S. Census, people are considered unemployed if they are 16 or older and (A) did not work during the “reference week”, (B) were actively looking for a job in the past four weeks, and (C) were available to start working. This also includes people who were laid off and waiting to return to their job, as long as they were available to work. [48]

Overall, the higher poverty and unemployment rates in East Oakland indicate that residents are economically marginalized, facing limited job opportunities and other barriers to employment.

[47] The unemployment rate does not include people who are not part of the workforce, such as students, stay-at-home parents, retired individuals, seasonal workers not looking for work during the off-season, people in institutions, or those doing unpaid family work for less than 15 hours in the “reference week.”

[48] The "reference week" is the calendar week just before the date when the Census survey was completed or the interview took place. Source: U.S. Census Bureau. “American Community Survey and Puerto Rico Community Survey 2023 Subject Definitions,” 2023. https://www2.census.gov/programs-surveys/acs/tech_docs/subject_definitions/2023_ACSSubjectDefinitions.pdf.

Unemployment Rates in East Oakland, Alameda County, and the Bay Area (2018-2022)

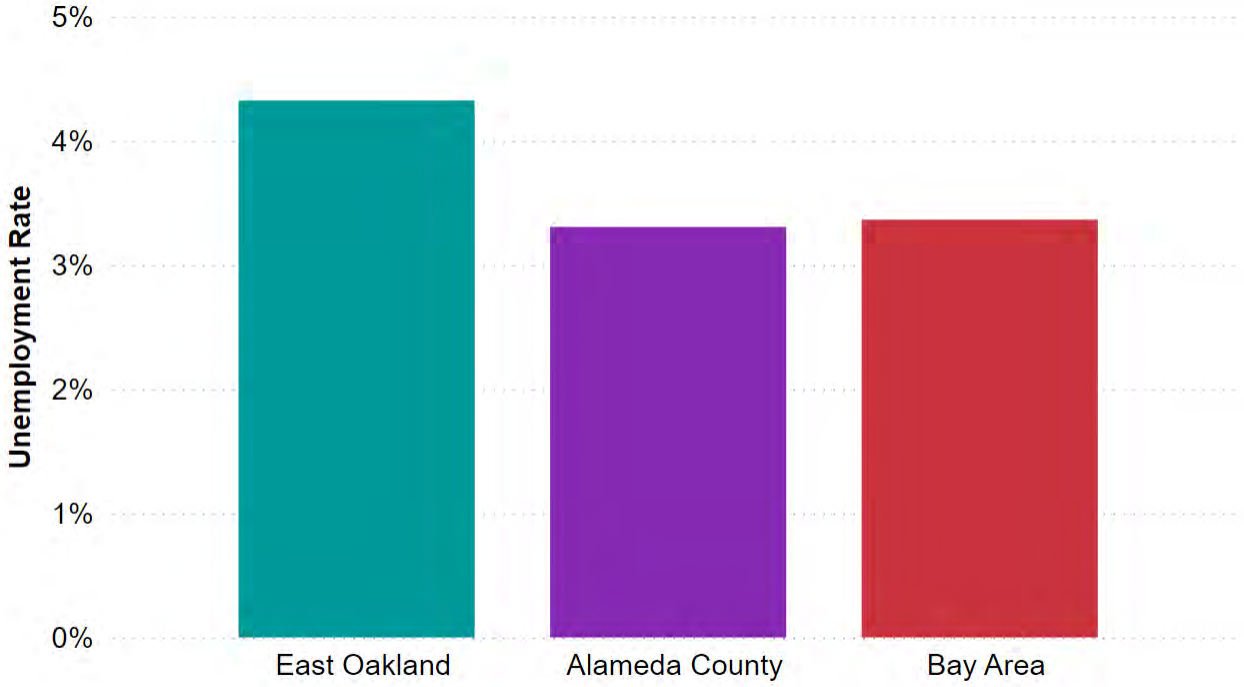


Figure 4-10: This chart illustrates unemployment rates in East Oakland, Alameda County, and the Bay Area. The unemployment rate represents the percentage of people aged 16 and over in the workforce who are unemployed. Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, DP03, Selected Economic Characteristics. Retrieved from https://data.census.gov/.

Educational Attainment in East Oakland, Alameda County, and the Bay Area (2018-2022)

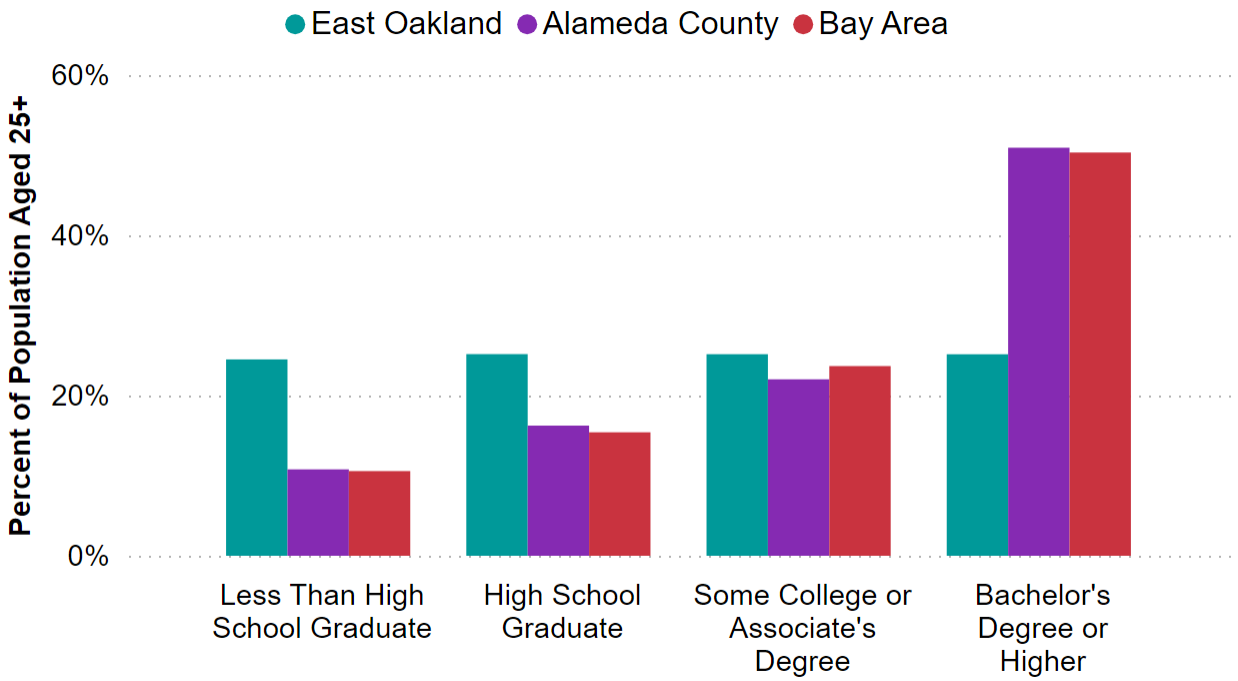


Figure 4-11: This chart shows educational attainment in East Oakland (green), Alameda County (purple), and the Bay Area (red). From left to right: Less than High School Graduate, High School Graduate, Some College or an Associate's Degree, and Bachelor's Degree or Higher. Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table S1501, Educational Attainment. Retrieved from https://data.census.gov.

Census data regarding educational attainment further illustrates the economic disparities facing East Oakland. Educational attainment refers to the highest level of education an individual has completed, and is a common measure used to understand links between education and economic opportunity. [49]

Data on East Oakland reveals lower educational attainment among adults aged 25 and older compared to Alameda County and the Bay Area (see Figure 4-11). Around 25% of East Oakland adults lack a high school diploma, compared to 11% in both Alameda County and the Bay Area. Additionally, 25% of East Oakland adults have only a high school diploma, compared to 16% in Alameda County and 15% in the Bay Area. In contrast, only 25% of East Oakland adults hold a bachelor's degree or higher, compared to 51% in Alameda County and 50% in the Bay Area. Notably, the percentage of adults with some college education or an associate degree is relatively consistent across East Oakland (25%), Alameda County (22%), and the Bay Area (24%). These differences point to a persistent educational gap that is closely tied to limited economic opportunity and contributes to ongoing economic segregation.

[49] The Census measures educational attainment among adults who are at least 25 years of age.

Section 5: Health Conditions Related to Air Pollution

This section presents local public health data from the Alameda County Public Health Department (ACPHD) to describe health conditions linked to air pollution and to compare East Oakland to Oakland and Alameda County overall. For a more comprehensive discussion of health outcomes and community well-being indicators, please refer to the Healthy Alameda County [50] dashboard, created by the ACPHD.

"I'm thinking about our future. What's happening now definitely affects our future and how we govern ourselves as a community. Right now, we have issues with respiratory problems within our community. But what does that turn into long term?" - Aiyahnna Johnson, Co-Chair

Decades of research have shown that air pollution can worsen lung and heart diseases and contribute to other serious health issues. [51] When people inhale air pollution, harmful pollutants can enter the nose, throat, and lungs, and in some cases travel to other organs, causing short-term and/or long-term damage over time. [52]

Chapter 5 provides a detailed look at the sources of air pollution in East Oakland and the health effects of specific pollutants. For example, the Overview of Air Pollution and Health Effects section discusses how particulate matter (PM) is a major health concern. Fine particles can travel deep into the lungs and bloodstream, contributing to serious conditions such as heart disease, emphysema, and even premature death. Short-term effects may include bronchitis and asthma attacks. The section also highlights concerns about toxic air contaminants (TACs), also known as air toxics, which are pollutants linked to cancer and other serious health issues affecting the nervous, reproductive, developmental, cardiovascular, and respiratory systems.

Some people face higher risks of illness or premature death from air pollution due to increased exposures, greater vulnerability, or both. A person's vulnerability to air pollution is shaped by various factors, including activity levels, genetics, pre-existing health conditions, nutrition, and social and economic circumstances. The social and economic factors are often shaped by systemic racism, which affects access to healthcare and reinforces racial segregation. As a result, BIPOC communities are more likely to live in more polluted areas that have historically lacked government investment in services and infrastructure. For example, research shows that BIPOC communities and low-income communities experience higher exposure to air pollution and, as a result, face an increased risk of negative health effects. [53] Children, seniors, pregnant women, and individuals with pre-existing heart and lung conditions are especially vulnerable to the harmful effects of air pollution. [54]

For a detailed explanation of air pollution in East Oakland, including how it impacts health, please refer to Chapter 5.

[50] "Healthy Alameda County." 2025. https://www.healthyalamedacounty.org/.
[51] United States Environmental Protection Agency (US EPA). "Research on Health Effects from Air Pollution," October 28, 2020. https://19january2025snapshot.epa.gov/air-research/research-health-effects-air-pollution/index.html.
[52] "Common Air Pollutants." California Air Resources Board. Accessed March 12, 2025. https://ww2.arb.ca.gov/resources/common-air-pollutants.
[53] US EPA. "Study Finds Exposure to Air Pollution Higher for People of Color Regardless of Region or Income," September 20, 2021. https://19january2025snapshot.epa.gov/sciencematters/study-finds-exposure-air-pollution-higher-people-color-regardless-region-or-income/index.html.
[54] US EPA. "Research on Health Effects from Air Pollution," October 28, 2020. https://19january2025snapshot.epa.gov/air-research/research-health-effects-air-pollution/index.html.

A Note on the Impact of the COVID-19 Pandemic

The COVID-19 pandemic intensified existing disparities in life expectancy and mortality in Alameda County. During the first two years of the pandemic (2020–2021), overall life expectancy declined, and gaps widened across racial, ethnic, and socioeconomic groups. COVID-19 mortality rates varied significantly by race and ethnicity, with Pacific Islander, Native American, Latinx/Hispanic, and African American/Black residents experiencing death rates three to five times higher than those of white residents. [55]

However, Alameda County experienced a smaller increase in overall mortality and had a lower COVID-19 mortality rates compared to California and the U.S. as a whole. Contributing factors included high vaccination rates, widespread mask use, and equity-focused efforts—such as hyperlocal outreach in African American/Black and Latinx/Hispanic communities—to expand access to COVID-19 testing, vaccination, and care for groups hit hardest by the pandemic. [56]

This section of the Community Description includes health data from 2019 through 2023, which reflects a year's worth of pre-pandemic conditions but also, in large part, reflects the immediate impacts and longer-term consequences of the pandemic. This context should be considered when the Community Description is updated, see Chapter 9 for more information.

Life Expectancy at Birth

Life expectancy, like all-cause mortality, [57] is a measure of the overall health of a population—as mortality rates go down, life expectancy goes up. [58] A lower average life expectancy at birth (LEB) for a community means that, on average, people living there are not living as long as people in other communities.

Life expectancy data can be helpful in making high-level comparisons across population groups or areas. However, this data cannot predict precisely how long individuals born today will live. [59] Life expectancy is influenced by many factors, including diet, lifestyle, genetics, diseases, and environmental exposures. Disparities in life expectancy often reflect social, economic, and racial disparities, as well as disparities in other factors related to the places where people live. [60]

[55] Alameda County Public Health Department and Alameda County Health Care Services Agency. "Alameda County: Examining Increases in Mortality and Disparities from 2018-2019 to 2020-2021," 2024. https://acphd-web-media.s3-us-west-2.amazonaws.com/media/data-reports/docs/mortality-disparities-report-feb2025.pdf.
[56] Ibid.
[57] According to the Alameda County Public Health Department, "all-cause mortality rate" represents the overall rate of all deaths in a population, regardless of the cause of death.
[58] "An Introduction to Measures of Mortality: Assessing Overall Health, Cause of Death Rankings, Health-Adjusted Life Expectancy, and Socioeconomic Conditions in Alameda County." Alameda County Public Health Department, November 2017. https://acphd-web-media.s3-us-west-2.amazonaws.com/media/data-reports/city-county-regional/docs/mofm.pdf.
[59] Life expectancy is a hypothetical estimate rather than a literal prediction of future lifespan. The estimates of LEB presented in this section assume that current age-specific and group-specific mortality rates remain constant over time, which is not the case in reality. (Ibid.)
[60] US Environmental Protection Agency (EPA). "Indicators of Environmental Health Disparities: Life Expectancy," January 2, 2025. https://19january2025snapshot.epa.gov/environmentaljustice/indicators-environmental-health-disparities-life-expectancy/index.html.

Life Expectancy at Birth (in Years) by Race and Ethnicity for East Oakland, Oakland, and Alameda County (2019–2023).

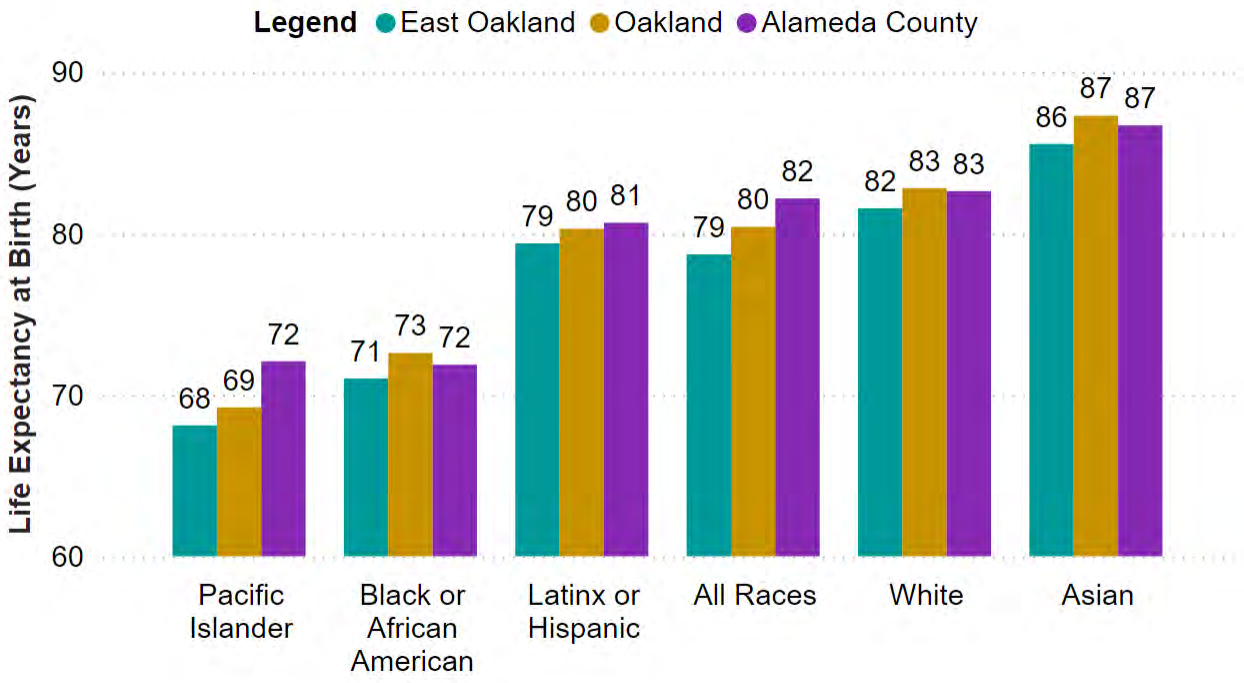


Figure 4-12: This chart shows the average life expectancy at birth (LEB) by race and ethnicity, comparing East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from Alameda County vital statistics files 2019-2023.

The average life expectancy at birth (LEB) for East Oakland residents is now 78.7 years (see Figure 4-12). This is based on observations of actual mortality rates during 2019–2023 among various groups of people. Average LEB for East Oakland is 1.7 fewer years than the estimate for Oakland overall (80.4 years) and 3.5 fewer years than the estimate for Alameda County (82.2 years).

However, inequities in average life expectancy at birth (LEB) persist across racial and ethnic groups, even within the same geographic area, such as East Oakland. For instance, the average LEB for the Pacific Islander population in East Oakland is estimated at 68.1 years, which is 14.1 years lower than the average LEB for all racial and ethnic groups in Alameda County.[61] Life expectancy at birth for Black/African American residents in East Oakland is 71.0 years, which is 11 years lower than the Alameda County estimate for all racial and ethnic groups. Latinx/ Hispanic residents in East Oakland have an average life expectancy of 79.4 years, which is 2.8 years lower than the countywide estimate for all racial and ethnic groups.

[61] Please note that, due to small population sizes, the life expectancy estimate for Pacific Islander residents should be interpreted with caution. These rates are less statistically reliable and come with wide margins of error. Although the charts do not show margins of error, this information is included in the full dataset, which is available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.

These disparities by race and ethnicity are consistent with trends observed throughout Oakland and Alameda County.[62]

In contrast, East Oakland's white[63] and Asian residents have the highest life expectancies. The average life expectancy for white residents in East Oakland is 81.6 years, while Asian residents have the highest among all racial and ethnic groups at 85.5 years. However, despite having the longest life expectancies in East Oakland, both groups still experience lower life expectancy compared to their counterparts in Oakland overall and Alameda County. In other words, life expectancy for white and Asian residents is lower in East Oakland than in other parts of the city and county. This further highlights the powerful influence of place on health—where people live can have a major impact on their health outcomes, regardless of their race or ethnicity.

Unfortunately, Indigenous/Native American populations are not represented in Figure 4-12 due to the inability to produce a statistically reliable life expectancy estimate for this group in East Oakland, stemming from the small population size. This absence reflects ongoing challenges in accurately capturing the health experiences of underrepresented populations.

Asthma Emergency Department Visits and Hospitalizations

Asthma is a chronic disease that causes inflammation in the lungs and airways, affecting over 25 million people in the U.S., including 4 million children.[64] An asthma attack occurs when the airways become swollen and clogged, making it difficult to breathe. These attacks can range from mild to life-threatening, and chronic asthma can impact a child's physical, cognitive, social, and emotional development. Environmental triggers such as secondhand smoke, dust mites, mold, air pollution, pet dander, and pests like cockroaches can worsen asthma or cause attacks. Air pollution can both exacerbate existing asthma and increase the risk of developing it.[65]

Asthma does not affect all groups equally. Some of the most impacted populations include children, older adults, BIPOC communities, and individuals with lower incomes. These disproportionate impacts may result from environmental factors associated with socioeconomic status, such as housing conditions or living in close proximity to pollution sources.[66]

Asthma is especially concerning for young children due to their small and still-developing airways. Children also breathe faster and take in more air for their size than adults. Across the country, children of color have higher rates of asthma and asthma-related emergencies. These disparities are also shaped by systemic inequities, such as limited access to medical care, living closer to pollution sources, poor housing conditions, and higher levels of chronic stress.[67]

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[62] The average LEB for Alameda County as a whole is about 82.2 years (Figure 4-12). However, this overall average masks significant disparities across racial and ethnic groups. For Black/African American and Pacific Islander residents, the average LEB is notably lower: 71.9 and 72.1 years, respectively. In comparison, Latinx/Hispanic residents have an average LEB of 80.7 years. The average LEB for white and Asian residents is even higher, at 82.6 years and 86.7 years, respectively.

[63] In this context, 'white' refers to 'Non-Hispanic White'—people who identify as white and are not of Hispanic or Latino origin, based on the Census definition. This group includes individuals with European ancestry, such as English, German, Irish, Italian, Polish, Scottish, and others.

[64] US EPA. "Indicators of Environmental Health Disparities: Childhood Asthma," 2024. https://19january2025snapshot.epa.gov/environmentaljustice/indicators-environmental-health-disparities-childhood-asthma/index.html.

[65] Ibid.

[66] Ibid.

[67] US EPA. "Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities," May 2012. https://19january2025snapshot.epa.gov/asthma/coordinated-federal-action-plan-reduce-racial-and-ethnic-asthma-disparities.

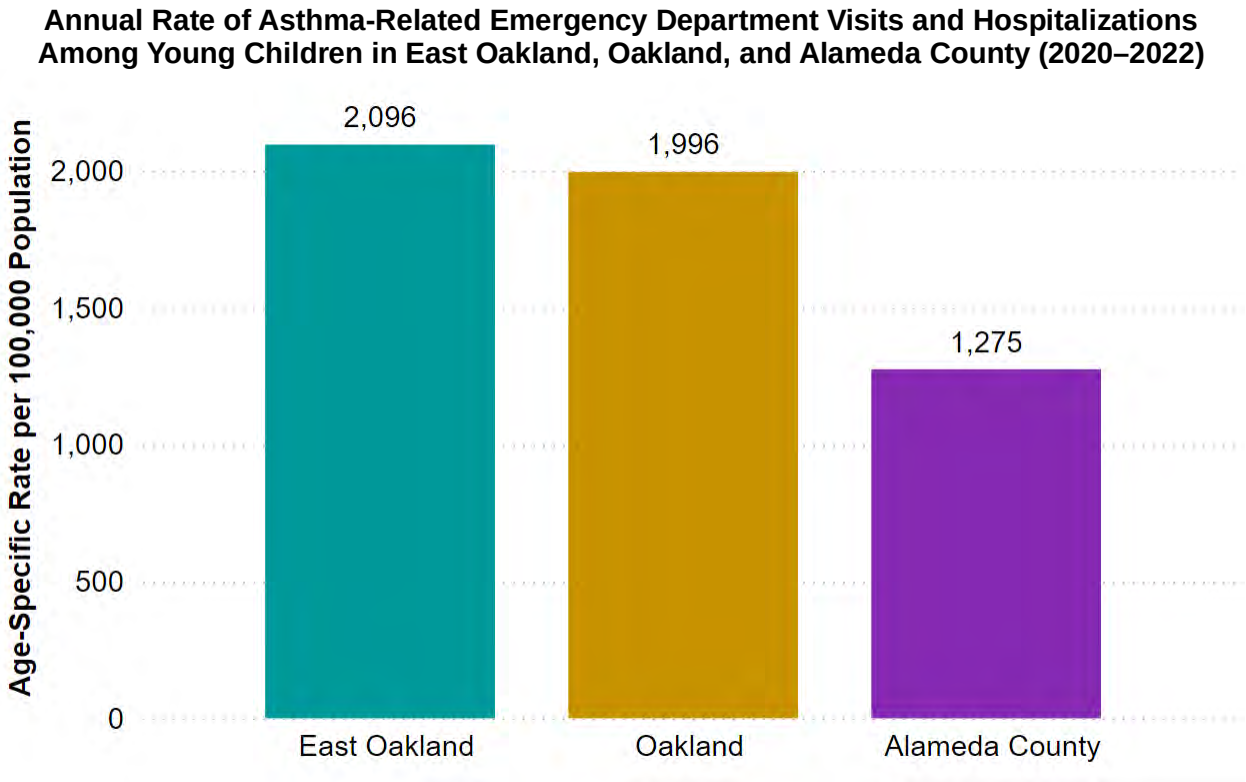


Figure 4-13: This chart compares the yearly rates (per 100,000 children under age 5) of emergency department visits and hospitalizations due to asthma in East Oakland, the broader city of Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), data from HCAI (2020-2022).

Asthma-related emergency visits and hospitalizations are more common among East Oakland residents than in the City or County as a whole. During a recent three-year period (2020–2022), there were approximately 1,000 asthma-related emergency department visits and hospitalizations in East Oakland involving children under the age of 5 (data not shown). [68] To make this comparable to the city and county, the chart above (see Figure 4-13) converts emergency department visits and hospitalizations to an annual rate of about 2,100 visits per 100,000 children per year. [69] For comparison, in Alameda County, the annual rate is about half of that (1,300 per 100,000). This considerable difference highlights health inequities and reinforces what many in the community have long understood: that children in East Oakland experience higher exposure to environmental causes of asthma and asthma attacks, as well as limited access to preventive care, and/or other systemic challenges related to asthma onset and management. [70]

[68] Although the chart does not show this data, this information is included in the full dataset, which is available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.
[69] There are fewer than 100,000 children under 5 in East Oakland, but 100,000 is a standard number to use.
[70] Given that the margins of error for asthma-related emergency department visits and hospitalizations among young children in both East Oakland and Oakland overall are wide enough to overlap, we cannot confidently conclude that the rates in Oakland are actually lower than those in East Oakland. Although the charts do not show margins of error, this information is included in the full dataset, which will be available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.

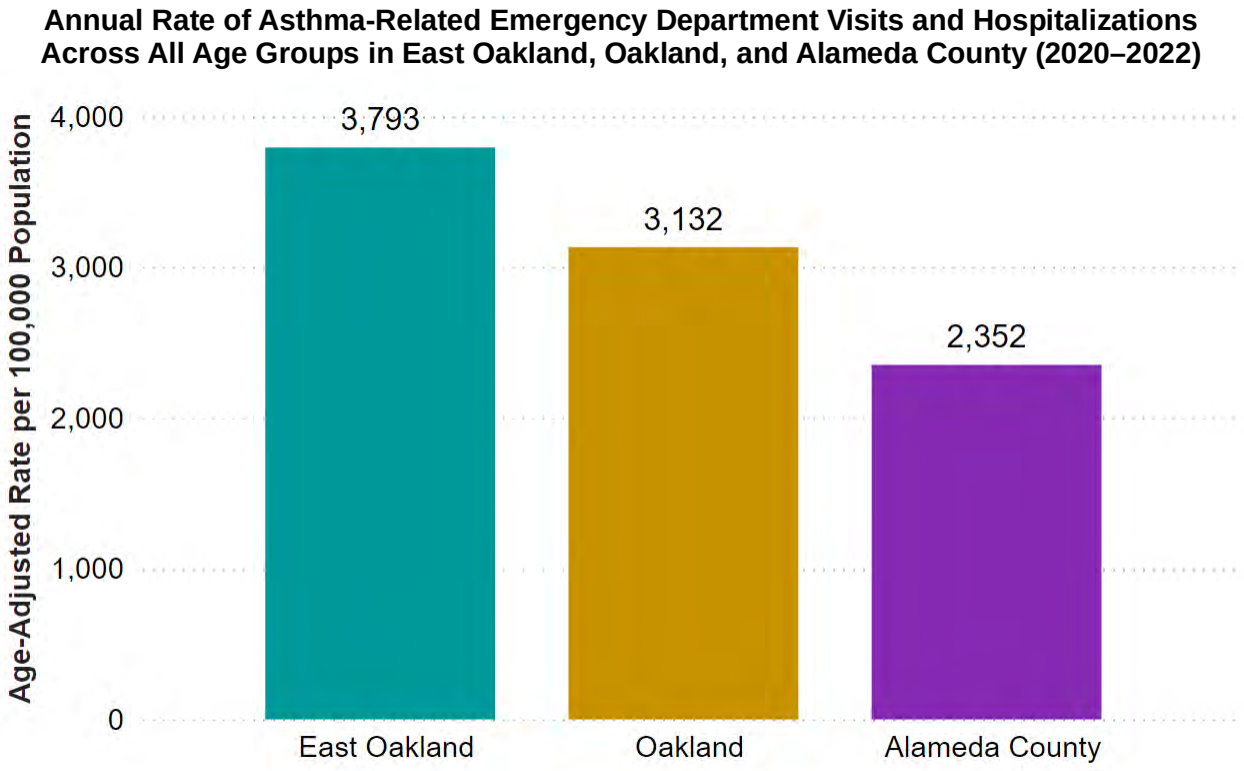


Figure 4-14: This chart shows the annual rates (per 100,000 residents) of emergency department visits and hospitalizations due to asthma for all age groups in East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from HCAI 2020-2022.

Asthma is strongly linked to age, so the rates in Figure 4-14 are "age-adjusted." This helps to see whether areas like East Oakland may have higher asthma rates due to factors other than having a younger population (Fig 4-7).

Between 2020 and 2022, there were approximately 29,000 asthma-related emergency department visits and hospitalizations in East Oakland across all age groups (data not shown). [71] To make this comparable to the city and county, the chart above (see Figure 4-14) converts emergency department visits and hospitalizations to an age-adjusted annual rate of about 3,800 asthma-related emergency visits and hospitalizations per 100,000 people. This rate is higher than Oakland's rate of about 3,100 per 100,000 people and substantially higher than Alameda County's rate of approximately 2,400 per 100,000 people. This highlights the potential that systemic factors in East Oakland are contributing to more frequent asthma-related emergencies.

[71] Although the chart does not show this data, this information is included in the full dataset, which is available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.

Mortality Rates

Mortality rates refer to the number of deaths in a specific population over a set period of time, usually expressed per 100,000 people. Communities facing social inequalities, like poverty or limited access to quality healthcare, often experience higher mortality rates. Lower mortality rates typically suggest a healthier community with better access to resources and care. Like asthma, mortality rates are closely linked to age. To make meaningful comparisons between different areas, mortality rates can also be age-adjusted.

This section contains charts of age-adjusted mortality rates for selected health conditions. These conditions have been linked to air pollution through extensive research. While air pollution is not the only cause of these conditions, its impact is especially concerning in communities already overburdened by other forms of environmental pollution and socioeconomic factors that increase vulnerability. (See Section 3: Cumulative Impacts for more information).

- **Cardiovascular disease:** Cardiovascular disease is a broad term for conditions that affect the heart and blood vessels. This includes coronary heart disease, which can limit the amount of blood and oxygen supplied to the heart, causing chest pains or heart attacks. It also includes problems with blood vessels in the brain, which can also lead to reduced blood flow, or to bleeding (strokes). [72] Research by the U.S. EPA and others has found that exposure to increased concentrations of fine particulate matter ($PM_{2.5}$) over a few hours to weeks can trigger cardiovascular disease-related heart attacks and death. Longer-term exposure can lead to increased risk of cardiovascular mortality and decreases in life expectancy. [73]
- **Lung Cancer**: A malignant tumor that originates in the lungs. Long-term exposure to many toxic air contaminants, such as diesel particulate matter (DPM), is known to increase the risk of developing cancers, including though not limited to lung cancer.
- **Chronic Obstructive Pulmonary Disease (COPD)**: Also known as chronic lung disease, COPD affects the lungs by damaging lung tissue or blocking airflow in the airways that lead to the air sacs. The most common types of COPD are chronic bronchitis and emphysema. [74] Short-term exposure to particulate matter has been linked to worsening COPD symptoms, leading to hospitalizations and emergency department visits. [75]
- **Lower Respiratory Infections**: These are infections, such as bronchitis or pneumonia, that occur in the lungs and airways. Research shows that exposure to air pollution can lead to emergency room visits or hospital admissions for respiratory infections. [76]

Of the conditions listed above, cardiovascular disease was the leading cause of mortality in East Oakland between 2019 and 2023. As seen in Figure 4-15, the age-adjusted annual mortality rate from cardiovascular disease in East Oakland was approximately 212 deaths per 100,000

[72] Centers for Disease Control (CDC). “Cardiovascular Disease.” https://www.cdc.gov/cdi/indicator-definitions/cardiovascular-disease.html.
[73] U.S. Environmental Protection Agency (EPA). “Air Pollution and Cardiovascular Disease Basics.” 2024. https://19january2025snapshot.epa.gov/air-research/air-pollution-and-cardiovascular-disease-basics/index.html
[74] U.S. EPA. “Chronic Obstructive Pulmonary Disease Prevalence and Mortality”. 2015. https://cfpub.epa.gov/roe/indicator.cfm?i=76.
[75] California Air Resources Board (CARB). “Inhalable Particulate Matter and Health.” 2025. https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health.
[76] U.S. EPA. “Particle Pollution and Respiratory Effects.” 2014. https://19january2025snapshot.epa.gov/pmcourse/particle-pollution-and-respiratory-effects/index.html.

people, notably higher than the rates in Oakland overall (192 per 100,000) and Alameda County (171 per 100,000).

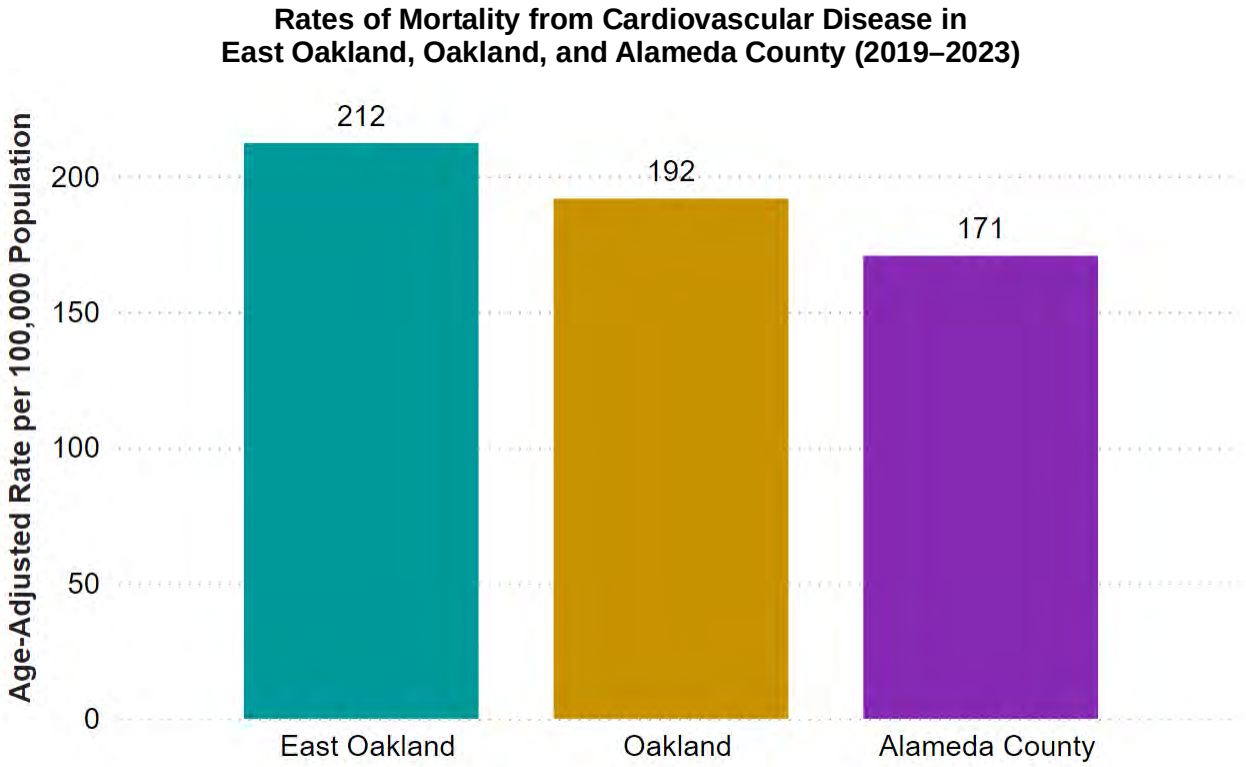


Figure 4-15: This chart displays the mortality rates (per 100,000 residents) due to cardiovascular disease in East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from Alameda County vital statistics files 2019-2023.

When comparing mortality rates in East Oakland, Oakland, and Alameda County, it's important to account for the margins of error in each estimate. [77] When the margins of error overlap, this indicates that the differences in mortality rates are unlikely to be statistically significant. [78]

As shown in Figure 4-16, between 2019 and 2023, the mortality rate for lung cancer in East Oakland (24 per 100,000 people) was higher than the rate in Alameda County (20 per 100,000 people). Similarly, the Chronic Obstructive Pulmonary Disease (COPD) mortality rate in East Oakland (21 per 100,000 people) was higher than in Alameda County overall (18 per 100,000 people). These are the only two respiratory disease mortality rates in these data where there

[77] The margin of error reflects the uncertainty in an estimate, typically due to factors like sample size. A wider margin of error suggests less precision in the estimate. Small population sizes tend to have larger margins of error because they are more sensitive to variability. If the margins of error overlap, it means the differences between the two estimates may not be statistically significant. This indicates that the estimates may not be significantly different from each other. Even if the ranges overlap, you can compare the relative sizes of the margins of error, where a smaller margin of error indicates a more reliable estimate. To determine if East Oakland's estimates are, in fact, different from those for Oakland or Alameda County, we compare the lower limit of East Oakland's margin of error with the upper limit of the margin of error for Oakland or Alameda County. If the lower limit of East Oakland's estimate is greater than the upper limit of the other areas' estimates, this suggests a significant difference.

[78] Although the charts do not show margins of error, this information is included in the full dataset, which will be available for download from the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/.

appears to be a clear and measurable difference between East Oakland and the County, indicating that East Oakland experiences higher rates of mortality related to lung cancer and COPD.

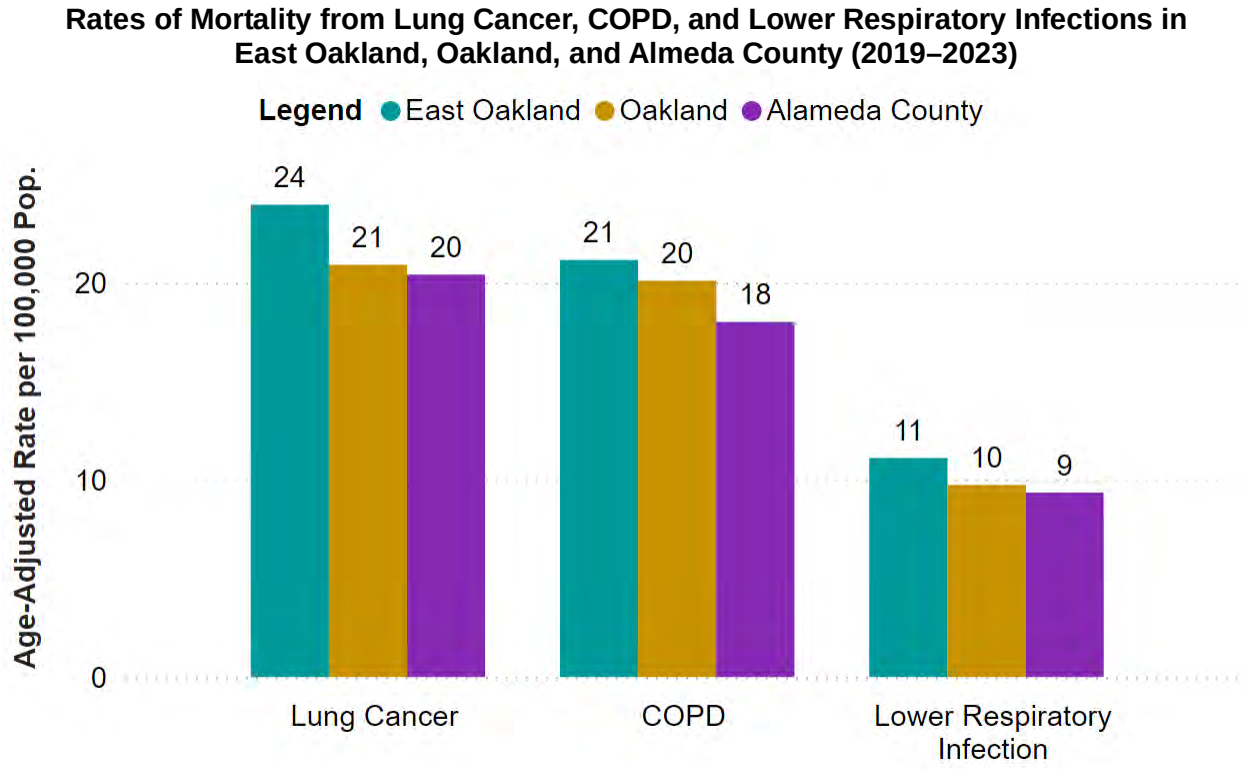


Figure 4-16: This chart shows annual mortality rates (per 100,000 residents) for (in order) lung cancer, chronic obstructive pulmonary disease (COPD), and lower respiratory infections in East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from Alameda County vital statistics files 2019-2023.

However, the overlap in margins of error between East Oakland and Oakland prevents us from concluding that the lung cancer and Chronic Obstructive Pulmonary Disease (COPD) mortality rates in East Oakland are truly higher than in Oakland overall. Likewise, we cannot confidently assert a meaningful difference in the mortality rate from lower respiratory infections between East Oakland, Oakland, and Alameda County.

Even when there isn’t enough data to establish “significant” differences in mortality rates for a specific cause, the patterns we observe across a broad range of causes can still offer a valuable description of community health. Finally, it's important to acknowledge that every death—whether from cardiovascular disease, lung cancer, Chronic Obstructive Pulmonary Disease (COPD), or lower respiratory infections—represents a profound loss for families and communities.

Birth Outcomes

Low birth weight and premature births are important community health indicators, as they can signal underlying health disparities and environmental stressors.

A premature birth, also known as preterm birth, is when a baby is born before 37 weeks of gestation. Birth weight is considered “low” if the baby weighs less than 5 pounds and 8 ounces (2,500 grams).[79] Both premature birth and low birth weight are linked to a range of health problems that can affect the child from infancy into adulthood. These issues can include trouble with breathing, feeding, development, and even hearing or vision.[80]

Many factors can lead to premature birth and low birth weight, such as the mother's health conditions and lack of prenatal care. According to the U.S. EPA, environmental exposures may contribute to low birth weight, including maternal exposures to lead and exposures to toxic substances in air, water, or food. Research also suggests that pollutants like fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), and nitrogen oxides (NO_x) may contribute to premature birth and low birth weight.[81]

Between 2019 and 2023, approximately 6.5% of babies born in East Oakland had a low birth weight (see Figure 4-17).[82] Although this rate may not be notably higher when compared to Oakland (6.4%) or Alameda County (6.2%), the number of affected babies – around 1,000 over five years – is still concerning. This is important to recognize because infants born with low birth weight face a higher risk of adverse health conditions, some of which can increase their vulnerability to environmental pollution later in life.[83]

[79] United States Environmental Protection Agency (US EPA). “Indicators of Environmental Health Disparities: Underweight and Pre-Term Births,” 2025. https://19january2025snapshot.epa.gov/environmentaljustice/indicators-environmental-health-disparities-underweight-and-pre-term-births/index.html.
[80] Ibid.
[81] Ibid.
[82] This data only includes singleton births, as multiple births (such as twins) are often more likely to be premature or have low birth weight.
[83] Office of Environmental Health Hazard Assessment (OEHHA). “CalEnviroScreen 4.0.” Office of Environmental Health Hazard Assessment, October 2021. https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf.

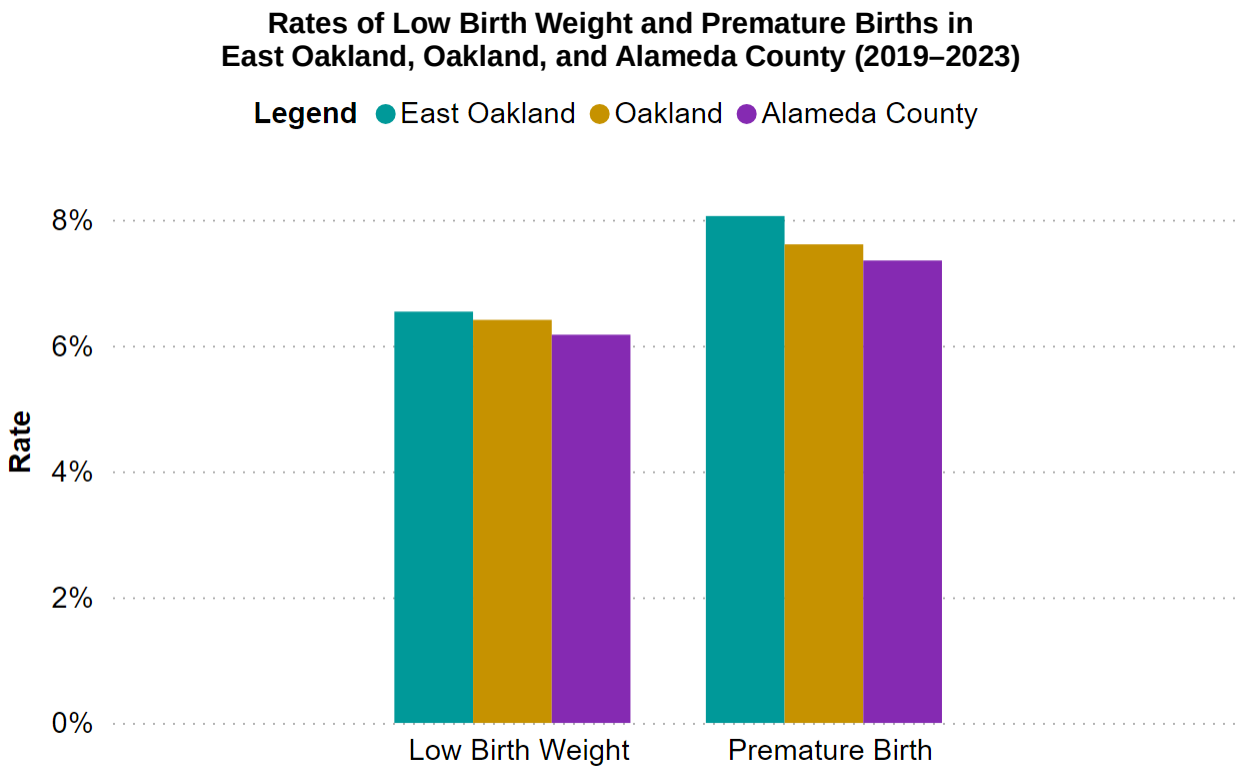


Figure 4-17: This chart displays the rates of low birth weight (left) and premature births (right) in East Oakland, Oakland, and Alameda County. Source: ACPHD Community Assessment, Planning, and Evaluation (CAPE), with data from 2019-2023 vital statistics files.

In addition, nearly 8.1% of babies born in East Oakland were premature (see Figure 4-17). [84] The premature birth rate in East Oakland is appreciably higher than the rate in Alameda County (7.6%). This points to the possibility that systemic factors in East Oakland may be contributing to a higher frequency of premature births.

Section 6: Land Use, Transportation, and Housing Conditions

Social determinants of health (SDH) refer to the social, economic, cultural, environmental, and political factors that influence health outcomes and contribute to health inequities. These include the conditions in which people are born, grow up, live, work, and age, as well as their access to money, resources, and opportunities. Examples of SDH include employment, education, exposure to pollution, housing conditions, and access to healthy food. [85]

"We want our kids to be able to enjoy the playgrounds, be able to go and play games, pickleball, any type of game they want to play, without worrying about pollution."

- Ms. Cecilia Cunningham, CSC Member

[84] This data only includes singleton births, as multiple births (such as twins) are often more likely to be premature or have low birth weight.
[85] World Health Organization (WHO). "Operational Framework for Monitoring Social Determinants of Health Equity," January 2024. https://www.who.int/publications/i/item/9789240088320.

Over a person's lifetime, social determinants of health (SDH) interact and build upon each other, shaping health outcomes based on social status. Social status is influenced by factors such as race and ethnicity, immigration status, education, gender, gender identity, income, occupation, and sexual orientation. Thus, the root causes of health inequities lie in the unequal distribution of money, resources, and opportunities, which lead to disparities in SDH and, ultimately, differences in health outcomes. [86]

Sensitive Receptors: Populations Especially Vulnerable to Air Pollution.

Certain groups of people are more vulnerable to the harmful effects of air pollution. These individuals, known as "sensitive receptors," are more likely to experience adverse health effects because their bodies are less able to defend against or cope with pollutants. [87]

Sensitive receptors include, but are not limited to:

- **Children** – Their lungs are still developing, and they breathe more air relative to their body weight than adults, making them more susceptible to pollution.
- **Older adults** – Aging can weaken the body's ability to fight off the effects of air pollution.
- **People with respiratory diseases (e.g., asthma, bronchitis)** – Air pollution can worsen their conditions and make breathing more difficult.
- **People with cardiovascular diseases** – Pollutants can increase the risk of heart attacks or strokes.
- **Pregnant people** – Exposure to certain pollutants during pregnancy can affect fetal development.

In addition to individual sensitive receptors, there are designated "sensitive receptor locations." These include places such as hospitals, schools, daycare centers, community centers, parks, and even densely populated residential areas. [88] Figure 4-18 shows the locations of daycare centers, hospitals, clinics, libraries, nursing homes, assisted living facilities, schools, and parks and recreation centers in relation to industrially zoned land. [89]

[86] Ibid.
[87] Reid, Stephen, Laura C. Cackette, Virginia Lau, Sarah Chen Small, Carly Cabral, and Beth Altshuler Muñoz. 2024. "East Oakland Emissions Inventory: A Closer Look at Permitted Sources." Prepared for the East Oakland AB617 Steering Committee. Bay Area Air Quality Management District, and Communities for a Better Environment. https://drive.google.com/file/d/1oe_6_LBhNBYH3zQQWR3fbjTLOkONE9v3/view?usp=sharing.
[88] Ibid.
[89] Ibid.

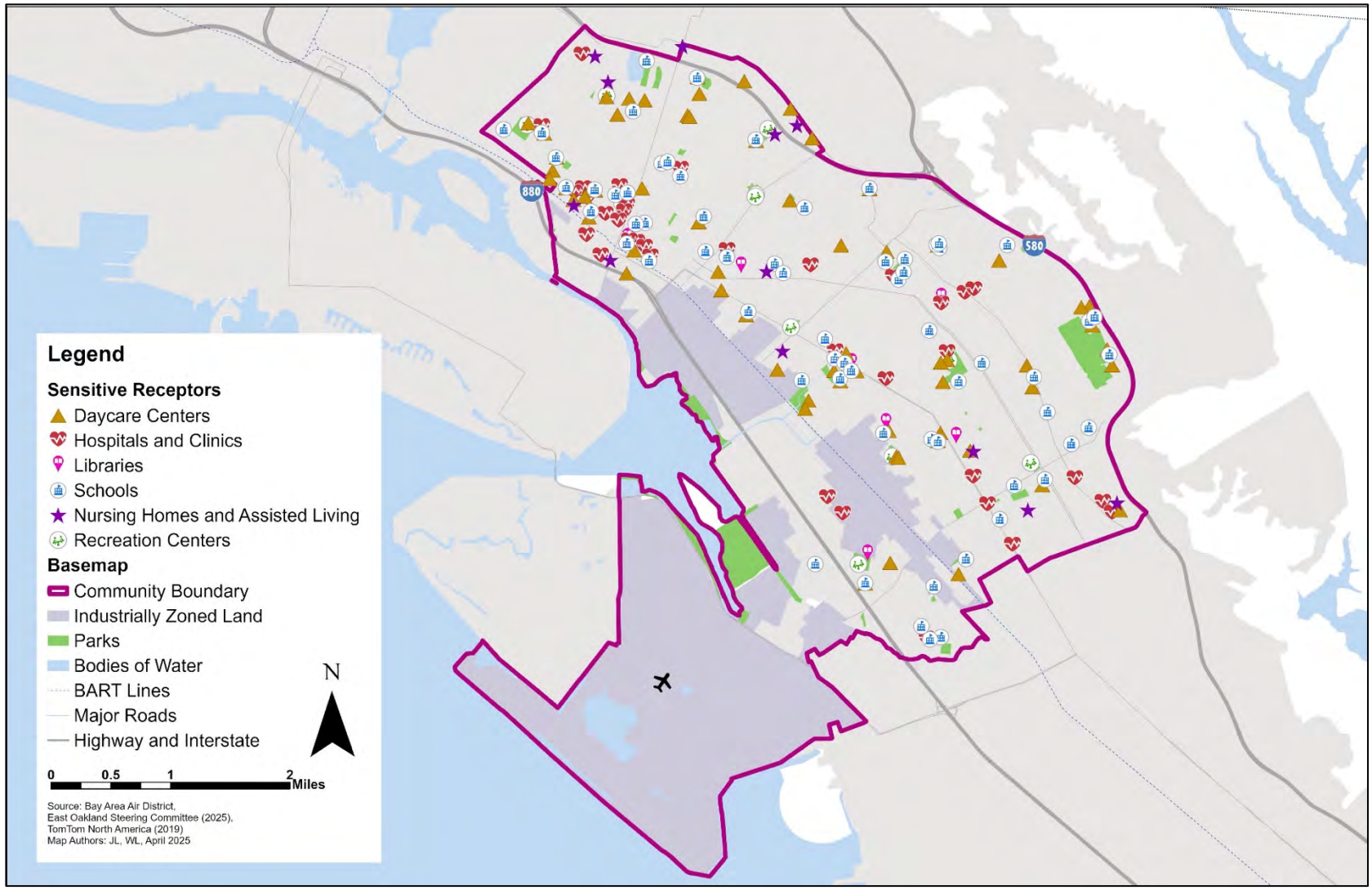


Figure 4-18: Sensitive Receptor Locations in East Oakland. This map shows places in East Oakland where people may be especially vulnerable to the health effects of air pollution. Symbols on the map represent: gold triangles for daycare centers, red hearts for hospitals and clinics, pink pins with books for libraries, blue buildings within white circles for schools, purple stars for nursing homes and assisted living facilities, and green seesaws within white circles for recreation centers. Light purple areas indicate industrial zoning, and green areas show parks. Sources: See the reference list at the end of this chapter.

Zoning & Land Use

Zoning is a tool cities and counties use to decide how land can be used in different parts of a city or county, and it plays an important role in protecting public health. By separating homes from sources of pollution like factories or busy highways, zoning can reduce residents' exposure to harmful air and noise. It can also promote healthier communities by making space for parks, grocery stores, clinics, and safe housing. In this way, zoning helps shape the conditions that support or harm people's health where they live, work, and play.

Land use conflicts occur when different types of land uses are placed in close proximity, leading to potentially negative impacts on the health, safety, and well-being of community members. As shown in Figure 4-19, many locations where vulnerable populations gather—such as schools, daycare centers, recreation centers, and health clinics—are located near industrially zoned areas in East Oakland. This proximity raises concerns about potential exposure to air pollution for these vulnerable groups.

One example of a land use conflict raised by the CSC is the Sterling Environmental Corporation (Sterling Environmental), a facility that temporarily stores asbestos waste from cleanup projects. The facility is located next to Esperanza Elementary School, Korematsu Discovery Academy, Stonehurst Child Development Center, and the Stonehurst Edible Schoolyard—where students grow food in a school garden. The close proximity of this facility to educational and recreational spaces raises community fears about hazardous materials that could affect the health of children and families.

Similarly, the CSC raised the issue of air pollution from the Evergreen Crematory, situated amidst homes, schools, and a park. Community members fear the crematory could negatively impact vulnerable populations—including infants, children, the elderly, individuals with pre-existing conditions (e.g., asthma), pregnant women, and athletes (due to higher breathing rates)—who are especially at risk for adverse health effects from air pollution.

Another example of the CSC citing an issue with land use conflicts is Argent Materials, a concrete and asphalt recycling facility located less than a mile upwind from Acorn Woodland Elementary School, the 81st Avenue Branch Library, and the Tassafaronga Recreation Center, where students, families, and community members gather.

Current Industrial Zoning in Oakland

Oakland has several designated industrial zones, with Commercial Industrial Mix – 2 (CIX-2) and General Industrial (IG) being the most prominent in East Oakland (see Figure 4-19).

- **CIX-2 (Commercial Industrial Mix - 2):** This zone functions as a general industrial area, supporting both commercial and industrial businesses. It permits operations with potential off-site impacts, such as noise or emissions. Allowed businesses include manufacturing and warehousing. However, businesses with greater impacts, such as trucking operations, crematories, and transfer stations, require a Conditional Use Permit (CUP) to operate.
- **IG (General Industrial):** The IG zone is a high-impact industrial area designed for manufacturing, transportation, warehousing, and other industrial activities that may produce noise, odors, or traffic. IG zones are typically located near major transportation hubs like freeways, rail lines, ports, and airports. Permitted businesses include manufacturing, warehousing, trucking, and rail yards. Activities involving hazardous

materials, along with high-impact operations such as crematories, landfills, and transfer stations, require a Conditional Use Permit (CUP) in this zone.

In addition, the S-19 Health and Safety Protection Combining Zone is a zoning overlay designed to regulate activities involving hazardous materials. The S-19 Zone applies to specific industrial areas, such as the IG and CIX-2 zones, as well as other industrial zones. In areas within the S-19 zone (typically within 300 feet of residential areas), there are additional regulations for how hazardous materials can be used, stored, and handled to reduce potential risks.

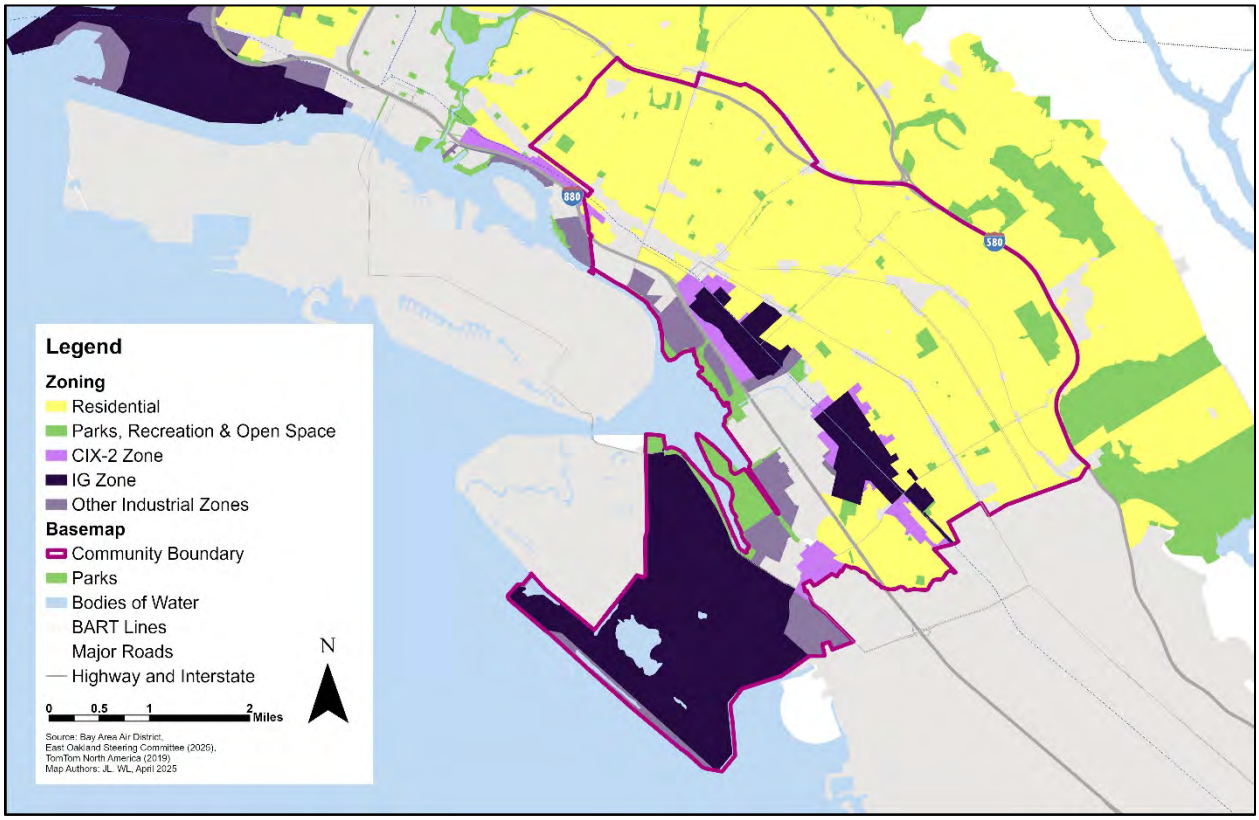


Figure 4-19: Map of Industrially Zoned Areas in East Oakland. Areas zoned for industrial use (CIX-2, IG, and other industrial zones) are shown in purple, residential zones in yellow, and parks or open space in green. Sources: See the reference list at the end of this chapter.

Oakland's industrial zones play a key role in supporting the transportation and manufacturing sectors. According to a study commissioned by Oakland's Economic and Workforce Development Department (EWD), industrial businesses employ approximately 33,553 people across nearly 1,100 businesses. These jobs account for 18.4% of the city's total wage and salary employment, all concentrated on less than 6% of the city's land. [90]

About one-third of industrial jobs are in transportation and material-moving occupations. Approximately 80% of industrial jobs—around 26,700—are middle-wage positions accessible to workers without a college degree. One in four workers in Oakland's industrial sector are city

[90] Haynes, Khalilha, and Alicia Parker. "History of Industrial Activities and Industrial Zoning in Oakland." City of Oakland, February 23, 2022. https://cao-94612.s3.amazonaws.com/documents/History-of-Industrial-Activities-and-Industrial-Zoning-in-Oakland.pdf.

residents, and the industrial workforce is predominantly white (66%) and male (65%). [91]

Case Study: Concentration of Solid Waste Facilities and Operations in East Oakland

Many of the stationary sources regulated by the Air District are located in Oakland's industrial zones. Figure 4-20 provides a map of these permitted sources. For a more comprehensive discussion of permitted sources, please refer to Chapter 5.

One type of stationary source regulated by the Air District are solid waste disposal sites—such as landfills and transfer stations—which are significant sources of methane and volatile organic compounds (VOCs) emissions. [92] These facilities also rely on a steady flow of heavy vehicles to transport waste, increasing truck activity in surrounding areas. For example, the Davis Street Transfer Station in San Leandro consolidates waste into larger loads, reducing the number of trips to disposal sites but concentrating truck traffic around the facility. Poor siting or management of solid waste disposal sites can heighten air pollution and create safety risks for nearby communities. Effective planning and regulation are essential to minimize these impacts.

A recent analysis for Oakland's Environmental Justice (EJ) Element found that solid waste facilities are unevenly distributed across the city. As of February 2025, Oakland had 17 solid waste facilities—active, inactive (not certified closed), or planned—with the largest cluster in East Oakland, north of the Coliseum. [93] CalRecycle's Solid Waste Information System (SWIS) identified six active facilities: four in East Oakland (two operated by Bee Green Recycling and Supply, one by Asphalt Shingle Recyclers, and one by Independent Recycling Services) and two in West Oakland (operated by California Waste Solutions). The analysis revealed that predominantly Latinx/Hispanic census tracts in Oakland have nearly five times more solid waste sites than predominantly white tracts, with the highest concentrations in the Melrose, Port Upper, and Lockwood/Coliseum/Rudsdale neighborhoods. [94]

Urban Greening

Trees improve air quality by providing shade that cools surrounding areas and by directly removing certain pollutants from the air. In urban environments, trees and other vegetation help reduce the local heat island effect [95] and offer additional environmental and health benefits—especially for those most vulnerable to the health impacts of air pollution. [96]

However, Oakland's tree canopy is not equitably distributed, leaving many low-income, vulnerable communities with significantly less tree cover than wealthier areas. While the city's overall canopy coverage is 21.5%—higher than some similar Bay Area cities—tree cover in certain neighborhoods is as low as 9%, compared to 43% in affluent Oakland Hills communities. [97] Between 2014 and 2018, the city lost 277 acres of tree canopy while gaining

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[91] Ibid.
[92] Cackette, Laura. "Regulation 8: Organic Compounds Rule 34: Solid Waste Disposal Sites Concept Paper." Bay Area Air Quality Management District, May 2019. https://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-8-rule-34/documents/20190606_cp_0834-pdf.pdf?rev=7f07d0903fd14568a8ed07481eb5db72&sc_lang=en.
[93] CalRecycle. "SWIS Facility Activity Search." Accessed February 9, 2025. https://www2.calrecycle.ca.gov/SolidWaste/Activity.
[94] City of Oakland. "Environmental Justice (EJ) Element," Adopted: September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.
[95] According to the EPA, "heat islands" are urban areas that become significantly hotter than nearby rural or less developed areas.
[96] U.S. Environmental Protection Agency. "Benefits of Trees and Vegetation," March 29, 2024. https://19january2025snapshot.epa.gov/heatislands/benefits-trees-and-vegetation/index.html.
[97] City of Oakland. "Urban Forest Plan," December 16, 2024. https://www.oaklandca.gov/Community/Community-

1,296 acres of impervious surfaces like roads and buildings. East Oakland's Council District 5, in particular, saw a canopy loss of more than 5%. Decades of budget cuts have severely limited tree maintenance, with 92% of street and park trees requiring pruning. [98]

Development/Sustainability-Environment/Sustainability-Plans/Oakland-Urban-Forest-Plan.
[98] Ibid.

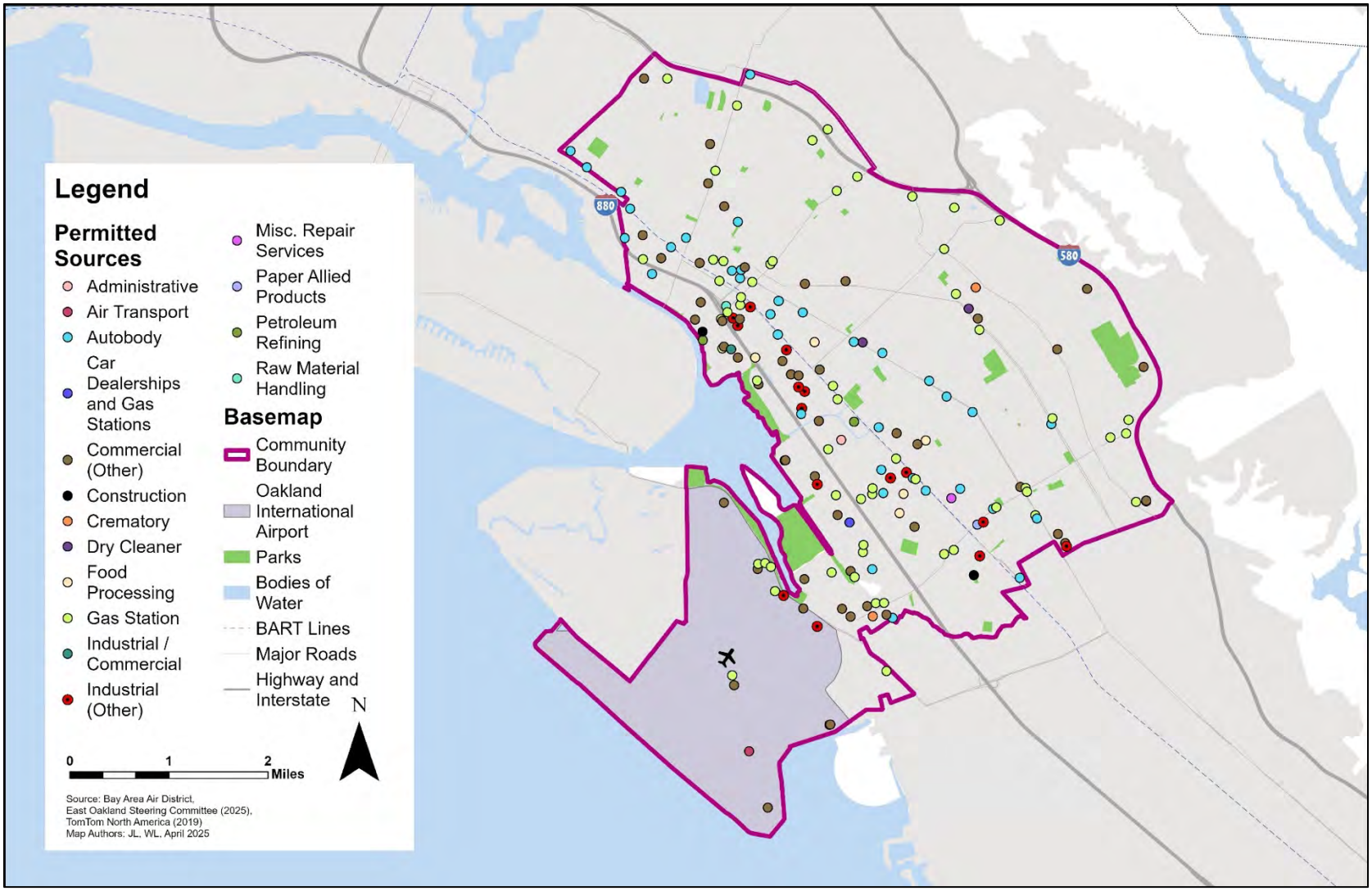


Figure 4-20: Map of Air District-Permitted Facilities in East Oakland, Categorized by Source Type. Each dot represents a facility with a permit from the Air District. The most visible sources on the map include autobody shops (light blue), gas stations (yellow), industrial facilities (red with a black center), commercial sources (brown), and crematories (orange). Sources: See the reference list at the end of this chapter.

Transportation

East Oakland's expansive transportation infrastructure—including major roadways, public transit systems, an international airport, and vital freight corridors—has significantly shaped the community's mobility, economic development, and public health. While these systems enhance accessibility and regional connectivity, they also contribute to air pollution from vehicle and freight traffic, which can lead to harmful health effects for residents. Additionally, the overlap of residential and industrial land uses along multimodal corridors—where pedestrian, bicycle, automobile, transit, and freight routes intersect—is creating growing land use conflicts.

Truck-attracting businesses—such as warehouses, distribution centers, and freight hubs—contribute to air pollution, traffic congestion, and public health concerns. In East Oakland, these businesses are primarily concentrated in commercial and industrial zones along San Leandro Boulevard. However, the truck traffic they generate must travel along designated truck routes that pass through or near residential neighborhoods (see Figure 4-21). Notably, 59% of East Oakland's truck routes are located in close proximity to residential areas. [99]

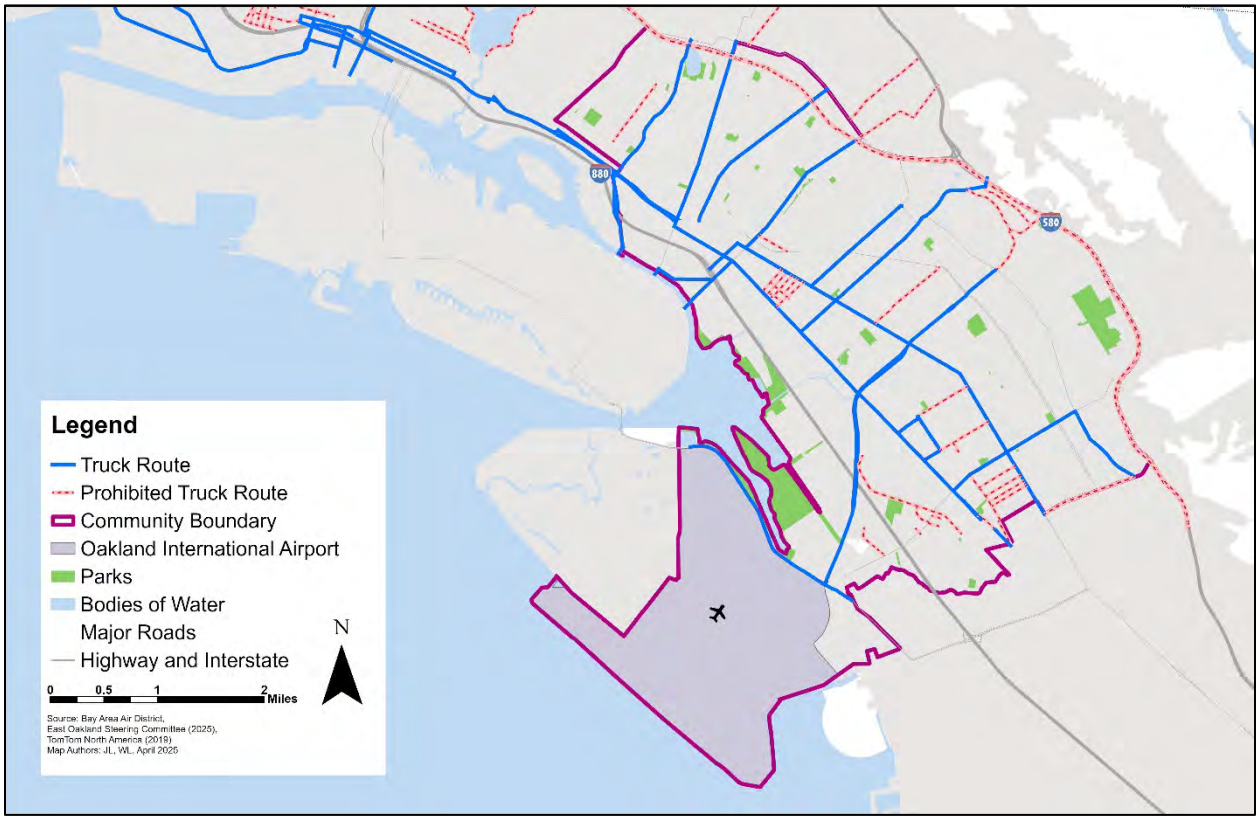


Figure 4-21: Map of Truck Routes in East Oakland. Blue lines indicate roads where trucks are permitted, while red lines show roads where truck traffic is prohibited. The map also highlights the I-580 truck ban, which applies to an 8.7-mile stretch of the highway, from Foothill Boulevard in San Leandro to Grand Avenue in Oakland. Sources: See the reference list at the end of this chapter.

[99] City of Oakland. (2021). East Oakland mobility action plan. https://cao-94612.s3.amazonaws.com/documents/EOMAP-Final-Plan_2022-05-12-170448_vgrv.pdf.

Truck traffic from economically active areas across the region travels along Interstate 880 (I-880)—a major freight corridor with high truck volumes—en route to the Port of Oakland. [100] This heavy flow of freight trucks leads to increased levels of diesel pollution, fine particulate matter, and black carbon in both West and East Oakland, with the highest concentrations found along the I-880 corridor, where truck traffic is heaviest. [101]

The concentration of truck traffic can be partially attributed to a truck ban on I-580. The I-580 truck ban applies to an 8.7-mile stretch of the highway, from Foothill Boulevard in San Leandro to Grand Avenue in Oakland. Trucks weighing more than 9,000 pounds are not allowed on this segment, with exceptions made for passenger buses and paratransit vehicles. As a result, freight trucks are redirected onto I-880 and designated truck routes on local roads. [102]

Truck restrictions on I-580 date back to 1951, when truck traffic was banned on MacArthur Boulevard. Despite years of efforts to lift the restriction, the California State Legislature officially included the I-580 truck ban in the California Vehicle Code through Assembly Bill 500 (AB500). In 2025, Caltrans initiated a long-awaited truck access study to assess the potential impacts on neighborhoods in East Oakland. [103]

Advancing Environmental Justice Through Land Use Reform: Recent Planning Code Updates in Oakland

Oakland's land use planning history reflects its shift from an industrial hub to a diverse urban city shaped by economic and demographic change. Early growth was driven by railroads, the port, and shipbuilding, followed by mid-20th century highway construction and urban renewal projects that reshaped neighborhoods, contributing to racial segregation and systemic disinvestment in BIPOC communities. Today, Oakland is advancing planning efforts focused on sustainability, equity, and resilience through initiatives like the ongoing General Plan Update, as well as recently completed Environmental Justice (EJ) Element (adopted in 2023), the Urban Forest Master Plan (adopted in 2024), and the Oakland 2030 Equitable Climate Action Plan (ECAP) (adopted in 2020).

In 2023, the City of Oakland adopted an ordinance aimed at addressing the impact of truck-attracting businesses on air quality and public health. The Planning Code Amendments adopted included several key changes for East Oakland:

1. A new Planning Code section has been created to address truck-intensive industrial businesses (Planning Code Section 17.103.065):
    a. A new industrial activity type called "Truck-Intensive Industrial Activity" has been added. This category includes businesses such as General Manufacturing, Heavy/High Impact Manufacturing, Construction Operations, Warehousing, Storage and Distribution, Regional Freight Transportation (Rail Yards), Trucking and Trucking-Related, and Recycling and Waste-Related. Stricter rules now

[100] City of Oakland. "Environmental Justice (EJ) Element," September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.
[101] Reid, Stephen, Laura C. Cackette, Virginia Lau, Sarah Chen Small, Carly Cabral, and Beth Altshuler Muñoz. 2024. "East Oakland Emissions Inventory: A Closer Look at Permitted Sources." Prepared for the East Oakland AB617 Steering Committee. Bay Area Air Quality Management District, and Communities for a Better Environment.
[102] California Department of Transportation. Special route restriction history – Route 580. https://dot.ca.gov/programs/traffic-operations/legal-truck-access/restrict-route-580.
[103] California Department of Transportation. Interstate 580 truck access study. https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/d4-580-truck-access-study.

apply to businesses classified as "Truck-Intensive Industrial Activity" (Planning Code Section 17.103.065).

   b. A new definition for "Sensitive Receptor Locations" has been created. This includes locations like schools, parks, senior centers, and homes. The definition helps to assess the impact of "truck-intensive" businesses on nearby communities.
   c. A new requirement for a Conditional Use Permit (CUP) has been introduced for "truck-intensive" businesses located within 500 feet of residential areas. Businesses in this category must meet new CUP criteria related to “truck-intensive" activities. This gives the Planning and Building Department (PBD) the authority to review potential impacts from new industrial businesses and require mitigations to address truck-related impacts.

2. The timeframes for discontinuing non-conforming "Truck-Intensive Industrial Activity" have been updated. If a business involved in Truck-Intensive Industrial Activity stops operating for any reason, even for just one day, and the closure is intentional or due to abandonment, it will lose the right to continue that type of activity. In other words, when the business leaves, the use will end (Planning Code Section 17.114.050).
3. Similarly, the termination timeframe for conditionally permitted "truck-intensive" businesses has been updated. These businesses, which were originally allowed through a Conditional Use Permit (CUP), will have 6 months during which a new industrial business can continue operating as a "truck-intensive" business. After 6 months, this right will expire, and the new business will need to apply for a new CUP (Planning Code Section 17.134.130).
4. The permitted activities in the CIX-2 Zone have been updated. Some truck-related and recycling businesses that were previously allowed by right are now conditionally permitted in the zone (Planning Code Section 17.73.020).

Housing

Housing is a fundamental social determinant of health, influencing both physical and mental well-being. The affordability, quality, and location of housing play a crucial role in shaping health outcomes. Stable, high-quality housing can provide a safe and healthy environment, whereas inadequate housing conditions—such as poor ventilation, exposure to indoor air pollutants, and structural deficiencies—can contribute to adverse health effects among at-risk populations. [104]

Housing quality is often influenced by factors like:

- The age of the building
- How well it is maintained
- The presence of household hazards, such as lead paint and mold
- Outdated utilities

Housing Conditions and Indoor Air Quality

Although the primary objective of this plan is to reduce ambient air pollution, indoor air pollution is also a significant concern because it adds to the overall pollution burden. In addition to outdoor air pollution from regional and local sources, individuals are also exposed to pollutants within their homes. Further, research has shown that people typically spend around 90% of their

[104] Robert Wood Johnson Foundation. “Where We Live Matters for Our Health: The Links Between Housing and Health,” September 30, 2008. https://nchh.org/resource/rwjf_where-we-live-matters-for-our-health_the-links-between-housing-and-health/.

time indoors. [105] This dual exposure intensifies the total pollution burden, underscoring the importance of addressing both indoor and outdoor sources of pollution in order to more effectively protect health.

Moreover, certain groups of people, such as children, the elderly, and those with chronic illnesses—especially respiratory or heart conditions—are most likely to be exposed to indoor air pollution for extended periods, making them more vulnerable to its harmful effects. [106]

Household products such as building materials, tobacco smoke, and furniture release harmful chemicals that contribute to indoor air pollution. Appliances like water heaters, space heaters, clothes dryers, and stoves that run on natural gas further impact air quality. Older, poorly maintained buildings often lack proper ventilation and have deteriorating infrastructure, increasing residents' exposure to pollutants. Prolonged exposure can lead to eye and throat irritation, asthma, respiratory diseases, and even cancer. [107]

Proximity to Pollution Sources and Health Risks

In addition to housing quality, proximity to pollution sources presents another major health risk. Many homes in East Oakland are located near significant pollution sources, such as truck routes, I-880, and industrial zones like CIX-2 and IG. [108]

The combination of poor housing conditions, indoor air pollution, and proximity to pollution sources exacerbates health risks. Older homes near major pollution sources, with inadequate ventilation, are more likely to have higher levels of outdoor pollutants that can enter indoor spaces, further degrading indoor air quality. Without sufficient resources for repairs or upgrades, residents in these neighborhoods face heightened exposure to both indoor and outdoor air pollution, leading to long-term health consequences. [109]

Age of Housing

Older housing often reflects substandard living conditions. In Oakland, more than 80% of the housing was built before 1980, meaning much of the city's housing is over 40 years old. This is also the case for East Oakland (see Figure 4-22). Without proper maintenance or rehabilitation, older buildings tend to deteriorate, leading to issues like inadequate ventilation, structural hazards, unsafe mechanical systems, and conditions that fail to meet the state’s minimum standards for living. [110]

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[105] U.S. Environmental Protection Agency. “The Inside Story: A Guide to Indoor Air Quality.” Overviews and Factsheets, August 28, 2014. https://19january2025snapshot.epa.gov/indoor-air-quality-iaq/inside-story-guide-indoor-air-quality/index.html.
[106] Ibid.
[107] Ibid.
[108] City of Oakland. “Environmental Justice (EJ) Element,” September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.
[109] Ibid.
[110] City of Oakland. “Environmental Justice (EJ) Element,” September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.

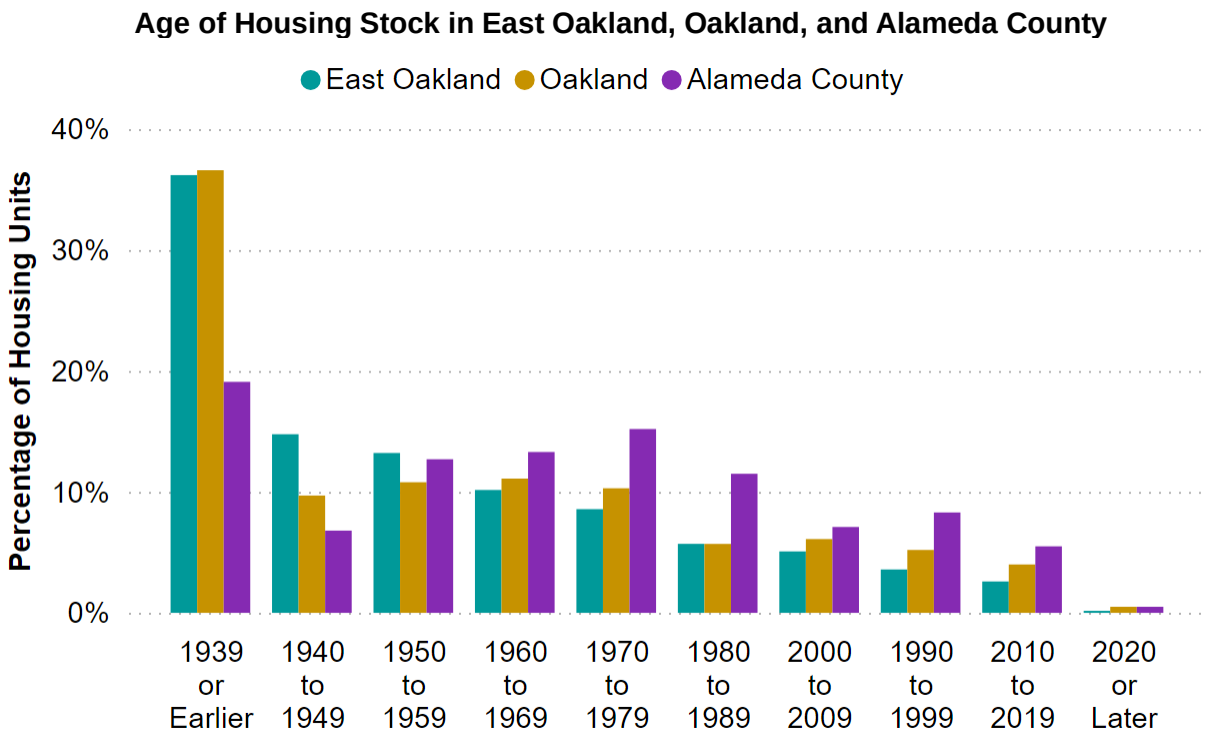


Figure 4-22: This chart shows the percentage of housing units built in various time periods, ranging from before 1939 to after 2020. Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table DP04 – Selected Housing Characteristics. Retrieved from https://data.census.gov.

As in the rest of Oakland, East Oakland's housing stock is notably older than that of Alameda County. Nearly 36% of homes in East Oakland were built in 1939 or earlier, compared to 19% across the county. Additionally, only 3% of East Oakland's housing was built in 2010 or later, while about 7% of Alameda County's housing stock falls into this category.[111] Aging housing stock refers to homes built before 1980.[112] In East Oakland, approximately 83% of the housing falls into this category, putting residents at higher risk of exposure to indoor air pollutants, such as lead-based paint dust, mold, and outdated ventilation systems.

The limited number of newly constructed homes means fewer modern, energy-efficient options with improved air filtration and ventilation systems. The city has limited capacity to address housing rehabilitation needs, and identifying substandard housing can be challenging. Low-income renters may hesitate to report unsafe conditions due to concerns about eviction or potential rent increases.[113]

[111] Ibid.
[112] Camero, Edgar. "Pathways to Improved Housing Quality in Rural Places." ChangeLab Solutions. Accessed April 25, 2025. https://www.changelabsolutions.org/blog/pathways-improved-housing-quality-rural-places.
[113] Ibid.

The Affordable Housing Crisis and Health Risks

Household income plays a key role in determining housing options and opportunities. As household income decreases, challenges such as higher housing costs, overcrowding, and the risk of displacement or homelessness tend to increase. [114]

Research conducted in Oakland shows that as the housing crisis worsens, lower-income residents often have no choice but to remain in the only housing they can afford, which is frequently in disrepair or located in areas with high levels of pollution. In neighborhoods where safe, quality, and affordable housing is scarce, residents face higher rates of lead poisoning and asthma. These communities also experience higher poverty levels, have fewer resources to support overall health, and are exposed to more environmental and housing-related health hazards. [115]

Low-income neighborhoods, areas with older housing, and communities with high renter populations are more likely to experience poorly maintained homes with inadequate ventilation, malfunctioning range hoods, and natural gas appliances, creating an urgent need for electrification. [116]

"Renter-occupied" and "owner-occupied" describe who lives in a home—whether it is rented by tenants or owned by the residents. In East Oakland, 58% of homes are renter-occupied, meaning most residents depend on rental housing. In contrast, Alameda County has a higher rate of owner-occupied homes (54%), which may provide more long-term housing stability and greater opportunities for homeownership (see Figure 4-23).

Because most East Oakland residents rent rather than own, they may be forced to rely on landlords to make home upgrades that could improve air quality or address housing quality concerns. However, research shows that tenants may be reluctant to report problems due to the risk of eviction, rent increases, or other forms of retaliation. [117]

[114] Ibid.
[115] Nguyen, Tram, Matt Beyers, Radhika Agarwal, Miriam Magana Lopez, and Luciana Rocha. “Housing Habitability and Health: Oakland’s Hidden Crisis.” Alameda County Public Health Department and Alameda County Healthy Homes Department, April 2018. https://www.acgov.org/cda/lead/documents/news/health,housinginoakland.pdf.
[116] City of Oakland. “Environmental Justice (EJ) Element,” September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.
[117] Nguyen, Tram, Matt Beyers, Radhika Agarwal, Miriam Magana Lopez, and Luciana Rocha. “Housing Habitability and Health: Oakland’s Hidden Crisis.” Alameda County Public Health Department and Alameda County Healthy Homes Department, April 2018. https://www.acgov.org/cda/lead/documents/news/health,housinginoakland.pdf.

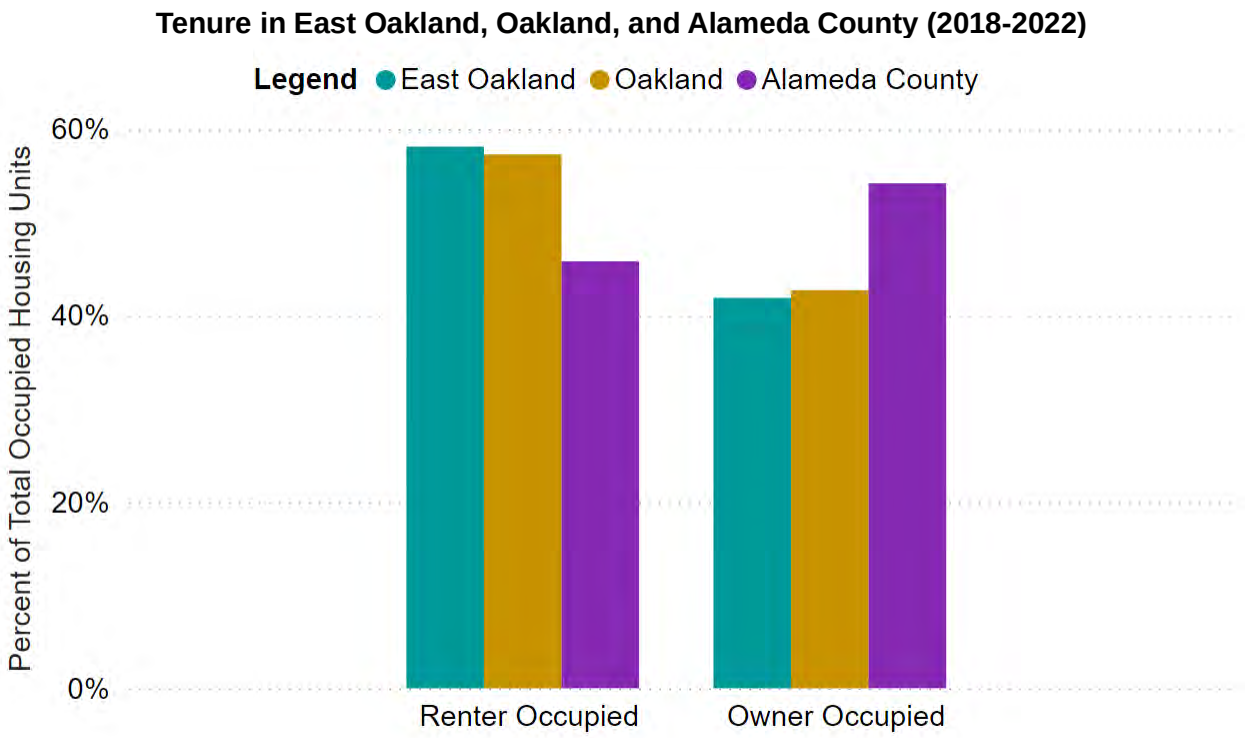


Figure 4-23: This chart shows the percentage of total occupied housing units that are renter-occupied (left) versus owner-occupied (right). Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table B25003 – Tenure. Retrieved from https://data.census.gov.



Figure 4-24: This chart shows the percentage of renters who are ‘severely rent burdened’ (left) and ‘rent burdened’ (right). Source: U.S. Census Bureau. (2022). American Community Survey 5-Year Estimates, Table B25070, Gross Rent as a Percentage of Household Income. Retrieved from https://data.census.gov.

Housing affordability is often assessed by the percentage of income spent on rent. Two common categories used are:

- "Rent-burdened": households spending 30% to 50% of their income on rent
- "Severely rent-burdened": households spending more than 50% of their income on rent

Households that spend a large portion of their income on housing, without financial assistance, are considered to be in insecure housing situations. These households are more vulnerable to eviction, displacement, overcrowding, and homelessness. [118]

In East Oakland, the majority of renters (57%) live in unaffordable housing, spending more than 30% of their income on rent. Among them, 33% are severely rent-burdened, meaning they spend more than half of their income on housing, highlighting the significant financial strain faced by many residents in the community (see Figure 4-24).

Wildfires and the Unhoused

Wildfire smoke is becoming a more serious public health issue, especially as climate change causes wildfires to happen more often and with greater intensity. Wildfire smoke can cause a wide range of health problems, from difficulty breathing to heart attacks and strokes. During

[118] City of Oakland. “Environmental Justice (EJ) Element,” September 26, 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.

wildfire smoke events, the Air District recommends staying indoors with windows and doors closed, leaving the affected area, or visiting a clean air-cooling center.[119] However, for individuals experiencing homelessness, following these recommendations can be extremely challenging, if not impossible, leaving them at significantly higher risk during these emergencies.

At the time this report was written, specific data for East Oakland was unavailable. However, it is known that approximately 58% of Alameda County's homeless population resides in Oakland. Of Oakland's homeless individuals, 67% are unsheltered, meaning they live in tents, makeshift shelters, vehicles, RVs, or on the streets and sidewalks. Within this unsheltered group, more than half (58%) reside in vehicles or RVs, while 21% live in tents or makeshift shelters. The remaining individuals are either on the streets, sidewalks, or in other locations. Sheltered individuals, on the other hand, are those living in emergency shelters, transitional housing, or "Safe Haven" facilities. There are notable racial disparities in homelessness, with BIPOC, especially African Americans, experiencing homelessness at significantly higher rates than white individuals.[120]

These statistics show the urgent need for solutions to protect this vulnerable group. While the long-term goal is to reduce homelessness, it is important to find ways to keep unhoused communities safe during climate emergencies, especially as climate change causes more frequent wildfires.

[119] Bay Area Air District. "Wildfire Safety." Accessed March 18, 2025. https://www.baaqmd.gov/en/about-air-quality/wildfire-air-quality-response-program/wildfire-safety.
[120] Alameda County Housing and Homelessness Services. "Alameda County Point-In-Time Report," 2024. https://homelessness.acgov.org/data_point_in_time.page?.

Reference List: Map Data Sources

All of the datasets listed below are available for download and fully documented in the Air District's Open Data Catalog at https://datacatalog.baaqmdsf.org/. To find all datasets utilized in Chapter 4, enter "East Oakland CERP" in the search bar.

Figure 4-1

- Bay Area Air District. "East Oakland CERP Community Boundary."
- California Air Resources Board (CARB). "Alameda County Boundary."

Figure 4-2

- Bay Area Air District. "East Oakland CERP Community Boundary."
- City of Oakland. "City of Oakland Boundary."

Figure 4-3

- Mapping Inequality. "HOLC Redlining Map."

Figure 4-6

- City of Oakland. "Zoning (Effective Dec 17, 2024)."
- Office of Environmental Health Hazard Assessment (OEHHA). "CalEnviroScreen 4.0."

Figure 4-18

- California Department of Education (CDE). "Private Schools."
- California Department of Education (CDE). "Public Schools."
- California Department of Public Health (CDPH). "Licensed and Certified Healthcare Facilities."
- California Department of Social Services (CDSS). "Child Care Centers."
- California Department of Social Services (CDSS). "Residential Care Facilities for the Elderly."
- City of Oakland. "Oakland Public Library Locations."
- City of Oakland. "Parks and Recreation Facilities."
- City of Oakland. "Zoning (Effective Dec 17, 2024)."

Figure 4-19

- City of Oakland. "Zoning (Effective Dec 17, 2024)."

Figure 4-20

- Bay Area Air District. "Permitted Sources."

Figure 4-21

- City of Oakland. "Truck Routes."

Chapter 5: Air Quality Overview

Introduction

To support the development of the Plan, the Air District worked closely with the CSC to develop a common understanding of the community's air quality issues. This effort involved compiling and assessing a wide variety of information to identify factors contributing to air quality conditions in East Oakland. This analysis was informed by the community's lived experience, air quality measurements, emissions inventory data, and air quality modeling results. This chapter begins with an overview of air pollution and health effects, air monitoring data, emissions inventory development, and air quality modeling, and concludes with a section on connecting insights from these technical tools to specific community concerns to help provide a basis for the strategies and actions outlined in Chapter 7. Some of the key findings discussed in this chapter include:

- Air monitoring data from the Air District's *Oakland - East* monitoring site show that while levels of certain air pollutants have been in compliance with federal air quality standards, those levels have not improved over the last ten years.
- Data from Air District monitoring sites and from numerous studies show higher levels of black carbon (BC), ultrafine particles (UFPs), and other pollutants associated with traffic in locations near busy roadways.
- A community-based monitoring study conducted by Communities for a Better Environment (CBE) in 2008 found higher levels of fine particulate matter ($PM_{2.5}$) near industrial areas and corridors with high diesel truck traffic, and that on average, residents in East Oakland were exposed to higher levels of $PM_{2.5}$ compared to residents in Alameda County.
- A 2021 emissions inventory for East Oakland shows that key fine particulate matter ($PM_{2.5}$) sources include residential fuel combustion, road dust, construction activities, and permitted facilities like Davis Street Transfer Station and Miller Milling Company.
- Mobile sources such as cars, trucks, aircraft and construction equipment are significant sources of several key toxic air contaminants (TACs) in East Oakland, including diesel particulate matter (DPM), 1,3-butadiene, benzene, and acrolein.
- Though permitted facilities make a relatively small contribution to the overall toxic air contaminants (TAC) inventory, individual facilities or groups of facilities may still be important emitters, especially if they are located near sensitive populations such as schools or senior centers.
- Oakland San Francisco Bay Airport is a significant air pollution source in East Oakland, accounting for over one-third of local emissions of nitrogen oxides (NO_x). Monitoring studies have shown that elevated levels of ultrafine particles (UFP), fine particulate matter ($PM_{2.5}$), black carbon (BC), and other pollutants occur in and around airports.
- Air monitoring projects planned in East Oakland are expected to provide additional data and information about how air quality can vary from place to place and on air quality impacts from specific sources of concern in the community.

Background and Community Concerns

The Air District recommended East Oakland for the development of a CERP due to the high health burden of residents in East Oakland neighborhoods, who experience disproportionately high exposure to air pollution. Waste facilities, crematories, small-to-medium industrial and manufacturing operations, large warehouse distribution centers, high-volume freeways and roadways (I-880, I-238, I-580, Highway 92), Oakland San Francisco Bay Airport, and freight and passenger rail all contribute to the pollution burden of the area.

Upon the selection of the East Oakland Community Steering Committee (CSC) in 2018, the Air District and the CSC began the process of developing a shared understanding of local air quality issues, which is fundamental to the CERP process. A list of community concerns was developed with CSC input and guided by a variety of public engagement efforts, as described in Chapter 4. Table 5-1 provides a summary of these community concerns, each of which provides an area of focus for the development of CERP strategies and actions. To support strategy development, findings from the air quality assessment are connected to these areas of concern where possible.

Table 5-1: Overview of the community concerns identified by East Oakland residents.

Area of Concern	Description
Commercial & Industrial Sources	Particulate matter (PM) exposure from fugitive dust, material handling, and construction. Facilities of concern include, but are not limited to, Argent Materials, Gallagher and Burk, Miller Milling, and Davis St. Transfer Station. Toxics exposure from facilities producing toxic emissions, including Argent Materials, Evergreen and East Bay crematoriums, Cultured Marble Products, PCC Structurals, and Amazon Services.
Transportation & Mobile Sources	Pollution exposure from mobile sources in the community, including heavy-duty trucks and operations at the Oakland San Francisco Bay Airport.
Built Environment & Land Use	Sensitive receptors in proximity to pollution sources, incompatible zoning, tree canopy coverage, pollution in the home, etc.
Public Health & Wellness	Cumulative health impacts of outdoor air pollution, protecting sensitive populations, and raising awareness about the health impacts of air pollution.
Illegal Dumping	Illegal dumping in vacant lots, the burning of trash and cars, and inequitable access to waste disposal services.

Area of Concern	Description
Cross-cutting Issues	Themes that touch on multiple concerns, such as workforce development and urban greening.

Overview of Air Pollution and Health Effects

This section provides general information on sources of air pollution and related health effects. The air we breathe includes a mix of pollutants emitted from different sources within East Oakland and from sources in nearby communities and regions in addition to pollutants formed through chemical reactions of different pollutants after they are emitted. Meteorological (weather) conditions further determine the transport of pollutants from one area to another and whether pollution will remain concentrated near the ground where people breathe. Sources of air pollution are wide-ranging and include anthropogenic sources (caused by human activity) like commercial and industrial facilities, motor vehicles, trains, ships, airports and airplanes, and residences (e.g., using wood-burning devices), as well as natural sources like wildfires and airborne sea salt. Certain pollution sources or operations produce multiple pollutants at the same time, such as burning fuels or other materials.

This section begins with a discussion of the two main categories of air pollutants: criteria air pollutants (CAPs) and toxic air contaminants (TACs). It then provides more detailed information on particulate matter (PM), including fine particulate matter ($PM_{2.5}$), black carbon (BC), and ultrafine particles (UFPs). Finally, it includes a description of TACs.

Categories of Air Pollutants

There are several categories and subsets of air pollutants. Two main categories of air pollutants are Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs), as summarized in Table 5-2. CAPs are six common air pollutants that harm human health and are pollutants that the U.S. Environmental Protection Agency (U.S. EPA) sets standards for under the Clean Air Act, called the National Ambient Air Quality Standards (NAAQS).[121] California also has established air quality standards (CAAQS) for several air pollutants.[122] TACs are pollutants that are known to or are suspected to cause cancer or other serious health effects.[123] Of these pollutants, particulate matter (PM) and various TACs are of greater concern due to their health impacts and the close proximity of sources of these pollutants to places where people live, work and spend time in East Oakland.

[121] U.S. EPA webpage on Criteria Air Pollutants: https://www.epa.gov/criteria-air-pollutants.
[122] CARB webpage for the California Ambient Air Quality Standards: https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards.
[123] CARB webpage on Toxic Air Contaminants: https://ww2.arb.ca.gov/resources/documents/carb-identified-toxic-air-contaminants.

Table 5-2: Categories and examples of air pollutants.

Pollutant Category	Description	Pollutants in this Category
Criteria Air Pollutants (CAPs)	Six common air pollutants that harm human health and have NAAQS set by the U.S. EPA	• Ozone (O_3) • Particulate matter ($PM_{2.5}$ and PM_{10}) • Carbon monoxide (CO) • Nitrogen dioxide (NO_2) • Sulfur dioxide (SO_2) • Lead (Pb)
Toxic Air Contaminants (TACs)	TACs include over 200 pollutants identified by CARB that are known or suspected to cause cancer or other serious health effects	Examples of TACs: • Benzene, toluene, ethylbenzene, xylene (BTEX), which are volatile organic compounds (VOCs) found in gasoline and released through combustion of fossil fuels • Diesel particulate matter (DPM), resulting from combustion of diesel fuel • Certain metals such as mercury, chromium, and arsenic

Particulate Matter

Particulate Matter (PM) comes in many shapes, sizes, and compositions, as summarized in Table 5-3. PM_{10} refers to inhalable particles with diameters of 10 micrometers or smaller, and $PM_{2.5}$ refers to fine inhalable particles with diameters of 2.5 micrometers or smaller.[124, 125] Fine particles are much smaller than the width of a human hair, as illustrated in Figure 5-1, and can travel deep into the lungs and bloodstream, where they can cause or contribute to short-term health effects like bronchitis and asthma attacks, and long-term effects like heart disease and respiratory conditions like emphysema. Chapter 4 contains more information related to health outcomes in East Oakland. PM is emitted from many sources and can be directly emitted into the air (referred to as primary PM) or can form in the air through complex reactions of other pollutants that are emitted as gases (often referred to as secondary PM). Smaller particles, such as $PM_{2.5}$, are emitted more from combustion sources, including the combustion of fossil fuels for industrial operations; by cars, trucks, and other on-road mobile sources; and off-road mobile sources such as airplanes, trains, and construction equipment. Other combustion sources of $PM_{2.5}$ include residential wood stoves and fireplaces, certain restaurants, and diesel generators. Secondary PM is also primarily composed of particles in the $PM_{2.5}$ size fraction. Non-

[124] CARB webpage on Inhalable Particulate Matter and Health ($PM_{2.5}$ and PM_{10}): California Air Resources Board. https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health.
[125] U.S. EPA webpage on Particulate Matter (PM) Basics: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics.

combustion sources of PM, such as dust from unpaved surfaces, facilities with sand, gravel, and metal operations, tend to emit particles of larger sizes, such as PM_{10}. Brake and tire wear from vehicles, and road dust generally, are also sources of PM. Natural sources of PM include wind-blown dust and sea salt, and biogenic sources (natural sources) that contribute to particle formation.

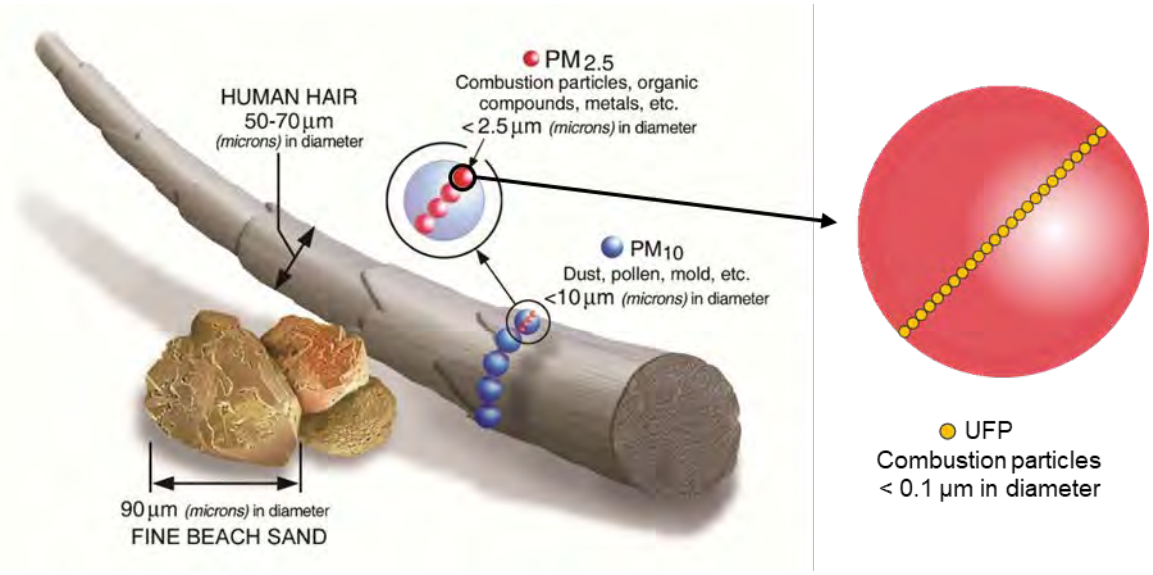


Figure 5-1: Illustration of size comparisons for types of particulate matter. Image reproduced and adapted from U.S. EPA.

Table 5-3: Types of PM and examples of sources and health impacts. Many pollution sources produce multiple types of PM. In addition to PM emitted directly from sources, PM can also form in the atmosphere due to reactions of other pollutants, referred to as secondary PM.

Pollutant	Description / Examples	Example Sources	Notable / Example Health Impacts
Inhalable particulate matter (PM_{10})	Smaller than 10 µm ($1/5^{th}$ the thickness of a human hair).	Dust, including from construction sites, unpaved surfaces, landfills, waste burning, and industrial and commercial sources Brake and tire wear Combustion of fuels (gasoline, oil, diesel) and wood (including wildfires)	Asthma development, asthma attacks, difficulty breathing, bronchitis, heart disease, heart attacks, strokes, neurological (brain) disease, lung cancer, low birth weight, lost days of work and/or school. Increased emergency room visits, medicine usage, hospital admissions, and premature deaths / years of life lost.

Pollutant	Description / Examples	Example Sources	Notable / Example Health Impacts
Fine inhalable particulate matter ($PM_{2.5}$)	Smaller than 2.5 µm (1/20th the thickness of a human hair). Smaller size makes it easier to inhale & be deposited in lungs.	Combustion of fuels (particularly diesel) and wood (including wildfires) Industrial and commercial sources Brake and tire wear $PM_{2.5}$ also forms in the air through complex reactions of other pollutants that are emitted as gases (known as secondary PM)	
Black carbon (BC)	Soot; a component of $PM_{2.5}$; correlated with diesel particulate matter (DPM)	Combustion of fuels (gasoline, oil, diesel) and wood (including wildfires)	
Ultrafine particles (UFPs)	Particles with diameter smaller than 0.1 µm.	Exhaust from gasoline, diesel fuel, etc., being burned in engines (including airplanes) Brake and tire wear, road dust Ultrafine particles also form in the air through complex reactions of other pollutants	

Black carbon (BC), commonly known as soot, is a component of particulate matter (PM). Black carbon is correlated with diesel particulate matter (DPM), which is of particular health concern because of its toxicity. Another category of PM is ultrafine particles (UFPs), which are particles with diameters of less than 0.1 micrometers. UFPs have many sources and are emitted primarily from fuel combustion, including diesel, gasoline, and jet engines. Concentrations of UFPs are highly variable over time and from location to location and are strongly influenced by proximity to sources that emit UFPs directly, secondary formation of UFPs resulting from chemical reactions in the atmosphere, and meteorological conditions. Higher concentrations of UFPs near high traffic roadways and airports have been well documented in several

measurement studies.[126, 127, 128] Because of their very small size, UFPs can travel farther into the body and cause adverse health effects, including respiratory and cardiovascular issues. The health effects of different components and sizes of particulate matter is an active and evolving area of scientific research.[129]

Toxic Air Contaminants

Toxic Air Contaminants (TACs), also referred to as air toxics, are pollutants that are known or suspected to cause cancer and other serious health effects such as neurological, reproductive, developmental, cardiovascular, or respiratory conditions. Chapter 4 contains more information related to health outcomes in East Oakland. There are over 200 substances or groups of substances in the list of TACs as defined by the California Air Resources Board (CARB). Some examples of TACs include diesel particulate matter (DPM); particulate metals such as arsenic, lead, manganese, and chromium; and volatile organic gases such as benzene and formaldehyde. Sources of different TACs vary by specific contaminant, and many TACs are co-emitted (released simultaneously) during combustion or evaporation of fuels. The California Office of Environmental Health Hazard Assessment (OEHHA) has developed Reference Exposure Levels (RELs) for non-cancer health impacts[130] for chronic (annual), 8-hour, and acute (1-hour) exposures for many TACs, which can be compared with measured or modeled TAC data.[131] Pollution levels below the REL are not expected to cause non-cancer health impacts. At higher levels, exposure to TACs can cause acute health effects such as headaches, nausea, respiratory irritation and asthma episodes, and irritation of the eyes, nose, throat, and skin.

[126] South Coast AQMD MATES V Final Report, Appendix VII: Ultrafine Particle Measurements at Fixed Sites: https://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/g-appendix.pdf?sfvrsn=7.
[127] South Coast AQMD Final Report: General Aviation Airport Air Monitoring Study: Follow-up Monitoring Campaign at the Santa Monica Airport: https://www.aqmd.gov/docs/default-source/air-quality/air-quality-monitoring-studies/general-aviation-study/supplemental-monitoring-campaign-at-the-santa-monica-airport.pdf.
[128] G.S.W. Hagler, R.W. Baldauf, E.D. Thoma, T.R. Long, R.F. Snow, J.S. Kinsey, L. Oudejans, B.K. Gullett,Ultrafine particles near a major roadway in Raleigh, North Carolina: Downwind attenuation and correlation with traffic-related pollutants, Atmospheric Environment, Volume 43, Issue 6, 2009, Pages 1229-1234, ISSN 1352-2310, https://doi.org/10.1016/j.atmosenv.2008.11.024.
[129] For more information on the health effects of ultrafine particles (UFP), see: https://www.nature.com/collections/bjjiefcddb; https://link.springer.com/article/10.1007/s00038-019-01202-7 or https://www.liebertpub.com/doi/abs/10.1089/089426802320282310.
[130] Examples of non-cancer chronic health effects include damage to the respiratory, nervous, immune, and reproductive systems and neurological and development disorders.
[131] OEHHA's Summary of Acute, 8-hour and Chronic Reference Exposure Levels (RELs): https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary.

Air Quality Monitoring

This section contains an overview of air monitoring data. It includes a discussion of trends and variability in air monitoring data for different Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs). It also provides comparisons with air quality standards and other health-based thresholds using data collected at Air District air monitoring sites. Furthermore, it offers insights from additional air monitoring projects in East Oakland.

Ambient air quality monitoring provides information on the outdoor air we breathe in our neighborhoods and communities. There are several methods for monitoring ambient air quality, each with different purposes, strengths, and limitations. However, no single monitoring system can inform every aspect of air quality and air monitoring is not feasible in all places at all times and for all pollutants. Air monitoring data reflect the combined impacts of pollution emissions, influences from meteorological conditions, and chemical reactions in the atmosphere.

The Air District operates a multi-pollutant network of long-term regulatory air monitoring sites across the Bay Area.[132] Data provided by the Air District's network can help characterize long-term air quality trends and is used for comparison with health-based standards, in particular, the National Ambient Air Quality Standards (NAAQS) set by the U.S. EPA.[133] This network includes three monitoring sites in Oakland: *Oakland – East*, *Oakland – Laney*, and *Oakland – West*, as shown in Figure 5-2, and Table 5-4 provides additional information about these monitoring sites and the pollutants they monitor for.

[132] The Air District's Ambient Air Monitoring Network webpage: https://www.baaqmd.gov/about-air-quality/air-quality-measurement/ambient-air-monitoring-network.
[133] Description of U.S. EPA's health-based NAAQS: https://www.epa.gov/air-trends/air-quality-design-values.

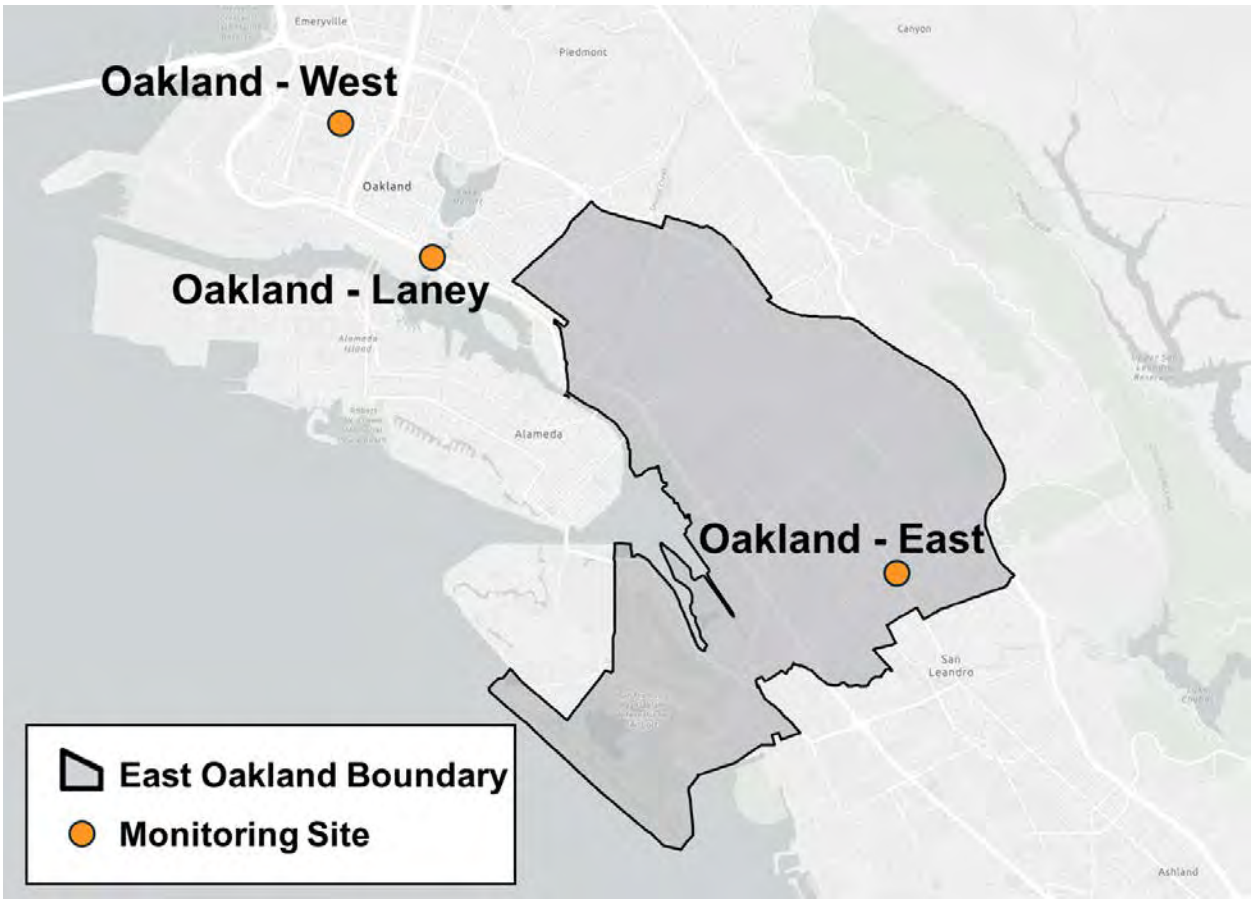


Figure 5-2: Map of air monitoring sites in Oakland.

Table 5-4: Air District monitoring sites in Oakland.

Monitoring Site	Pollutants Monitored	Location Notes
Oakland – East	Fine particulate matter ($PM_{2.5}$), ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), selected volatile organic compounds (VOCs) including some toxic air contaminants (TACs)	*Oakland – East* is located along International Blvd. between 98th St. and 99th St.
Oakland – Laney	$PM_{2.5}$, black carbon, ultrafine particles (UFPs), nitrogen dioxide (NO_2), carbon monoxide (CO), selected VOCs including some TACs	*Oakland – Laney* is a near-road monitoring site, located 20 meters from I-880 and is sited to be representative of pollution exposure in the near-road environment
Oakland – West	$PM_{2.5}$, speciated $PM_{2.5}$, black carbon, ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), selected VOCs including some TACs	*Oakland – West* is located one mile from the Port of Oakland, a major source for diesel particulate matter, and is near several freeways

Trends and Variability in Criteria Air Pollutants (CAPs)

One way to assess air quality in terms of health impacts is to compare measured concentrations of different pollutants to U.S. EPA's health-based (National Ambient Air Quality Standards) NAAQS. This comparison uses a statistic called a design value. For each Criteria Air Pollutant (CAP) measured at each monitoring site, a design value is calculated each year using data collected over the previous three years.[134] Tracking how design values change over time provides information on whether levels of a pollutant are improving, worsening, or holding steady relative to the NAAQS, and helps illustrate how design values vary between locations and for different pollutants.

Design values for annual average and 24-hour fine particulate matter ($PM_{2.5}$), 8-hour ozone (O_3), and 1-hour nitrogen dioxide (NO_2) for the three Oakland-area monitoring sites are shown in Table 5-5. All of the latest design values in Oakland (for the 2021-2023 period) are below their respective NAAQS levels.

[134] EPA Air Quality Design Values website: https://www.epa.gov/air-trends/air-quality-design-values.

Table 5-5: Design values (2021-2023) for $PM_{2.5}$, ozone (O_3), and nitrogen dioxide (NO_2) for Oakland-area air monitoring sites. Units are in micrograms per meter cubed (µg/m3), parts per million (ppm), or parts per billion (ppb), depending on pollutant.

National Ambient Air Quality Standards (NAAQS)	Level of the NAAQS	Oakland – East 2021-2023 Design Value	Oakland – Laney 2021-2023 Design Value	Oakland – West 2021-2023 Design Value
Annual $PM_{2.5}$ (2024 standard)	9.0 µg/m^3	7.6 µg/m^3	8.9 µg/m^3	7.5 µg/m^3
24-hour $PM_{2.5}$ (2006 standard)	35 µg/m^3	19 µg/m^3	23 µg/m^3	21 µg/m^3
8-hour Ozone (O_3) (2015 standard)	0.070 ppm	0.046 ppm	----	0.041 ppm
1-hour Nitrogen Dioxide (NO_2) (2010 standard)	100 ppb	37 ppb	40 ppb	39 ppb

The design value for annual fine particulate matter ($PM_{2.5}$)evaluates long-term, or chronic, exposure to $PM_{2.5}$ over the course of a year, and the design value for 24-hr $PM_{2.5}$ evaluates exposure to shorter-duration $PM_{2.5}$ episodes (e.g., wildfires or when stagnant weather conditions allow pollution levels to build up). In February 2024, U.S. EPA strengthened the National Ambient Air Quality Standards (NAAQS) for annual average $PM_{2.5}$ from 12.0 µg/m^3 to 9.0 µg/m^3.[135] Design values for annual $PM_{2.5}$ at the *Oakland – East* monitoring site were between 7.6 µg/m^3 and 10.0 µg/m^3 over the past ten years, as shown in Figure 5-3. Data from the *Oakland – Laney* monitoring site may better describe exposure experienced by East Oakland residents who are nearest to I-880 since it is generally representative of pollution levels near freeways, and design values for annual $PM_{2.5}$ at *Oakland – Laney* have usually been higher (ranging between 8.4 µg/m^3 and 11.6 µg/m^3). While the design value for annual $PM_{2.5}$ at the *Oakland - East* monitoring site has been below the NAAQS, additional reductions in $PM_{2.5}$ can have health benefits, especially in overburdened communities that can be more vulnerable to air pollution.

The 24-hour fine particulate matter ($PM_{2.5}$) design value, as opposed to the annual $PM_{2.5}$ design value, is much more strongly affected by shorter-term air quality events, such as smoke from wildfires. In recent years, wildfire smoke contributed to numerous occurrences of high 24-hour $PM_{2.5}$ concentrations across the Bay Area, leading to design values above the National Ambient Air Quality Standards (NAAQS) (see Figure 5-4). Outside of recent years with severe wildfire events, the 24-hour $PM_{2.5}$ design values were below the current 24-hr $PM_{2.5}$ NAAQS.

[135] EPA Final Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (PM): https://www.epa.gov/pm-pollution/final-reconsideration-national-ambient-air-quality-standards-particulate-matter-pm.

Design values for 8-hour ozone (O_3) (see Figure 5-5) and 1-hour nitrogen dioxide (NO_2) (see Figure 5-6) have been well below the National Ambient Air Quality Standards (NAAQS) at the *Oakland – East* monitoring site for the last decade. This means that ozone (O_3) and nitrogen dioxide (NO_2) concentrations are in compliance with federal health-based air quality standards. Ozone (O_3) forms in the atmosphere from reactions of other pollutants, especially under sunny, hot weather conditions. In the Bay Area, ozone (O_3) levels are generally higher farther inland from the coast and Bayshore. Nitrogen dioxide (NO_2) and other nitrogen oxides (NO_x) react with other pollutants to form both particulate matter (PM) and ozone (O_3).

As noted previously, in addition to the National Ambient Air Quality Standards (NAAQS) established by U.S. EPA, California established the California Ambient Air Quality Standards (CAAQS) for several pollutants. However, some of the CAAQS, including for fine particulate matter ($PM_{2.5}$), are now less stringent than the NAAQS, and recent monitoring data for different pollutants measured at the *Oakland - East* monitoring site are all below their respective CAAQS. The World Health Organization (WHO) has also developed air quality guidelines for several pollutants.[136] Those guidelines use different methodologies for comparison with air monitoring data and therefore are not directly comparable to the data presented in this section, which were summarized for comparison with the NAAQS.

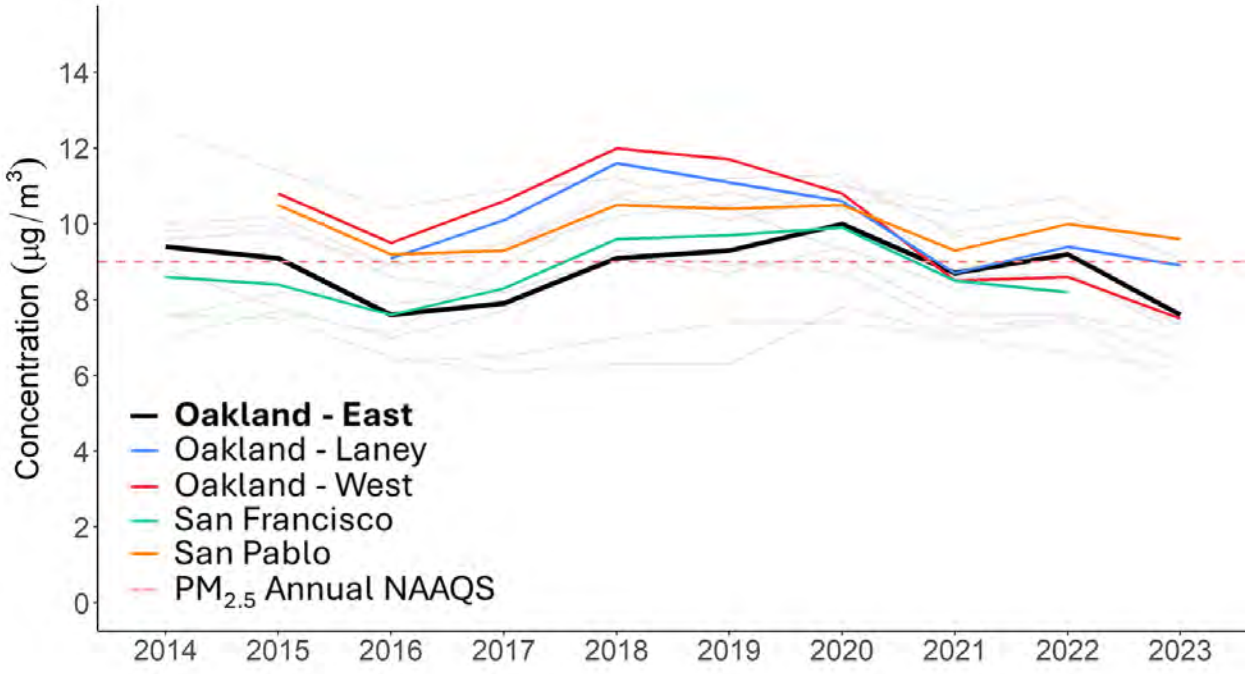


Figure 5-3: Design values for annual $PM_{2.5}$ at Air District monitoring sites. The y-axis shows $PM_{2.5}$ concentrations and the x-axis shows years from 2014 to 2023. Each line on the plot represents design values at a different monitoring site. Grey lines denote design values for other Air District monitoring sites in the Bay Area that are not otherwise labeled. In 2024, the $PM_{2.5}$ annual NAAQS was lowered from 12.0 µg/m^3 to 9.0 µg/m^3 and is shown in the figure for reference.

[136] World Health Organization air quality guidelines: https://www.who.int/news-room/feature-stories/detail/what-are-the-who-air-quality-guidelines.

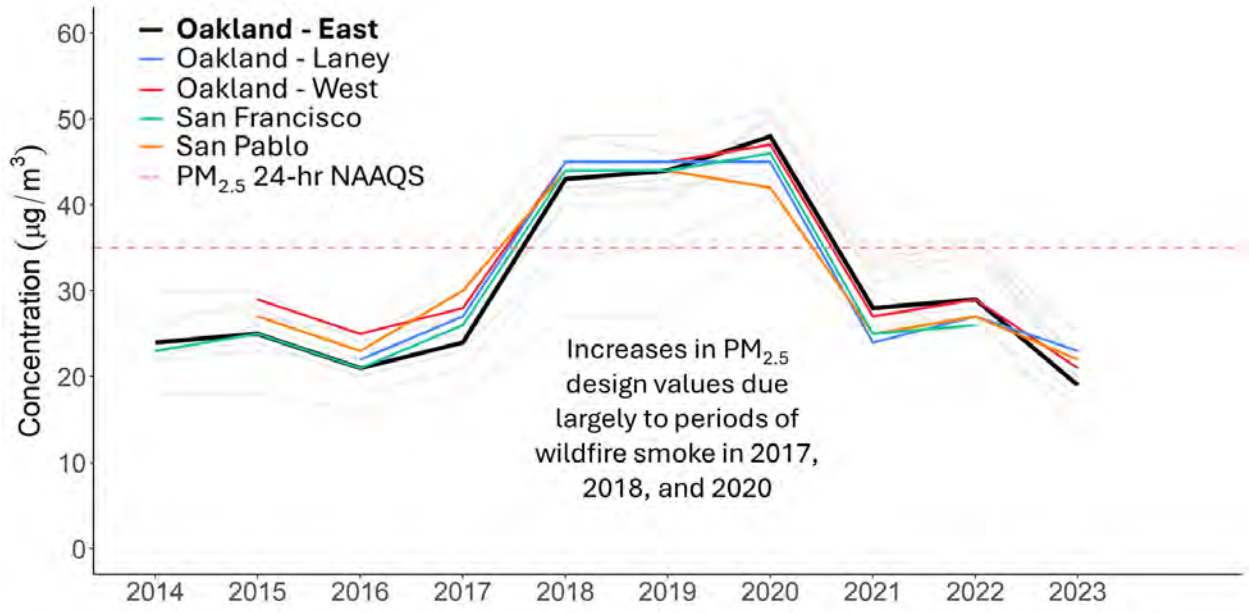


Figure 5-4: Design values for 24-hr $PM_{2.5}$ at Air District monitoring sites. The y-axis shows $PM_{2.5}$ concentrations and the x-axis shows years from 2014 to 2023. Each design value represents three years of data. Grey lines denote design values for other Air District monitoring sites in the Bay Area that are not otherwise labeled. Smoke from wildfires was the main driver for increases in 24-hr $PM_{2.5}$ design values from 2017 to 2020.

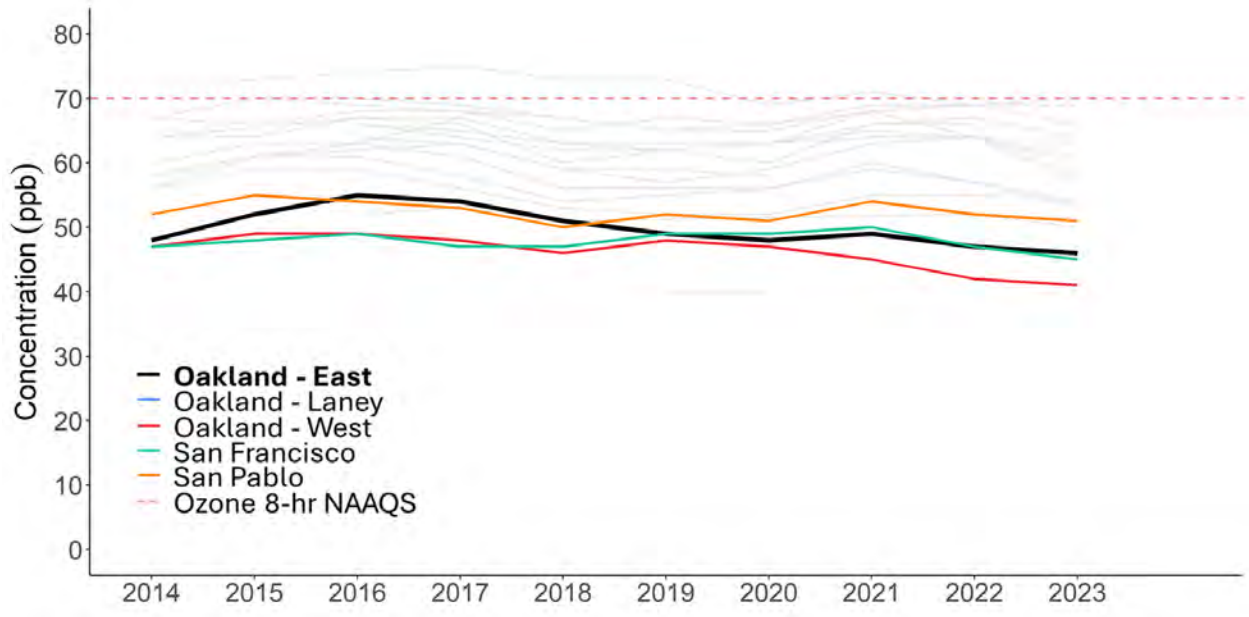


Figure 5-5: Design values for 8-hr ozone (O_3) at Air District monitoring sites. The y-axis shows ozone concentrations and the x-axis shows years from 2014 to 2023. Grey lines denote design values for other Air District monitoring sites in the Bay Area that are not otherwise labeled. Design values for 8-hr ozone (O_3) at the Oakland – East monitoring site have remained well below the NAAQS for the past ten years.

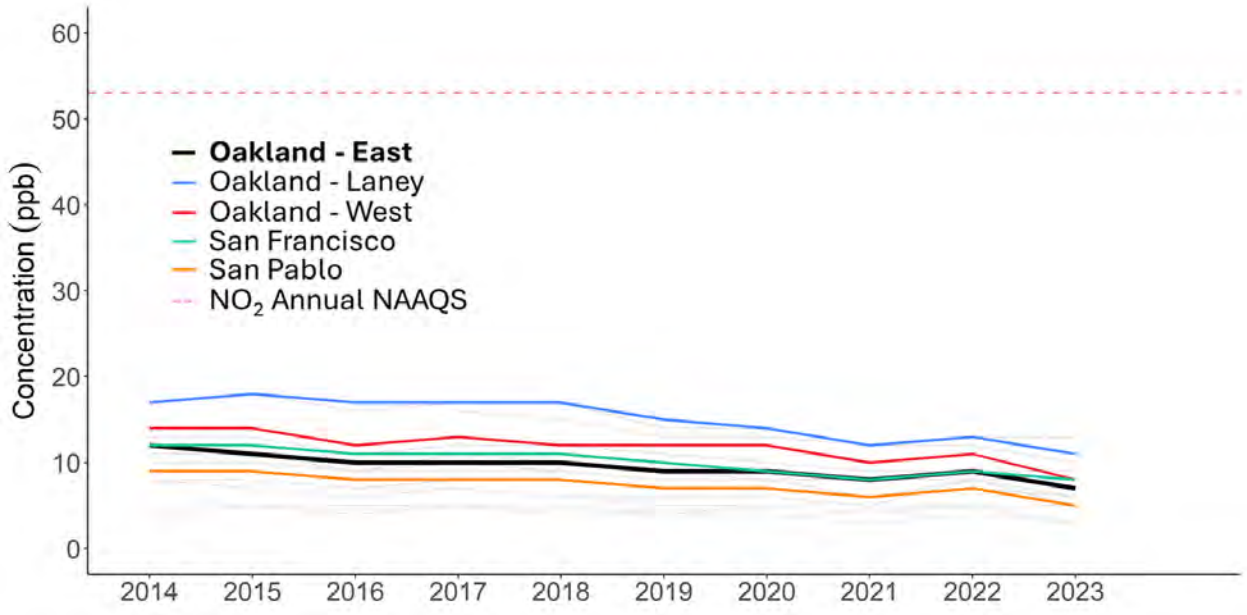


Figure 5-6: Design values for 1-hr nitrogen dioxide (NO_2) at Air District monitoring sites. The y-axis shows NO_2 concentrations and the x-axis shows years from 2014 to 2023. Grey lines denote design values for other Air District monitoring sites in the Bay Area that are not otherwise labeled. Design values for 1-hr NO_2 at the Oakland – East monitoring site have remained well below the NAAQS for the past ten years.

Trends and Variability in Air Toxics Data

Volatile organic compounds (VOCs) are compounds that can easily evaporate into the air and contribute to air pollution. The Air District measures selected VOCs, many of which are Toxic Air Contaminants (TACs), at several air monitoring sites, including *Oakland – East*. These VOCs are measured by collecting air into a canister over 24 hours, and the collected samples are then analyzed at the Air District's laboratory. VOC samples are collected at these monitoring sites every twelfth day. VOCs can come from many kinds of facilities, operations, processes, and consumer products. Some general sources of VOCs in outdoor air are listed below, noting that not all of these types of sources are found in East Oakland:

- Combustion of fuels (like gasoline, diesel, wood, coal, and cooking oils)
- Evaporation (vapors) from certain products, such as gasoline, paints, solvents, and cleaners
- Oil and gas refining, processing, transport, and storage
- Landfills, scrapyards, and water treatment facilities
- Smoke from wildfires, structure fires, and prescribed fires

Table 5-6 lists the maximums, minimums, and averages of the volatile organic compounds (VOC) samples as measured at the *Oakland – East* monitoring site from 2016-2020 in comparison to measurements across all Air District monitoring sites. Concentrations of several measured VOCs were higher at the Oakland – East monitoring site compared to the network average, including benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). The BTEX compounds have many sources in urban environments, including vehicle exhaust and commercial and industrial facilities. The *Oakland – East* monitoring site recorded the highest

individual 24-hour concentration of m/p-xylene (xylenes) across the Air District's network for the 2016-2020 period. In addition, the Oakland – East monitoring site recorded the highest 5-year average concentration and highest individual 24-hour concentration of methyl chloroform compared to any other Air District monitoring site, possibly indicating greater emissions of methyl chloroform in the local area near the *Oakland – East* monitoring site. Methyl chloroform is typically used as a solvent and degreasing agent for industrial purposes and is an ingredient in several common household products.

Table 5-6: Maximum, minimum, and 5-year average VOC concentrations measured at the Oakland - East air monitoring site in comparison to all Air District monitoring sites (Network) from 2016-2020. 5-year averages for a VOC that were higher than the network-wide average are in blue. Maximum individual samples that were the highest across the network in the five years are in red. Underlined concentrations denote values that are below the method detection limit (MDL).

Volatile Organic Compound (VOC)	Oak - East 5-yr avg.	Oak - East Max	Oak - East Min	Network 5-yr avg.	Network Max	Network Min
Acetone	4.09	15.15	0.31	4.96	71.52	0.03
Acetonitrile	0.02	0.36	0.00	0.04	18.86	0.00
Acrylonitrile	0.01	0.01	0.01	0.01	0.32	0.01
1,3-Butadiene	0.01	0.18	0.00	0.01	0.54	0.00
Benzene	0.23	1.54	0.00	0.19	3.12	0.00
Carbon tetrachloride	0.11	0.13	0.10	0.10	0.16	0.07
Chloroform	0.02	0.07	0.00	0.02	0.38	0.00
Dichloromethane	0.09	0.45	0.01	0.09	5.75	0.01
Ethyl alcohol	4.04	20.08	0.79	4.09	119.64	0.02
Ethylbenzene	0.14	1.04	0.00	0.09	1.20	0.00
Ethylene dibromide	0.00	0.00	0.00	0.00	0.00	0.00
Ethylene dichloride	0.00	0.00	0.00	0.00	0.02	0.00
Freon-113	0.07	0.22	0.05	0.07	0.24	0.04
Methyl chloroform	0.13	1.27	0.00	0.01	1.27	0.00
Methyl ethyl ketone	0.21	0.66	0.01	0.25	5.74	0.01
Tetrachloroethylene	0.00	0.03	0.00	0.00	0.34	0.00

Volatile Organic Compound (VOC)	Oak - East 5-yr avg.	Oak - East Max	Oak - East Min	Network 5-yr avg.	Network Max	Network Min
Toluene	0.63	3.52	0.12	0.42	3.93	0.01
Trichloroethylene	0.01	0.35	0.00	0.01	0.38	0.00
Trichlorofluoromethane	0.25	0.59	0.17	0.24	0.67	0.16
Vinyl chloride	0.01	0.01	0.00	0.01	0.04	0.00
m/p-Xylene	0.34	3.15	0.04	0.21	3.15	0.01
o-Xylene	0.14	1.37	0.01	0.08	1.45	0.00

Benzene is a TAC of particular concern as it is a carcinogen with known health impacts even at relatively low concentrations. Most of the measured benzene concentrations have been below 0.5 ppb across the Air District's monitoring network, which is below the Office of Environmental Health Hazard Assessment (OEHHA)'s chronic reference exposure level for benzene of 1 ppb (see Figure 5-7). Many of the measurements above 1 ppb occurred during periods of wildfire smoke. Some monitoring sites, including *Oakland – East*, have recorded instances of relatively higher benzene concentrations (over 0.5 ppb) outside of periods of wildfire smoke.

Several monitoring sites, including *Oakland – East*, recorded more occurrences of relatively higher concentrations of toluene and xylenes compared to other sites in the network (see Figure 5-8 and Figure 5-9). As noted previously, the highest 24-hour concentration of m/p-xylene (xylenes) measured throughout the network from 2016-2020 was at the *Oakland – East* monitoring site, and that measurement was not during a wildfire smoke period. This may indicate greater emissions of m/p-xylene and other benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds from local sources near the *Oakland – East* monitoring site. While some of toluene and xylene concentrations measured at the *Oakland – East* monitoring site were somewhat higher than in other typical urban areas, they were well below the Office of Environmental Health Hazard Assessment (OEHHA) chronic and acute reference exposure levels (RELs) for toluene of 110 ppb and 1300 ppb, respectively, and for xylene of 200 ppb and 5000 ppb, respectively, and the measured levels do not indicate a risk for acute health effects.

The *Oakland – East* monitoring site also recorded the highest 5-year average concentration and highest individual 24-hour concentration of methyl chloroform compared to any other monitoring site in the network (see Figure 5-10), indicating possible local sources of this compound near the monitoring site. Methyl chloroform concentrations were generally higher from 2011 to 2020 and have decreased since 2020 to levels similar to those observed at other Air District monitoring sites. The measured concentrations, while higher than compared to other locations, have been well below the Office of Environmental Health Hazard Assessment (OEHHA) chronic and acute reference exposure levels (RELs) for methyl chloroform of 200 ppb and 12500 ppb, respectively. Methyl chloroform was commonly used as a solvent and degreasing agent and as an ingredient in certain consumer products.

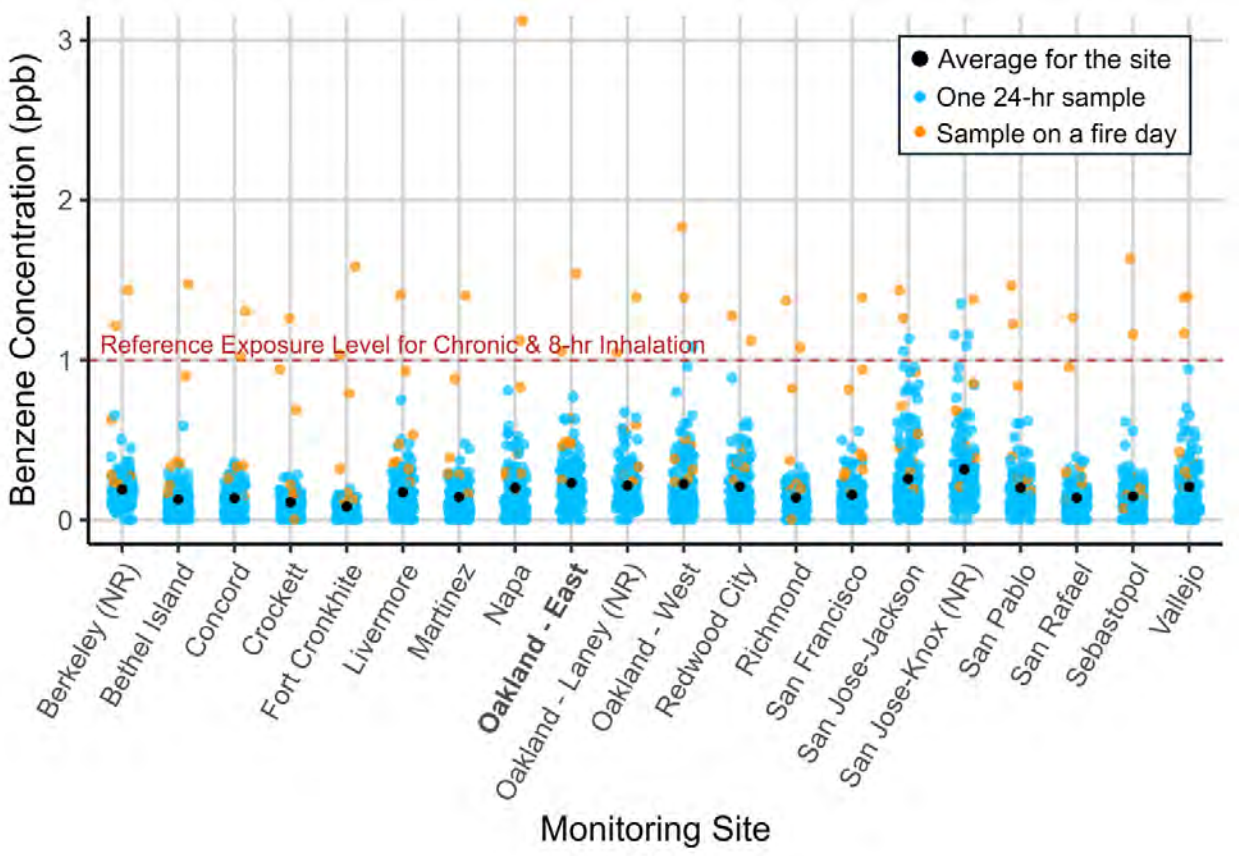


Figure 5-7: 24-hour benzene concentrations at Air District monitoring sites, 2016-2020. The y-axis shows benzene concentrations from roughly 0 to 3 parts per billion and the x-axis shows different Air District monitoring sites. Each blue or orange dot represents an individual 24-hour measurement, where orange dots indicate measurements during wildfire smoke periods. The larger black dots indicate the 5-year average concentration at each monitoring site. Most benzene concentrations were below 1 ppb, which is the Reference Exposure Level for chronic and 8-hr inhalation. Many of the relatively higher benzene concentrations occurred during periods of wildfire smoke.

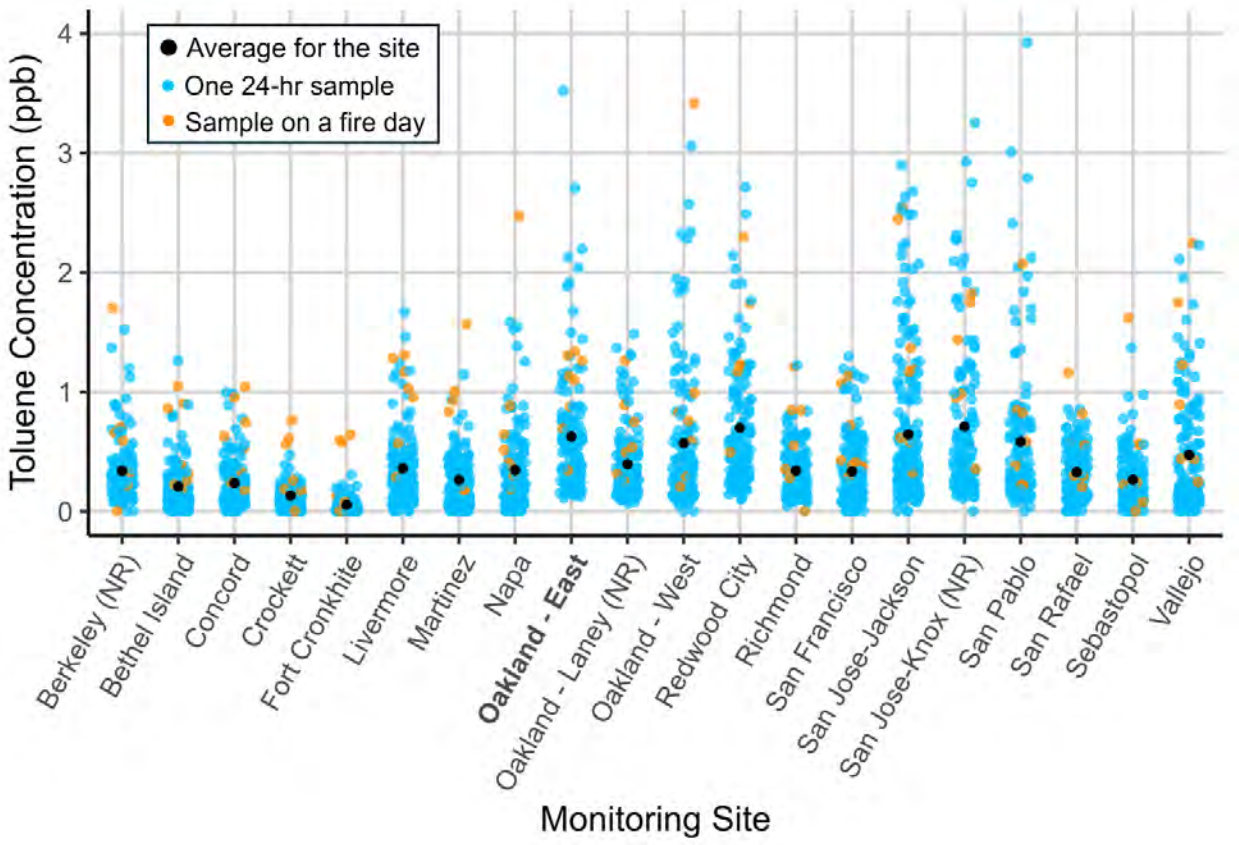


Figure 5-8: 24-hour toluene concentrations at Air District monitoring sites, 2016-2020. The y-axis shows toluene concentrations from roughly 0 to 4 parts per billion and the x-axis shows different Air District monitoring sites. Each blue or orange dot represents an individual 24-hour measurement, where orange dots indicate measurements during wildfire smoke periods. The larger black dots indicate the 5-year average concentration at each monitoring site. Measured toluene concentrations have been well below chronic and acute Reference Exposure Levels (RELs) for toluene of 110 ppb and 1300 ppb, respectively.

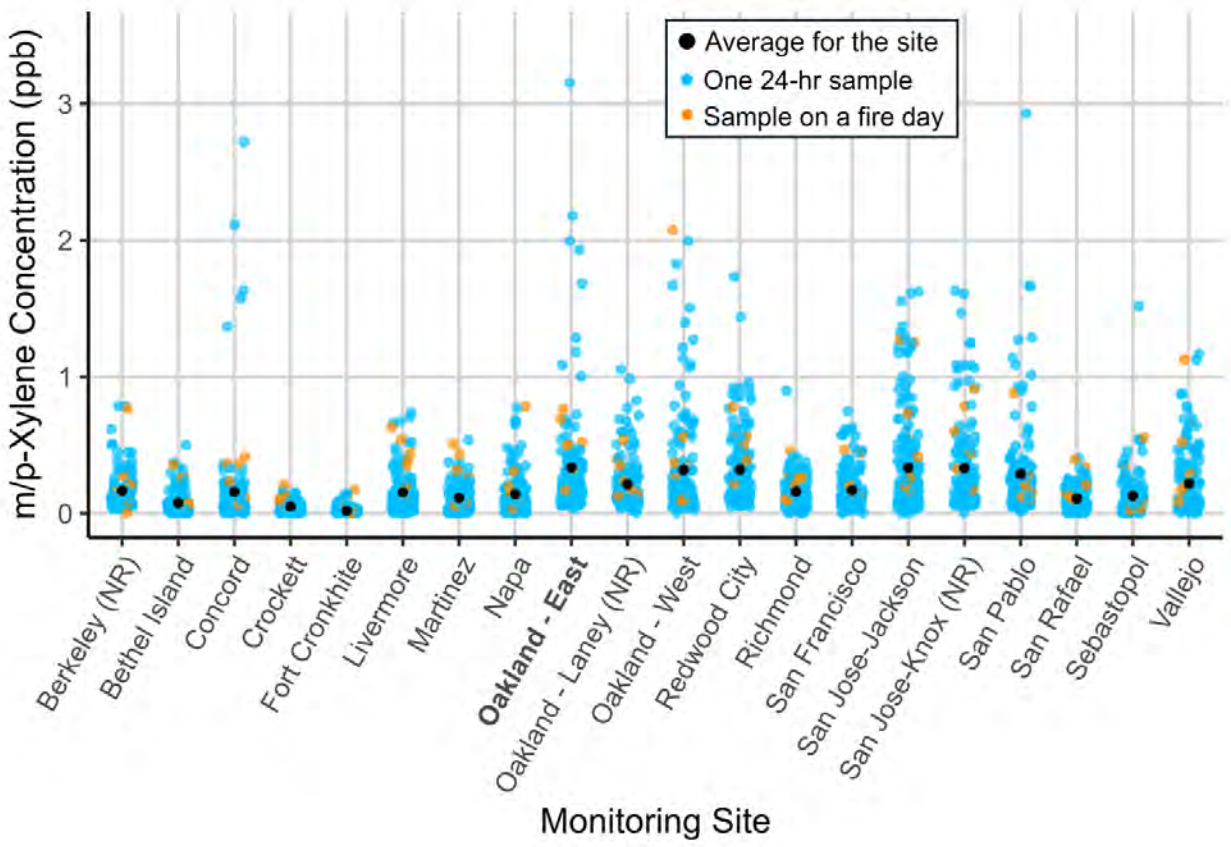


Figure 5-9: 24-hour m/p-xylene (xylenes) concentrations at Air District monitoring sites, 2016-2020. The y-axis shows m/p-xylene concentrations from roughly 0 to 4 parts per billion and the x-axis shows different Air District monitoring sites. Each blue or orange dot represents an individual 24-hour measurement, where orange dots indicate measurements during wildfire smoke periods. The larger black dots indicate the 5-year average concentration at each monitoring site. Measured m/p-xylene concentrations have been well below chronic and acute Reference Exposure Levels (RELs) for m/p-xylene of 200 ppb and 5000 ppb, respectively.

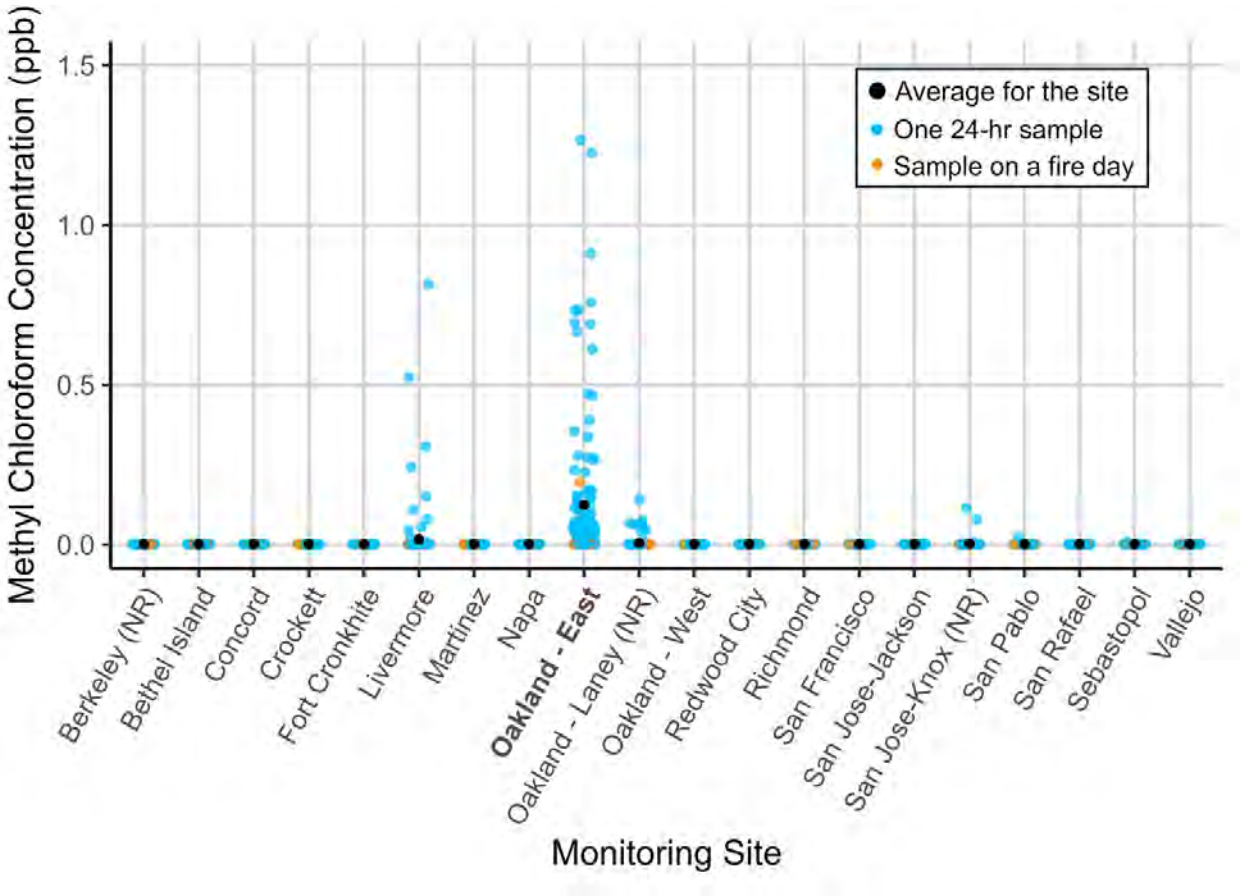


Figure 5-10: 24-hour methyl chloroform concentrations at Air District monitoring sites, 2016-2020. The y-axis shows methyl chloroform concentrations from roughly 0 to 1.5 parts per billion and the x-axis shows different Air District monitoring sites. Each blue or orange dot represents an individual 24-hour measurement, where orange dots indicate measurements during wildfire smoke periods. The larger black dot indicates the 5-year average concentration. The measurements of methyl chloroform at the Oakland - East monitoring site, while higher than compared to other locations, have been well below the chronic and acute Reference Exposure Levels (RELs) for methyl chloroform of 200 ppb and 12,500 ppb, respectively.

Annual average concentrations of several monitored volatile organic compounds (VOCs) have decreased (improved) since routine monitoring began at Air District long-term air monitoring sites, but those decreases in concentrations have leveled off in recent years. Figure 5-11, Figure 5-12, Figure 5-13, and Figure 5-14 show annual average concentrations of benzene, toluene, m/p-xylene, and methyl chloroform, respectively, at the *Oakland – East*, *Oakland – Laney*, *Oakland – West*, *San Francisco*, and *San Jose – Jackson* monitoring sites. *San Francisco* and *San Jose - Jackson* are shown for reference since those monitoring sites have longer data records. Prior to the mid-1990s, annual average benzene concentrations were above 1.0 ppb, which is the reference exposure level (REL) for chronic and 8-hour inhalation of benzene. Annual average concentrations of benzene and toluene have decreased (improved) considerably since the early 1990s, though those improvements have leveled off in more recent years. An overall decline in annual average concentrations of m/p-xylene (xylenes) is also evident, noting that a shorter period of record is available for m/p-xylene since samples were not analyzed for that compound prior to 2003. For methyl chloroform, annual average

concentrations decreased sharply in the 1990s. Methyl chloroform is an ozone depleting substance that was phased out per the 1992 Copenhagen Amendment to the Montreal Protocol.[137] A period of relatively higher levels of methyl chloroform was measured at the *Oakland – East* monitoring site from roughly 2011 to 2020, indicating possible local sources of this compound near the monitoring site as noted previously. It is unclear what the specific source of methyl chloroform was in this instance, and concentrations since 2020 have decreased to levels similar to those measured at other monitoring sites and are now generally below detection limits.

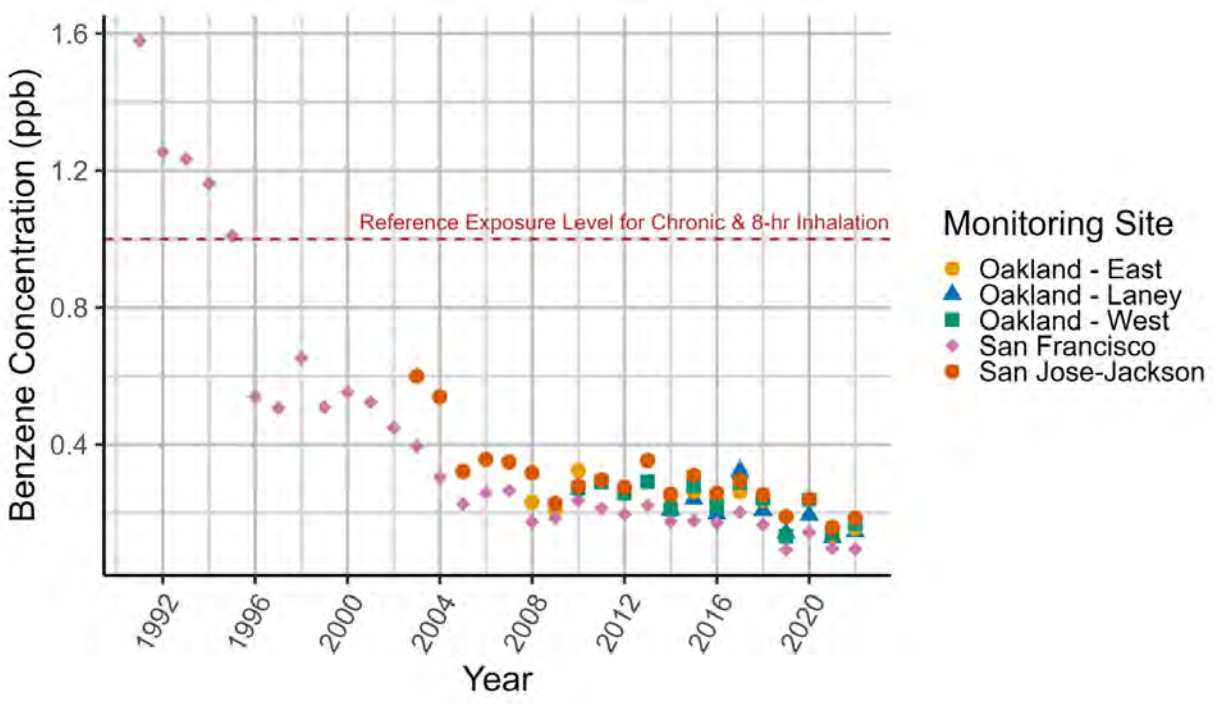


Figure 5-11: Annual average benzene concentrations at selected Air District monitoring sites. Note that the monitoring sites have different periods of record; the first year with complete data for the Oakland – East monitoring site was 2008. The y-axis shows annual average benzene concentrations and the x-axis shows years. Annual average benzene concentrations have decreased (improved) considerably since the early 1990s, though those decreases have leveled off in more recent years. Annual average benzene concentrations are now typically below 0.25 ppb, which is below the Reference Exposure Level (REL) for chronic exposure to benzene of 1 ppb.

[137] United Nations webpage on the Copenhagen Amendment to the Montreal Protocol: https://ozone.unep.org/treaties/montreal-protocol/amendments/copenhagen-amendment-1992-amendment-montreal-protocol-agreed.

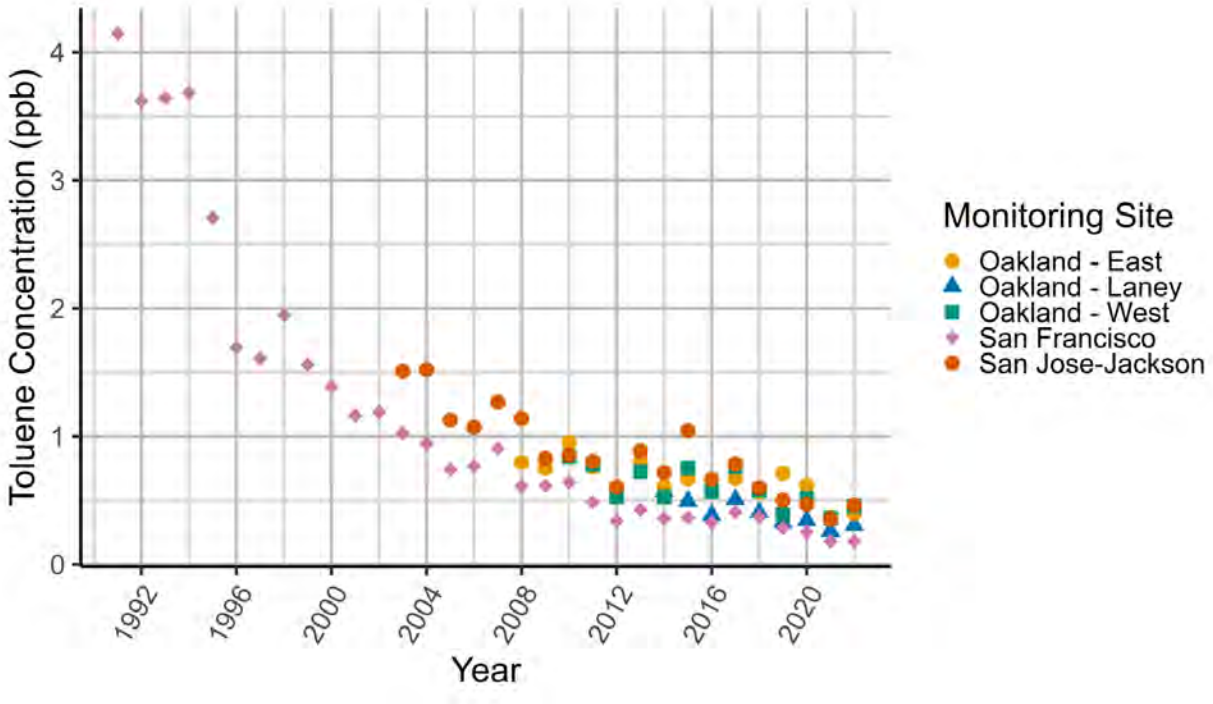


Figure 5-12: Annual average toluene concentrations at selected Air District monitoring sites. Note that the monitoring sites have different periods of record; the first year with complete data for the Oakland – East monitoring site was 2008. The y-axis shows annual average toluene concentrations and the x-axis shows years. Annual average toluene concentrations have decreased (improved) considerably since the early 1990s. Annual average toluene concentrations are now typically below 0.5 ppb, which is well below the Reference Exposure Level (REL) for chronic exposure to toluene of 110 ppb.

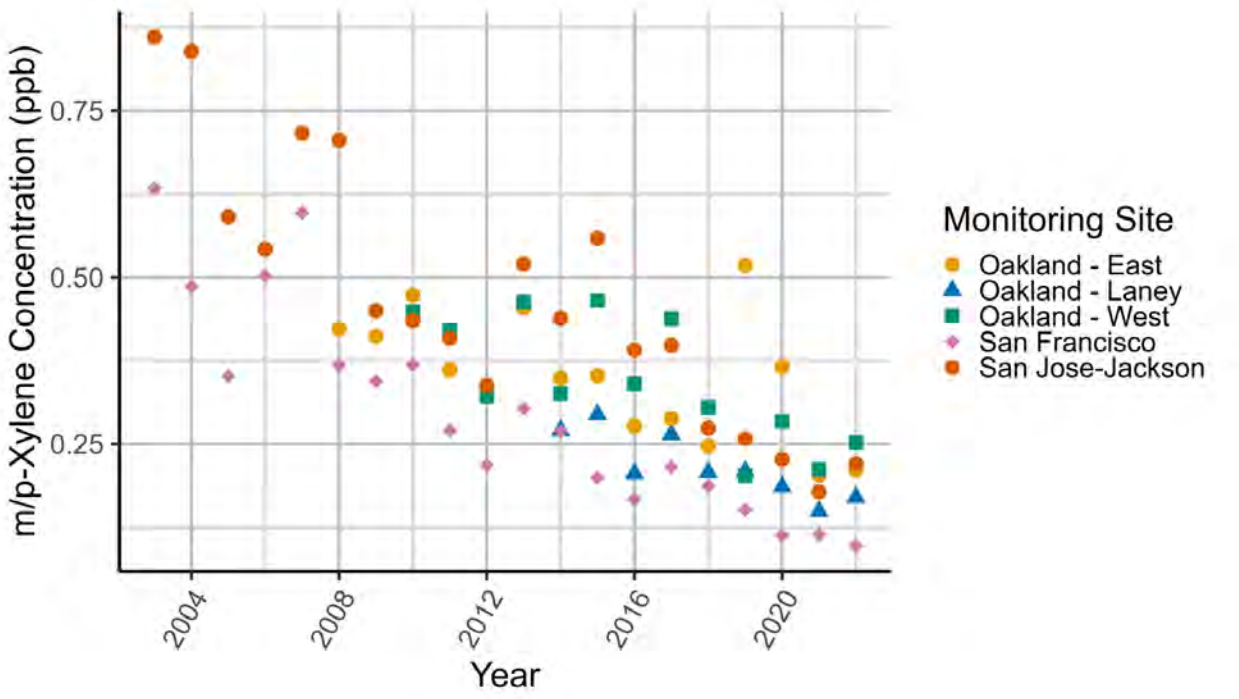


Figure 5-13: Annual average m/p-xylene concentrations at selected Air District monitoring sites. Note that the monitoring sites have different periods of record; the first year with complete data for the Oakland – East monitoring site was 2008. Samples were not analyzed for m/p-xylene prior to 2003. The y-axis shows annual average m/p-xylene concentrations and the x-axis shows years. Annual average m/p-xylene concentrations have generally decreased since the mid-2000s. Annual average m/p-xylene concentrations are now typically below 0.5 ppb, which is well below the Reference Exposure Level (REL) for chronic exposure to m/p-xylene of 200 ppb.

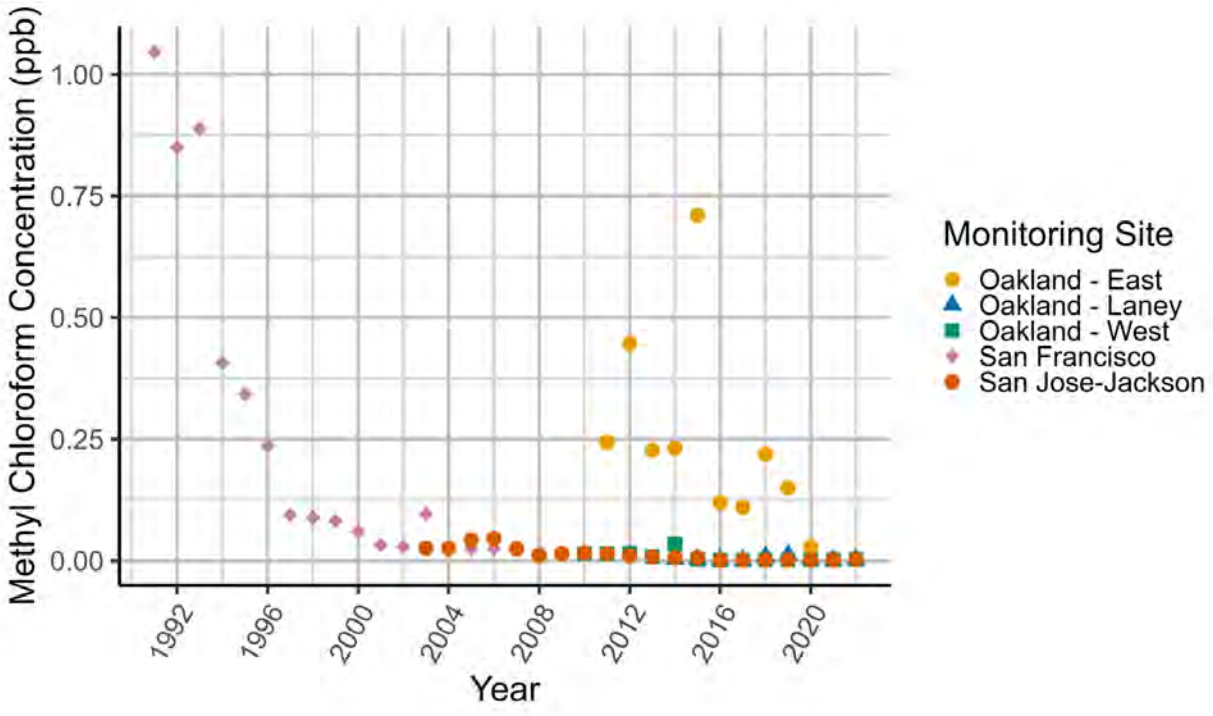


Figure 5-14: Annual average methyl chloroform concentrations at selected Air District monitoring sites. Note that the monitoring sites have different periods of record; the first year with complete data for the Oakland – East monitoring site was 2008. The y-axis shows annual average methyl chloroform concentrations and the x-axis shows years. A period of relatively higher levels of methyl chloroform was measured at the Oakland – East monitoring site from roughly 2011 to 2020, indicating possible local sources of methyl chloroform near the monitoring site. Concentrations since 2020 have decreased to levels similar to those measured at other monitoring sites and are now generally below detection limits and well below the Reference Exposure Level (REL) for chronic exposure to methyl chloroform of 200 ppb.

In addition, the Air District is currently partnering with Communities for a Better Environment (CBE) and the University of California, Berkeley to implement a multi-year community air monitoring project in East Oakland. [138] This study will use the Air District's air monitoring van to perform exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM) around sources or receptors of interest to the community, including follow up studies. This project is currently in progress, and data collected from this effort will be made available and used to support implementation of Plan strategies.

Insights From Other Projects

East Oakland Particulate Matter 2.5 Community-Based Air Monitoring Research Project

In 2008, Communities for a Better Environment (CBE) conducted a community-based air monitoring project in East Oakland to better understand the air quality impacts of diesel truck

[138] Bay Area Air Quality Management District: Community Air Monitoring in East Oakland. https://www.baaqmd.gov/en/about-air-quality/air-quality-measurement/special-air-monitoring-projects/east-oakland-community-monitoring-project.

emissions and industrial activities in the community.[139] The purpose of the study was to measure fine particulate matter ($PM_{2.5}$) to better understand the impacts of diesel truck emissions and industrial activities in the community. Handheld air monitors (TSI DustTrak 8520 Aerosol Particulate Monitors) were used to measure concentrations of $PM_{2.5}$. Local air monitoring showed that there were high levels of $PM_{2.5}$ near industrial areas and corridors with high diesel truck traffic. The study also suggested that on average residents in East Oakland were exposed to higher levels of $PM_{2.5}$ compared to residents in Alameda County.

East Oakland Air Monitoring Project

As mentioned above, the Air District is currently partnering with Communities for a Better Environment (CBE) and the University of California, Berkeley to implement a multi-year community air monitoring project in East Oakland. This study will use the Air District's air monitoring van to perform exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM) around sources or receptors of interest to the community, including several commercial and industrial facilities and the Oakland San Francisco Bay Airport. Measurements from the air monitoring van will initially provide snapshots in time of pollutant concentrations and may indicate what sources are contributing to elevated pollutant concentrations. It is anticipated that these exploratory measurements will also raise new questions that will inform the follow up studies that will involve the deployment of portable monitors to provide temporal information at locations identified through the initial measurements.

In addition, the project will also involve the deployment of a network of outdoor and indoor commercial particulate matter (PM) sensors and air filtration units to community members and schools. A PurpleAir sensor will be placed outdoors at each of the 35 monitoring sites. Five of these monitoring locations will be at Oakland Unified School District (OUSD) schools and 30 locations will be at residential homes. For the residential hosts, community members will be able to opt in to receive a second PurpleAir sensor that will be placed indoors and an indoor air filtration device. Training will also be provided to community members to build ownership in monitoring and responding to severe air quality events. While this project is currently in progress, it is expected that any data collected will be made available and used to support Plan implementation.

Emissions Inventory Development

For the East Oakland community, a baseline emissions inventory was developed for the year 2021 that included the two main categories of air pollutants – Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs) – as well as toxicity-weighted emissions (TWE) information. As discussed in the section below on TACs, toxicity weighting provides a useful means of accounting for the relative toxicity of the different TACs in an inventory, which is important because individual TACs have different toxicity levels and health effects. By converting mass-based emissions into toxicity-weighted emissions (TWE), it is easier to determine which TACs and sources may be of most concern.[140] The inventory covers stationary sources and mobile sources operating in and around the East Oakland community boundary[141] (see Figure 5-15).

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[139] East Oakland Particulate Matter 2.5 Community-based Air Monitoring Research Report. September 2010. https://www.cbecal.org/wp-content/uploads/2013/01/East-Oakland-PM-Monitoring-Report-FINAL-2010.pdf.

[140] Note that TWE do not quantify health risks, which requires additional information on pollutant concentrations and human exposures.

[141] The emissions inventory includes sources within the community boundary and a buffer zone around the community that captures nearby sources that may impact air quality for community residents. A map showing the

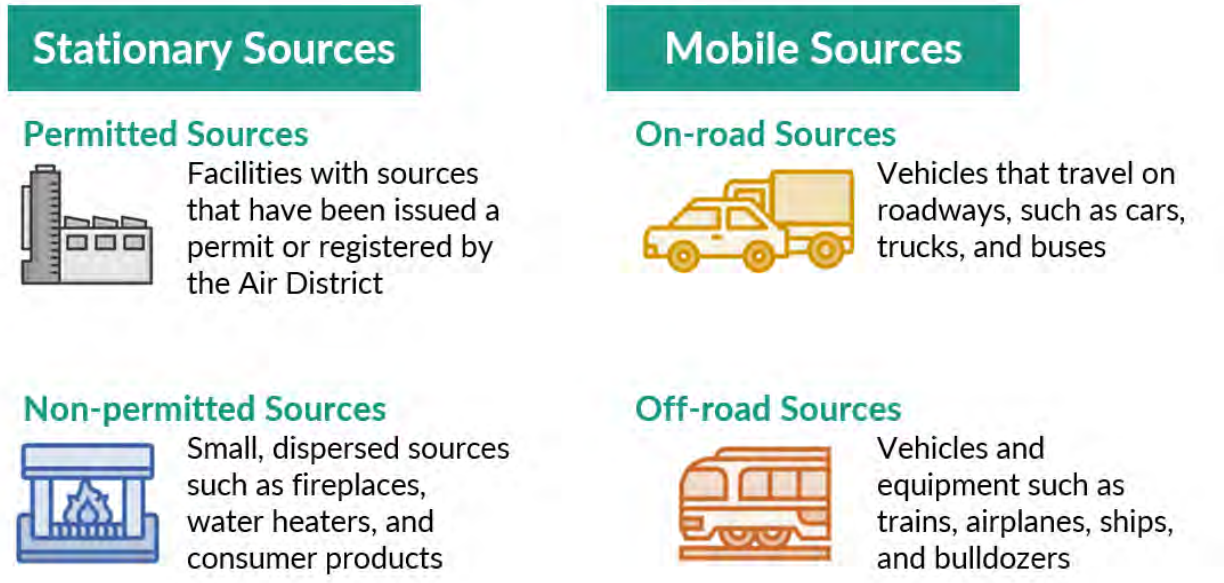


Figure 5-15: Source sectors included in the East Oakland emissions inventory.

Note that for permitted stationary sources, the East Oakland inventory includes detailed information for individual processes or devices that operate under the facility permit and emit air pollutants.[142] Non-permitted stationary sources, on the other hand, are treated as a group in the inventory and are not associated with a particular facility or location. Examples include fugitive dust sources and residential sources like fireplaces and consumer products.

Appendix D: Supplemental Technical Information provides additional details on the methods and data sources used to compile the emissions inventory for local sources in and around East Oakland. Appendix D also includes emissions forecasts for the years 2031 and 2036, which represent 5- and 10-year milestones from 2026, the year of Plan adoption. These forecasted emissions reflect the impact of anticipated growth and existing control programs and will be used for tracking purposes as the Plan is implemented. The sections that follow summarize the 2021 baseline inventory for criteria air pollutants (CAPs) and toxic air contaminants (TACs).

Criteria Air Pollutants (CAPs)

The East Oakland inventory includes emissions estimates for particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), nitrogen oxides (NO_x), sulfur oxides (SO_x), carbon monoxide (CO), total organic gases (TOG), and reactive organic gases (ROG). Note that some of these pollutant designations refer to classes of compounds. For example, ROG consists of organic compounds assumed to be reactive at urban scales, including toxic species such as benzene. These pollutants are either criteria air pollutants (CAPs) or species that serve as precursors to the formation of CAPs in the atmosphere.

Table 5-7 summarizes criteria air pollutants (CAP) emissions by source sector, and these data

community and emissions inventory boundaries is provided in Chapter 4.

[142] Note that "permitted stationary sources" also includes emissions from permit-exempt facilities for which the Air District has facility-level emissions data.

shows that source contributions vary by pollutant. For example, stationary sources account for the majority of particulate matter (PM_{10} and $PM_{2.5}$) and organic gas (TOG and ROG) emissions, while mobile sources dominate the inventory for nitrogen oxides (NO_X), sulfur oxides (SO_X), and carbon monoxide (CO). For nitrogen oxides (NO_x) and sulfur oxides (SO_x), aircraft operating at Oakland San Francisco Bay Airport are the largest source of emissions in East Oakland, as further discussed in a sub-section on the airport that follows.

Table 5-7: East Oakland 2021 CAP emissions by source sector in tons per year (tpy).

Source Type	Source Sector	$PM_{2.5}$	PM_{10}	NO_x	SO_x	CO	TOG	ROG
Stationary	Permitted	76.3	114.2	60.8	0.7	53.1	783.0	196.4
	Non-permitted	122.7	310.2	227.2	4.6	461.0	2,335.0	1,650.8
Mobile	On-Road	54.1	269.5	794.5	9.4	4,167.2	594.5	517.6
	Off-road	28.3	29.5	1,147.6	67.6	6,527.3	636.9	591.6
TOTAL		281.5	723.4	2,230.2	82.3	11,208.6	4,349.4	2,956.4

Among the criteria air pollutants (CAPs), fine particulate matter ($PM_{2.5}$) is of special concern from a human health perspective. As noted earlier in this chapter, fine particles can travel deep into the lungs and bloodstream, where they can cause or contribute to premature deaths, long-term effects like heart disease and respiratory conditions like emphysema, and short-term effects like bronchitis and asthma attacks. Figure 5-16 provides a more detailed breakdown of $PM_{2.5}$ emissions in East Oakland for each of the four source sectors listed in Table 5-7. This figure shows that non-permitted stationary sources account for 44% of local $PM_{2.5}$ emissions in East Oakland. Key sources in this sector include residential fuel combustion, [143] construction dust, and commercial cooking. Permitted stationary sources account for 27% of local $PM_{2.5}$ emissions, with key facilities including the Davis Street Transfer Station, Miller Milling Company and Peet's Coffee and Tea.

On-road mobile sources account for 19% of local fine particulate matter ($PM_{2.5}$) emissions, with paved road dust being the largest contributor. This finding reflects recent trends showing that sharp reductions in tailpipe emissions have increased the relative importance of non-exhaust processes like road dust with respect to on-road $PM_{2.5}$ inventories. Lastly, off-road mobile sources account for 10% of local $PM_{2.5}$ emissions, with airport-related sources being the largest contributors.

[143] About 70% of $PM_{2.5}$ emissions from residential fuel combustion are associated with wood burning for space heating. This category also includes combustion of natural gas for space heating, water heating and cooking.

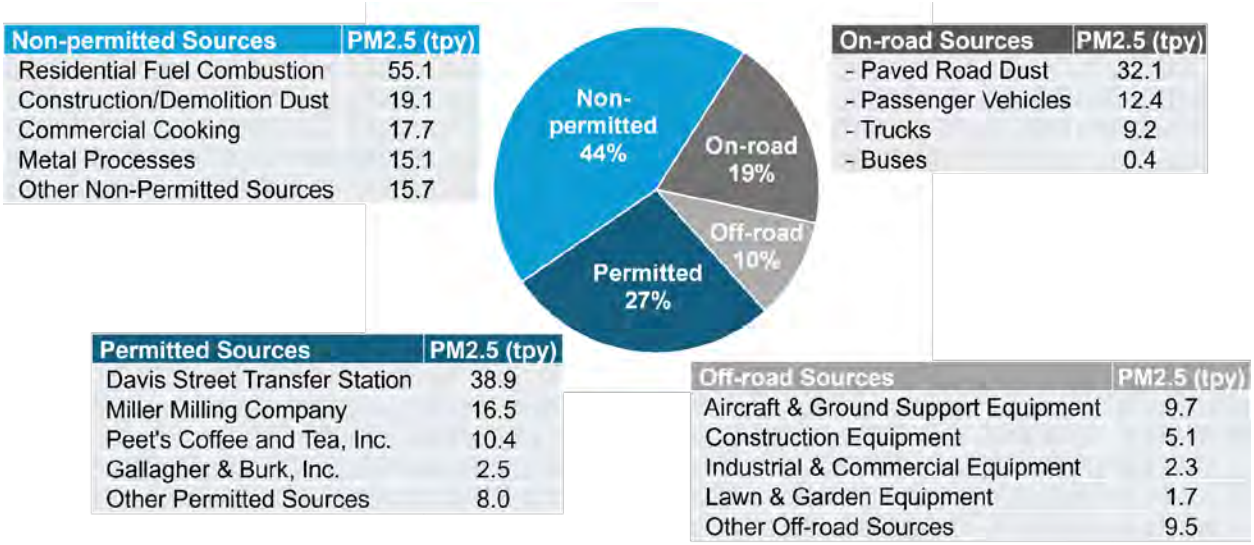


Figure 5-16: East Oakland PM2.5 emissions with source sector breakdowns.

Toxic Air Contaminants (TACs)

The 2021 inventory for East Oakland includes emissions estimates for 143 Toxic Air Contaminants (TACs). Because these compounds have different toxicity levels and health effects, Toxicity-Weighted Emissions (TWEs) were also calculated in two ways. For TACs listed as carcinogens, the mass emissions for each TAC emitted by a given source were multiplied by cancer potency factors from the Office of Environmental Health Hazard Assessment (OEHHA) and then summed. For TACs listed as causing other kinds of chronic health impacts (e.g., asthma, hypertension), emissions from a given source were divided by chronic reference exposure levels (RELs), and then summed.[144] The resulting TWE provide a useful means of comparing the relative toxicity of TACs in the inventory; however, TWE do not quantify health risks, which also require the consideration of how many people are exposed, for how long, and at what levels (concentrations).

Table 5-8 provides a broad summary of toxic air contaminants (TAC) and toxicity-weighted emissions (TWE) for local sources in East Oakland. The importance of toxicity weighting can be seen in the contributions of the various source sectors to total TAC emissions (unweighted) and cancer and chronic TWE. Mobile sources account for less than half of total TAC emissions by mass but account for 88% of cancer TWE and 74% of chronic TWE. This finding can be explained by the fact that mobile sources emit many of the compounds with high relative toxicities. For example, Figure 5-17 shows the contributions of individual TACs to cancer and chronic TWE in East Oakland. Mobile sources account for over 80% of emissions for several of these key TACs, including diesel particulate matter (DPM) (97%), 1,3-butadiene (85%), benzene (91%), and acrolein (98%).

[144] Note that one or more of the OEHHA health values were available for 81 of the 143 TACs in the East Oakland inventory. Emissions for the remaining compounds could not be included in the TWE calculations.

Table 5-8: East Oakland 2021 TAC emissions by source sector.

Source Type	Source Sector	Total TAC mass (lbs)	Cancer TWE	Chronic TWE
Stationary	Permitted	38,107	1,569	28
	Non-permitted	1,216,726	11,543	374
Mobile	On-Road	458,238	70,971	738
	Off-road	568,864	26,872	420
TOTAL		2,281,935	110,955	1,560

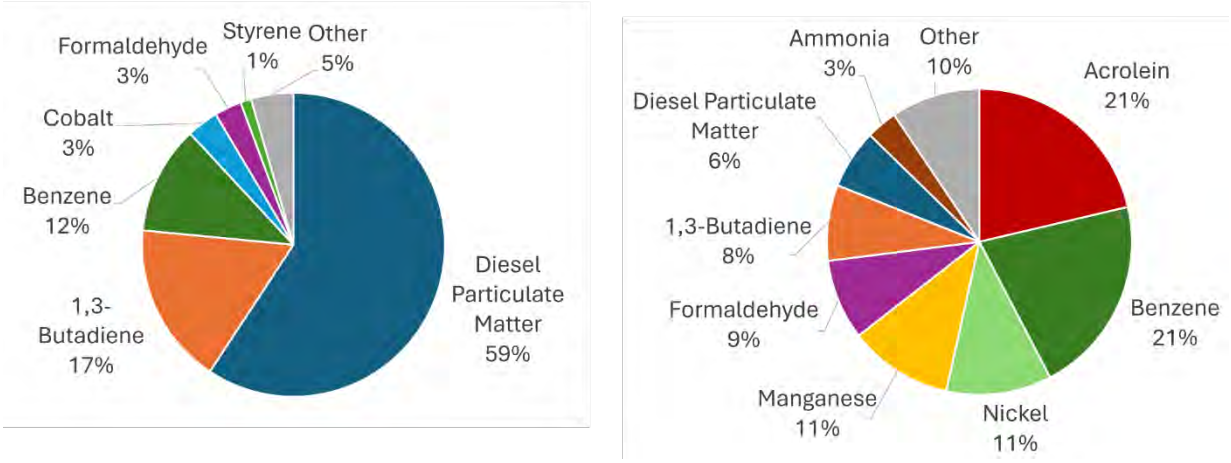


Figure 5-17: Contributions of individual toxic air contaminants (TACs) to total cancer (left) and chronic (right) toxicity-weighted emissions (TWE) in East Oakland.

It should be noted that, while permitted sources play a small role in the overall toxic air contaminants (TAC) inventory, individual facilities or groups of facilities may still be important emitters, especially if they are located near sensitive populations such as schools or senior centers. Importantly, some toxic compounds, such as mercury, dioxins and furans, and hydrogen sulfide, are primarily or entirely emitted by permitted sources. In addition, emissions from permitted facilities are generally released from a concentrated set of stacks or release points, while emissions from other sectors may be distributed widely (e.g., over a vast road network). These considerations are further explored in the material on community concerns that follows.

Dispersion Modeling Overview

Though the emissions inventory provides useful information on total annual emissions from a given source, other factors influence the impact of those emissions on pollutant concentrations and human exposures. For example, a source's proximity to residences and its emissions release characteristics (e.g., an elevated stack vs. a low-level release) influences the source's

contributions to exposures. Therefore, once the emissions inventory was completed, the Air District performed dispersion modeling for key local sources to provide a more complete picture of the impacts of those sources in East Oakland. Sources addressed in the community-scale modeling include permitted facilities, on-road mobile sources, aircraft and ground support equipment at Oakland San Francisco Bay Airport, rail activity, ferries, and commercial cooking. Modeling was conducted with the American Meteorological Society (AMS) and U.S. EPA Regulatory Model (AERMOD) , which combines emissions inputs, meteorological data, and other information to produce fine-grained pollutant concentration estimates near emissions sources.

For East Oakland, AERMOD was used to estimate fine particulate matter ($PM_{2.5}$) concentrations, diesel particulate matter (DPM) concentrations, cancer risk, [145] and chronic hazard index (HI) [146] at receptors spaced 50 meters apart, providing hyper-local, source-specific information. It should be noted that the modeling analyses focused on long-term average exposures and did not assess exposure to shorter variations in pollutant concentrations, which are better characterized by monitoring and other modeling approaches.

It should be noted that dispersion modeling of local sources does not provide an assessment of total exposure to air pollution, as it does not account for the impact of pollutant transport from outside East Oakland or the secondary formation of pollution in the atmosphere. Rather, the local source modeling gives information on the increment above “urban background” that is generated by sources within the community. Regional modeling conducted to support the West Oakland Community Action Plan (WOCAP) indicated that the local increment accounted for about 20% of total fine particulate matter ($PM_{2.5}$) exposure and about 40% of total cancer risk due to air pollution. [147] Preliminary results from more recent regional modeling show similar results for East Oakland, where the average residential cancer risk value of 300 per million is 36% higher than the Bay Area average of 220 per million.

An example of dispersion modeling results is provided in Figure 5-18, which shows a map of total cancer risk resulting from all modeled sources in East Oakland. These values represent cancer incidences per million people that would be expected to result from modeled carcinogen emissions. In Figure 5-18, the highest risk values can be seen along the I-880 freeway and the I-238 freeway that connects the I-880 and I-580. Unlike the I-580, these freeways are open to heavy-duty truck traffic. [148]

[145] Modeled cancer risk values represent an estimate of the chance that a person might develop cancer as a result of exposure to emitted carcinogens at a given residential location, assuming 30 years of exposure and accounting for increased susceptibility to carcinogens during infancy and childhood. Cancer risk values are expressed as the number of people who may develop cancer over their lifetime per million people exposed to modeled exposure levels.
[146] In contrast to cancer risk, the chronic hazard index (HI) does not represent a probability. It is a score created by comparing modeled levels of multiple toxic air contaminants to officially established reference levels (RELs), above which there is reason to expect harmful effects.
[147] Owning Our Air: The West Oakland Community Action Plan. Available at: https://www.baaqmd.gov/community-health/community-health-protection-program/west-oakland-community-action-plan.
[148] Historically, heavy-duty trucks have been banned from an 8.7 mile segment of I-580 running from Grand Avenue in Oakland to Foothill Boulevard in San Leandro. With nearly all heavy truck traffic using the I-880 corridor, concerns have been raised that the I-580 Truck Ban contributes to disproportionate air pollution exposure in already overburdened communities.

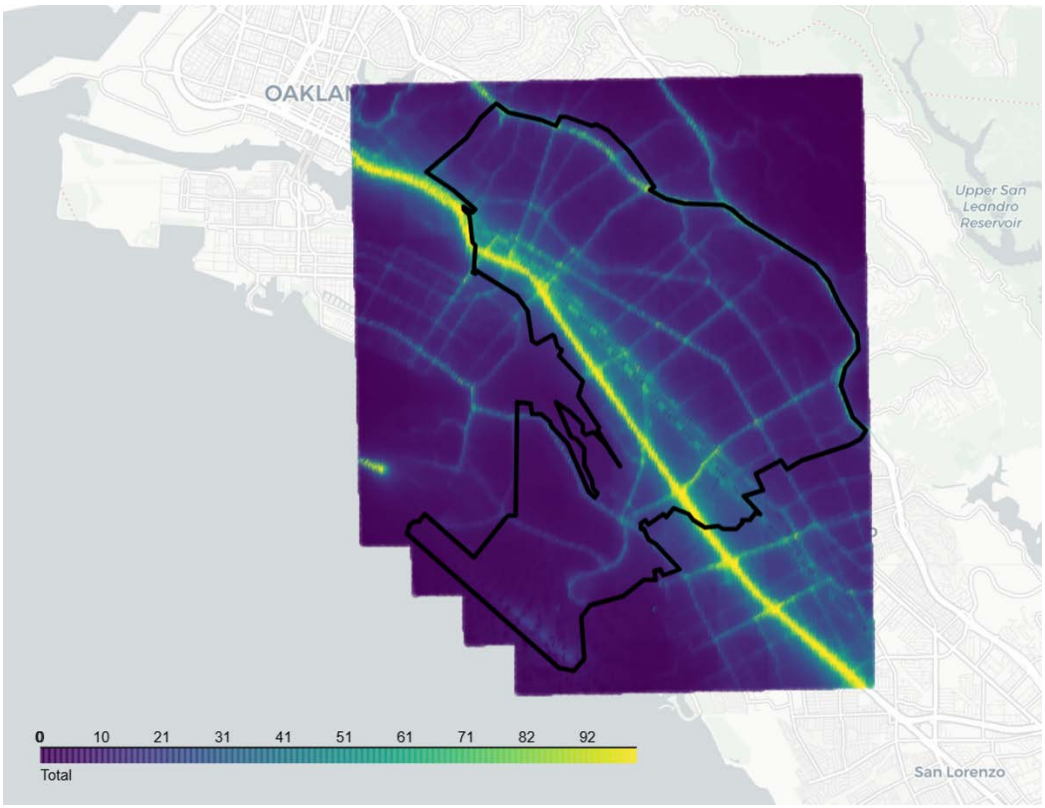


Figure 5-18: Map of total cancer risk (per million) from all modeled sources in East Oakland (permitted facilities, commercial cooking, on-road mobile sources, rail activity, ferries, and airport-related sources).

Modeling results are discussed further in the sub-sections that follow, which connect technical findings from the monitoring, emissions inventory, and modeling analyses to specific concerns identified by the CSC. In addition, Appendix D: Supplemental Technical Information provides further details on the methods and data sources used to conduct the dispersion modeling for key local sources in and around East Oakland.

Connecting to Community Concerns

As described above, the CSC collected community input through a variety of public engagement efforts and used that information to develop a list of six community concerns. The sections that follow provide information from the emissions inventory and modeling analyses on impacts of sources associated with each of these areas of concern.

Commercial & Industrial Sources

This area of concern relates to: (1) particulate matter (PM) exposure from fugitive dust sources, material handling operations, and construction; and (2) industrial and manufacturing facilities that emit air toxics and handle hazardous materials. Plan strategies are aimed at reducing these impacts and holding polluting industries and businesses accountable.

Particulate Matter (PM) Exposure from Fugitive Dust Sources

As shown in Table 5-7 above, stationary (permitted + non-permitted) sources emit 199 tons of fine particulate matter ($PM_{2.5}$) per year in East Oakland, which accounts for 71% of local $PM_{2.5}$ emissions in the community (see Figure 5-16). Among permitted sources, the 11 facilities shown in Figure 5-19 account for 98% of local $PM_{2.5}$ emissions from the permitted source sector. Many of these facilities house material handling operations that produce fugitive dust emissions. In fact, at seven of these facilities, processes that produce fugitive dust account for most or all of the $PM_{2.5}$ emissions. Table 5-9 provides additional details on fugitive dust emissions from these facilities and from non-permitted stationary sources. Table 5-9 also shows that, in total, fugitive dust sources in East Oakland emit 82 tons of $PM_{2.5}$ per year, or about 40% of all $PM_{2.5}$ emissions from local stationary sources. These findings highlight the importance of controlling fugitive dust emissions in the community as a way of reducing total $PM_{2.5}$ emissions.

It should also be noted that emissions estimates for fugitive dust sources are highly uncertain, in part due to the variable nature of those emissions. Factors like wind speed, soil moisture, and land disturbance play a large role, and fugitive dust sources may also be transitory in location (e.g., short-term construction projects or temporarily vacant lots). Identifying and tracking fugitive dust sources is difficult and may lead to underestimations in emissions from these sources.

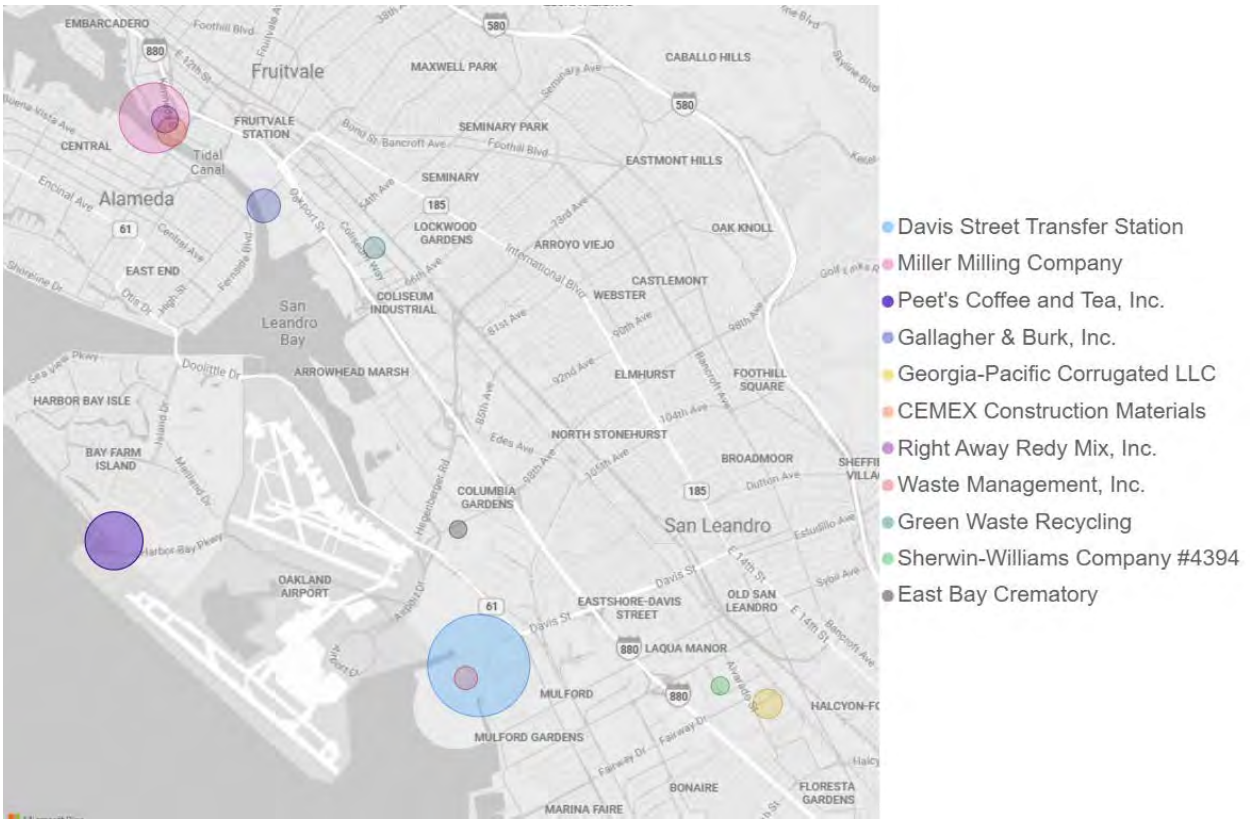


Figure 5-19: Top permitted sources of $PM_{2.5}$ emissions in East Oakland. Bubble sizes are proportional to annual $PM_{2.5}$ emissions in tons.

Table 5-9: Summary of 2021 PM2.5 emissions (tons) from stationary sources of fugitive dust in East Oakland.

Source Type	Source Name	Device or Process	$PM_{2.5}$
Permitted	Davis Street Transfer Station	Stockpiling	16.57
		Green Waste Transfer Building	9.49
		Main Indoor Waste Sorting and Transfer Station	9.25
		Material Processing: Screening Operations	1.40
		Other Fugitive Dust	2.16
		Sub-total	38.87
	Miller Milling Company	Grain Elevator	4.24
		Wheat Cleaning Houses	3.75
		Flour Flood Loadout Systems	5.83
		Flour Storage & Blend Plant	1.11
		Other Fugitive Dust	1.57
		Sub-total	16.50
	Gallagher & Burk, Inc.	Drum Mixer	1.84
		Aggregate Storage Bins	0.20
		Screen Deck 6 X 16 Virgin Aggregate	0.19
		Other Fugitive Dust	0.29
		Sub-total	2.52
	Georgia-Pacific	Hogger/Shredder	1.55
		Other Fugitive Dust	0.01
		Sub-total	1.57
	CEMEX Construction Materials	Mixer Truck Loading	1.47
		Other Fugitive Dust	0.12
		Sub-total	1.59
	Right Away Redy Mix Inc.	Aggregate Conveyor	0.71

Source Type	Source Name	Device or Process	$PM_{2.5}$
		Ground Storage for Aggregate	0.55
		Other Fugitive Dust	0.00
		Sub-total	1.26
	Green Waste Recycling	Green Waste Stockpiles	0.53
		Green Waste Chip and Grind	0.05
		Sub-total	0.58
Non-permitted	Construction/Demolition Dust	--	19.08
	Fugitive Windblown Dust	--	0.05
Total – All Fugitive Dust Sources			82.02

Air Toxics and Hazardous Materials

As previously noted, though permitted sources play a small role in the overall Toxic Air Contaminant (TAC) inventory, individual facilities or groups of facilities may still be important emitters due to the specific compounds they emit and/or their proximity to sensitive populations. To identify permitted sources that likely have the greatest impact on human health in East Oakland, facility-level emissions were ranked for cancer and chronic Toxicity-Weighted Emissions (TWE). This analysis led to the identification of a “Top 10” list based on facility-level contributions to total emissions from all permitted sources. Figure 20 shows emissions contributions for these 10 facilities, which account for 70% of permitted source cancer TWE and 85% of permitted source chronic TWE in East Oakland.

Focusing on toxic air contaminants (TACs) leading to chronic health effects, Figure 5-20 shows that cremation services at Evergreen Cemetery and SE Combined Services of California (East Bay Crematory) account for almost half (49%) of chronic toxicity-weighted emissions (TWE) emitted by permitted sources in East Oakland. Cremation activities at these facilities emit toxics such as mercury, arsenic, and hydrochloric acid.

For carcinogens, Cultured Marble Products, Amazon Services, and Waste Management are leading sources, combining to account for just over half of cancer toxicity-weighted emissions (TWE) from permitted sources in East Oakland. At Cultured Marble Products, styrene emissions from curing ovens and a gelcoat spray booth are the key drivers of cancer TWE; however, it should be noted that this facility is located about one mile south of the East Oakland community boundary. Diesel particulate matter (DPM) emissions from backup generators are responsible for cancer TWE at Amazon Services, while vinyl chloride and hydrogen sulfide emissions from the landfill gas collection system and flare are of concern at Waste Management.

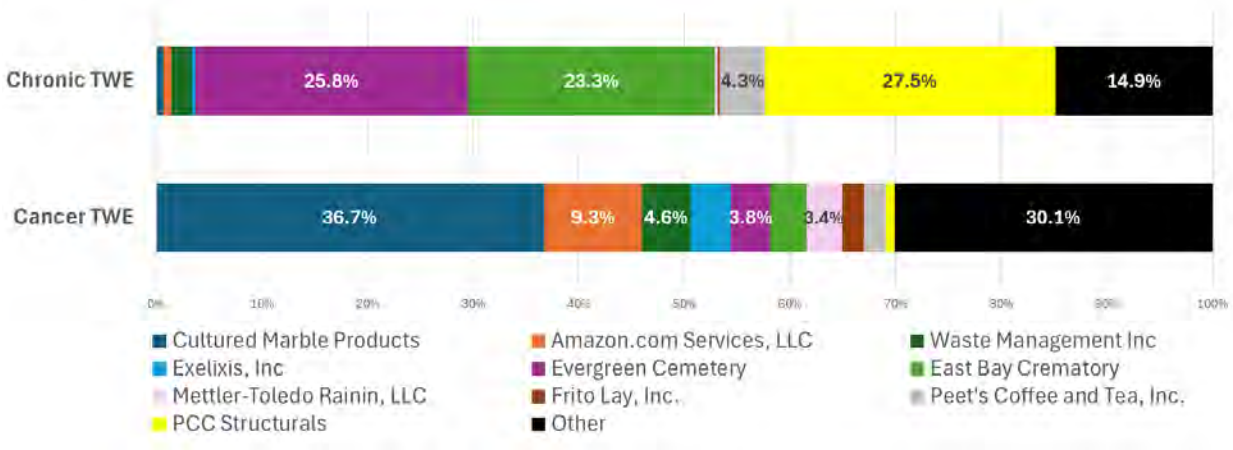


Figure 5-20: Top permitted sources of cancer and chronic TWE in East Oakland.

Dispersion modeling of cancer risk from permitted sources helps to define the potential spatial impact of these sources. Figure 5-21 shows a contour map with cancer risk values that represent cancer incidences per million people that would be expected to result from total permitted source carcinogen emissions.[149] The outer (purple) contour shows areas with a modeled cancer risk value of at least 1 in a million, and while impacts of this magnitude generally occur within a 1 km radius around individual facilities, large areas with cancer risk of at least 1 in a million are seen in locations where multiple toxic air contaminant (TAC) sources are clustered together. For example, a red oval is drawn around an area spanning more than 5 km (north-south) that has modeled cancer risk values at that level. This area is impacted by emissions from East Bay Crematory, PCC Structurals, and Waste Management, three of the Top 10 TAC sources identified in Figure 5-20.

[149] Note that Figure 5-21 shows the same type of information as Figure 5-18 (modeled cancer risk) but includes only impacts from permitted facilities. Figure 5-18 shows combined impacts from all modeled source, but while permitted sources were included in that figure, their impacts are not evident due to the scale of that map.

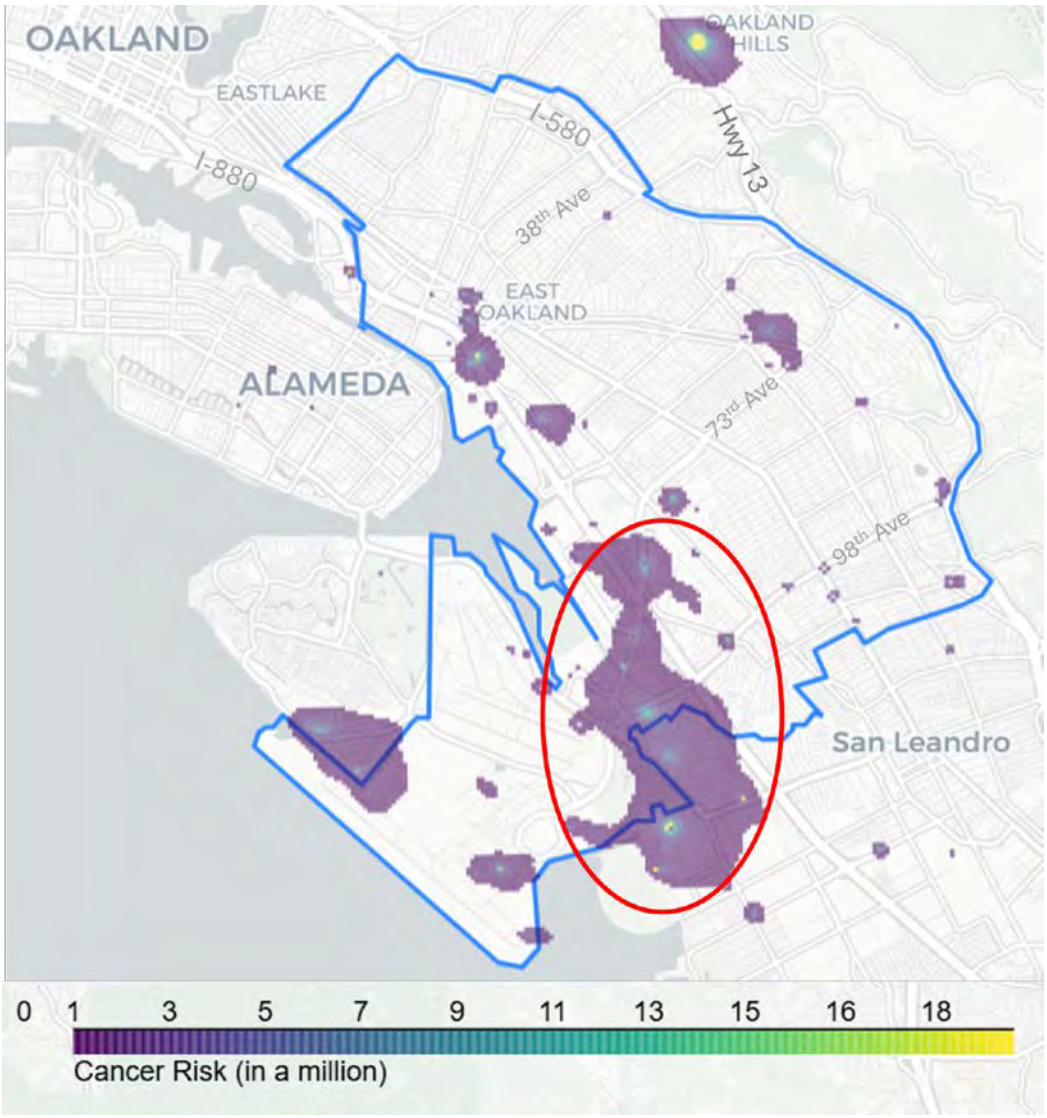


Figure 5-21: Modeled cancer risk (showing areas with risk greater than or equal to 1 in a million) from permitted facilities in and around East Oakland.

Transportation & Mobile Sources

Mobile sources operating in and around East Oakland are a significant source of fine particulate matter ($PM_{2.5}$) and nitrogen oxides (NO_x) emissions, as well as air toxics such as diesel particulate matter (DPM) and benzene. Specific transportation-related concerns in the community include roadways with high traffic volumes, truck traffic in the community, and emissions sources at Oakland San Francisco Bay Airport.

Freeway and High-Volume Roadway Traffic

Measurement data from Air District air monitoring sites and numerous studies of air monitoring data show that levels of several traffic-related air pollutants, such as nitrogen oxides (NO_x), carbon monoxide (CO), black carbon, ultrafine particles (UFPs), fine particulate matter ($PM_{2.5}$),

and volatile organic compounds (VOCs), are often higher near busy roadways. Pollutant levels along roadways are typically higher when traffic is worse, such as during daily commute periods.

The Air District operates four near-road air monitoring sites in the Bay Area as part of a national network of near-road monitors required by U.S. EPA.[150] These sites are located alongside freeways with high traffic counts where maximum impacts from on-road pollution sources are expected and monitor for pollutants that are commonly associated with traffic, such as nitrogen dioxide (NO_2), carbon monoxide (CO), and fine particulate matter ($PM_{2.5}$). Figure 5-22 shows the locations of the Air District's near-road air monitoring sites and a photo of the siting of the *Oakland - Laney* near-road monitoring site, which is located 20 meters downwind of I-880 along a segment of roadway that typically has among the highest Fleet Equivalent Annual Average Daily Traffic (FE-AADT) in the Bay Area. The *Oakland – Laney* site is located northwest of East Oakland as shown in Figure 5-22 and is representative of the impacts near freeways in East Oakland.

[150] U.S. EPA Near Road Monitoring website: https://www.epa.gov/amtic/near-road-monitoring.



Figure 5-22: Locations of the Air District's near-road air monitoring sites (top) and photo of the probe at the Oakland – Laney near-road air monitoring site near I-880 (bottom). [151]

[151] Photo of the *Oakland – Laney* air monitoring site is from the California Air Resources Board. Air Monitoring Sites – Interactive Map (2019). https://ww2.arb.ca.gov/applications/air-monitoring-sites-interactive-map.

Figure 5-23 shows average concentrations of several pollutants by time of day over the period 2016-2020 at Air District monitoring sites, categorized by general siting location (near-road, urban/suburban, and rural). Concentrations of nitrogen dioxide (NO_2), carbon monoxide (CO), black carbon, and ultrafine particles (UFPs) were generally higher at the near-road monitoring sites (red lines) compared to other monitoring sites (blue and green lines). For fine particulate matter ($PM_{2.5}$), average concentrations at the near-road monitoring sites (red lines) were higher than many of the other sites, though concentrations at some of the non-near road urban/suburban sites (blue lines) were very similar to concentrations at near-road sites. Average peak hour concentrations of black carbon and UFP at the near-road monitoring sites were about twice as high as compared to most other monitoring sites and were highest at the *Oakland - Laney* monitoring site. The higher black carbon concentrations observed at the near-road monitoring sites may indicate a greater contribution from diesel truck exhaust.

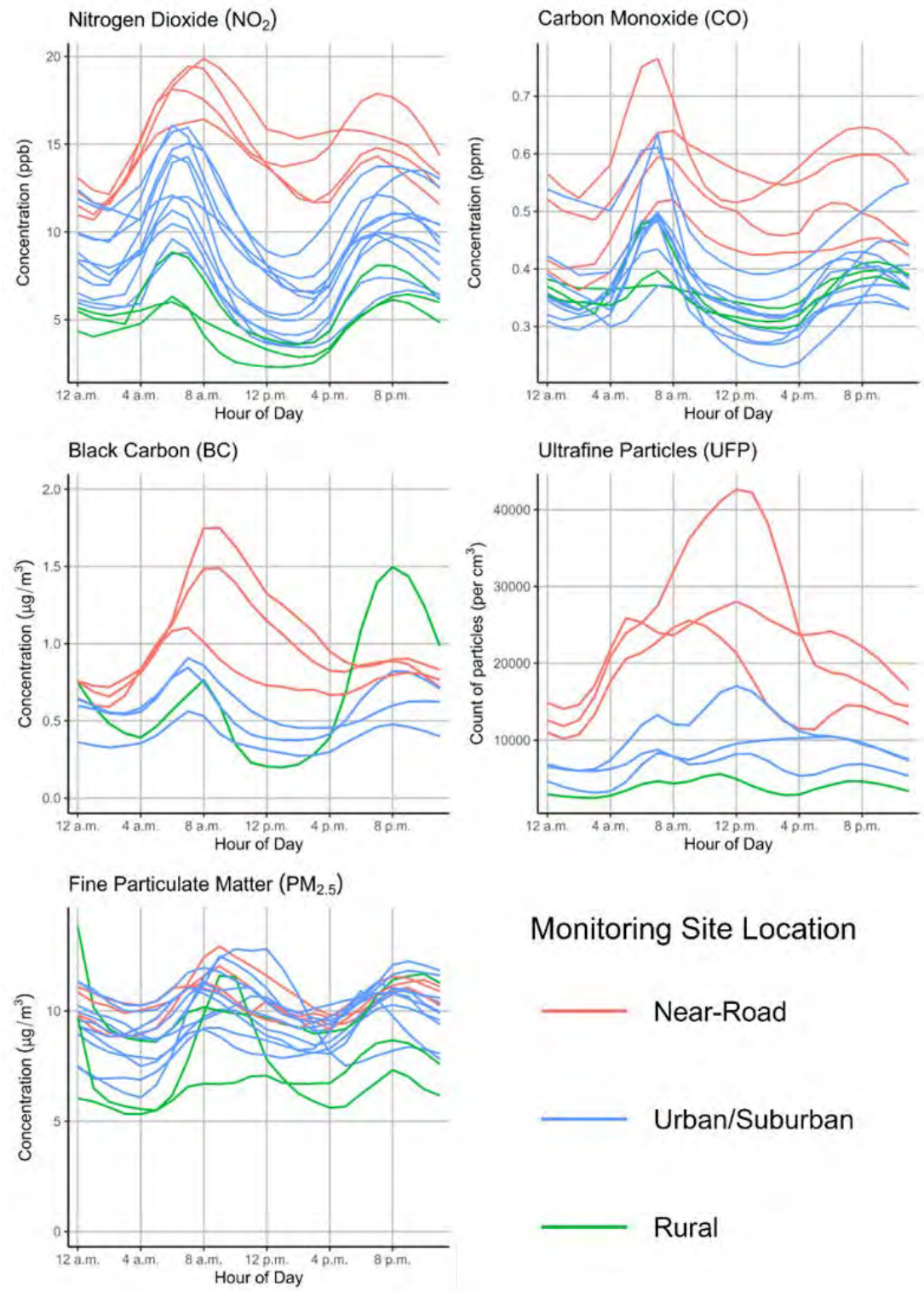


Figure 5-23: Average concentrations of nitrogen dioxide (NO_2), carbon monoxide (CO), black carbon (BC), ultrafine particles (UFP), and fine particulate matter ($PM_{2.5}$) by hour of day at Air District monitoring sites, 2016-2020. Each line represents data from one monitoring site.

Concentrations of these pollutants fluctuate throughout the day due to changes in emissions, meteorology, and chemical reactions in the atmosphere. Pollutant concentrations generally increase during the morning commute period, due in part to increased emissions from traffic at that time. The rural monitoring site that shows higher concentrations of black carbon in the evening hours is in a valley where residential wood burning is a dominant source of air pollution. On any given day, the fluctuations and patterns in pollutant concentrations may be substantially different than the average concentrations shown in Figure 5-23.

The impacts shown by Air District near road air monitoring are consistent with numerous other studies that also found higher measured concentrations of traffic-related air pollutants near roadways. [152, 153, 154] While these specific studies took place outside East Oakland, their findings can be applicable to near-road environments more broadly. Within the Bay Area, a mobile monitoring project conducted by Aclima found higher levels of traffic-related pollutants along several freeway corridors, including I-880 in East Oakland. [155] In addition, there are racial disparities in exposure to traffic-related air pollution, with communities of color often facing higher levels of harmful pollutants due to their proximity to busy roadways. [156]

Findings from the emissions inventory and modeling analyses also illustrate the impact of motor vehicle traffic on local air quality. For example, the inventory shows that diesel trucks account for about 20% of local emissions of diesel particulate matter (DPM), an important carcinogen in East Oakland. Moreover, these trucks operate on roadways that pass through or near residential areas and sensitive receptors such as schools and senior centers. As previously noted, Figure 5-18 shows that the highest risk values can be seen along the I-880 freeway and the I-238 freeway that connects the I-880 and I-580. It should also be noted that the freeways and major arterials in this map are sharply delineated, indicating that risk values decrease rapidly with distance from the roadways. This finding is supported by long-standing research into near-road air pollution [157] and highlights the importance of mitigating the impact of vehicle emissions for those living within a few hundred meters (~1,000 ft) of a major roadway such as I-880.

In addition to diesel particulate matter (DPM) impacts from heavy-duty trucks, passenger cars and other vehicles on high-volume roadways contribute to emissions of pollutants such as nitrogen oxides (NO_x) and fine particulate matter ($PM_{2.5}$), the latter from tailpipe exhaust, brake wear, tire wear, and road dust. As previously noted, road dust emissions are a significant contributor to $PM_{2.5}$ emissions in East Oakland, accounting for 59% of $PM_{2.5}$ emissions from on-road mobile sources and 11% of local $PM_{2.5}$ emissions from all sources (see Figure 5-24). And because road dust emissions are a function of roadway silt loadings, emissions from this source are of special concern in areas where dirt is tracked out onto road surfaces from industrial areas or construction sites.

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[152] Baldauf, R., Thoma, E., Hays, M. et al., *Traffic and Meteorological Impacts on Near-Road Air Quality: Summary of Methods and Trends from the Raleigh Near-Road Study*, Journal of the Air & Waste Management Association, 58:7, 865-878 (2008). https://doi.org/10.3155/1047-3289.58.7.865.

[153] Baldauf, R., Watkins, N., Heist, D. et al. *Near-road air quality monitoring: Factors affecting network design and interpretation of data.* Air Qual Atmos Health 2, 1–9 (2009). https://doi.org/10.1007/s11869-009-0028-0.

[154] Polidori A., Fine P. M. *Ambient Concentrations of Criteria and Air Toxic Pollutants in Close Proximity to a Freeway with Heavy-Duty Diesel Traffic*. Final report prepared by the South Coast Air Quality Management District (2012). http://www.aqmd.gov/docs/default-source/air-quality/air-quality-monitoring-studies/near-roadway-study.pdf.

[155] Aclima's Air.Health website: https://air.health/.

[156] Union of Concerned Scientists. Inequitable Exposure to Air Pollution from Vehicles in California. https://www.ucsusa.org/sites/default/files/attach/2019/02/cv-air-pollution-CA-web.pdf.

[157] Karner, A., Eisinger, D., and Niemeier, D. *Near-roadway air quality: synthesizing the findings from real-world data,* Environmental Science & Technology, 15:44(14):5334-44 (2010).

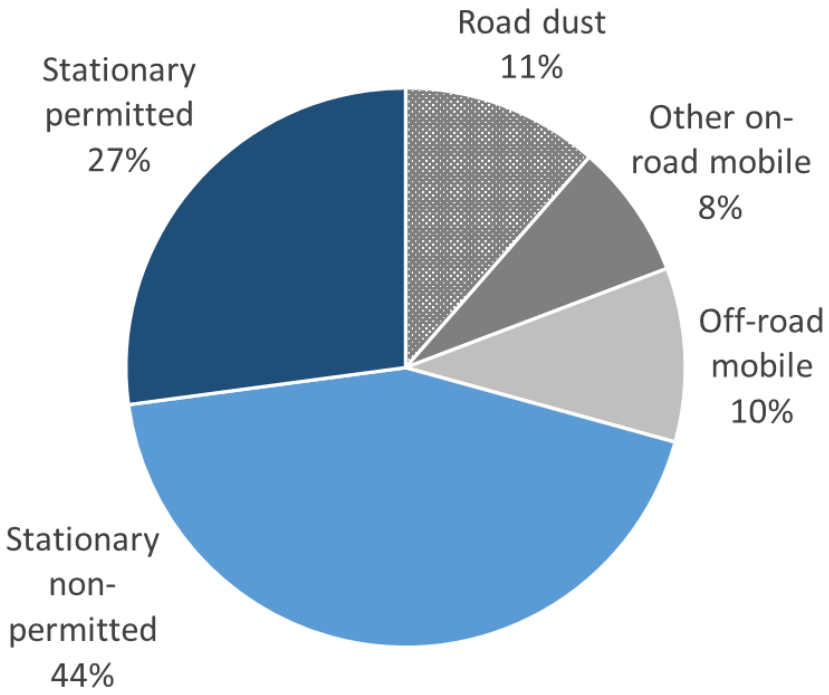


Figure 5-24: Breakdown of local $PM_{2.5}$ emissions in East Oakland for 2021 (total emissions = 282 tons).

A map of modeled fine particulate matter ($PM_{2.5}$) concentrations resulting from local on-road mobile sources is shown in Figure 5-25. Modeled concentrations exceeding 1 µg/m^3 can be seen along freeways like I-880, with $PM_{2.5}$ levels dropping sharply with distance from the freeway. Though the overall roadway pattern is similar to the map of cancer risk previously shown in Figure 5-18, note that the contrast between the I-580 and I-880 freeways is not as pronounced for $PM_{2.5}$ as it was for cancer risk. This finding is due to the fact that cancer risk is largely attributable to DPM emissions from truck traffic, while all vehicles contribute to $PM_{2.5}$ impacts, especially through the suspension of road dust.

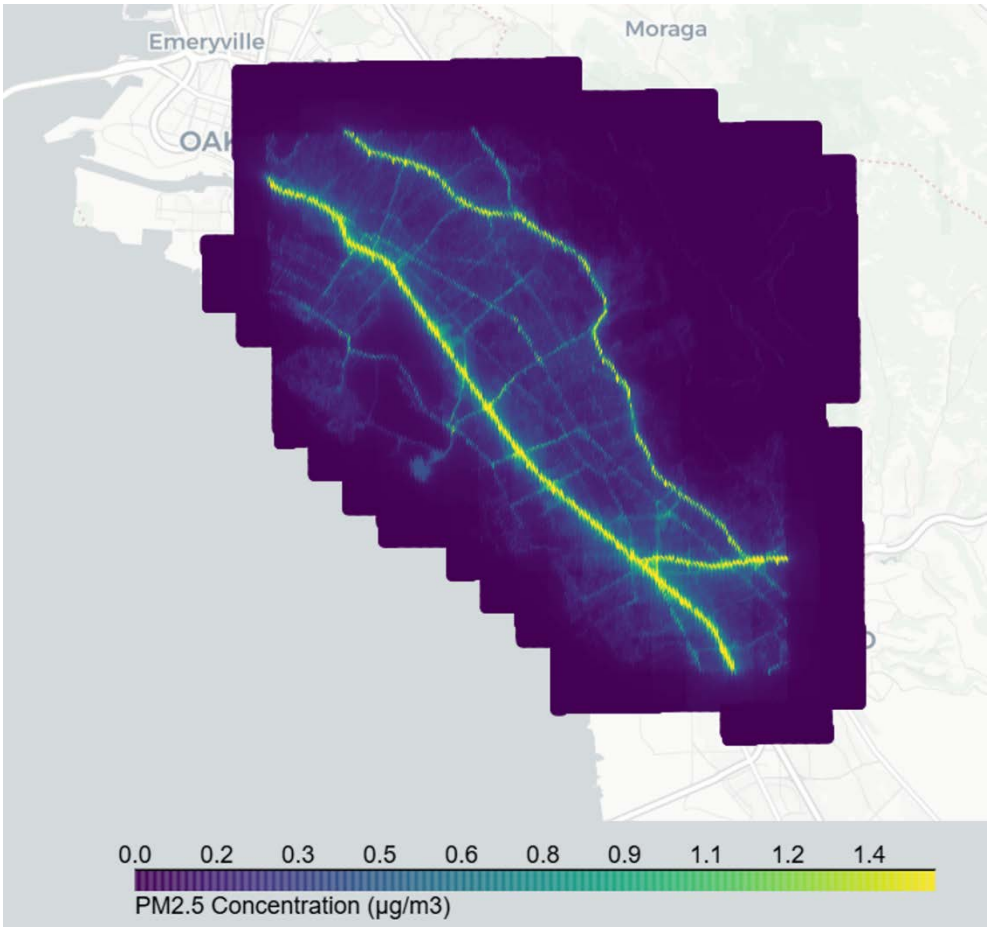


Figure 5-25: Map of $PM_{2.5}$ concentrations resulting from on-road mobile source emissions in East Oakland.

Oakland San Francisco Bay Airport

Oakland San Francisco Bay Airport is located in East Oakland and contributes to air pollution in the community. Emissions sources at the airport include aircraft, ground support equipment, and vehicular traffic to and from the facility. In addition to mobile sources, numerous stationary permitted sources operate at the airport, including backup diesel engines, fuel storage tanks, and gasoline pumps. The U.S. EPA has the primary authority to regulate emissions from aircraft engines in coordination with the International Civil Aviation Organization (ICAO). Since 2010, the Federal Aviation Administration (FAA) has been leading the Continuous Lower Energy, Emissions (CLEE), and Noise (CLEEN) Program with U.S. EPA and engine manufacturers to develop aircraft engines that are quieter, more fuel efficient and lower emitting. [158] In addition, the California Air Resources Board (CARB) regulates emissions from equipment used to maintain, fuel, move and restock planes, and handle passenger luggage as part of its Off-Road Regulation. [159] CARB is also exploring a new regulation that will require airport equipment to be

[158] Federal Aviation Administration. Continuous Lower Energy, Emissions, and Noise (CLEEN) Program. https://www.faa.gov/newsroom/faa-awards-100m-develop-next-generation-sustainable-aircraft-technology; https://www.transportation.gov/advancing-next-generation-aviation-technologies.
[159] California Air Resources Board. In-Use Off-Road Disel-Fueled Fleets Regulation. https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation.

zero emissions and developing a suite of regulations to require zero emissions from these vehicles.[160, 161]

The Air District regulates stationary permitted sources at the airport. In addition, the Air District also provides funding to purchase zero emission ground support tugs, baggage loaders, fueling trucks, low and zero emission buses, and to install electric vehicle (EV) chargers in the parking lots. The Air District also supports the efforts to expand the use of sustainable aviation fuel, or renewable fuel, as a substitute for petroleum-based jet fuel. A recent study commissioned by the Air District concluded that sustainable jet fuel has the potential to significantly reduce both greenhouse gas and particulate matter emissions.[162]

Short-term monitoring studies have found increases in ultrafine particles (UFPs) above typical urban levels in areas downwind of airport runways associated with takeoff and landing activity.[163, 164] In addition to UFPs, these studies have shown that elevated levels of fine particulate matter ($PM_{2.5}$), black carbon, criteria air pollutants (CAPs), and polycyclic aromatic hydrocarbons also occur in and around airports.[165] Other pollutants of concern include lead from piston-engine aircraft and nitrogen oxides (NO_x), which participates in the atmospheric formation of ozone (O_3) and secondary particulate matter. Figure 5-26 shows that airport-related sources are the largest contributor to NO_x emissions in East Oakland, accounting for 36% of the 2,230 tons emitted in 2021. Aircraft and ground support equipment emitted 796 tons of NO_x, which is comparable to total NO_x emissions from on-road mobile sources in East Oakland (795 tons).[166] Aircraft operating at the airport are also the largest source of SO_x and lead in the community, accounting for over 80% of sulfur oxides (SO_x) emissions and over 70% of lead emissions in the East Oakland inventory. It should be noted that aircraft emissions are estimated from the runway surface to a height of 3,000 feet,[167] so a significant portion of those emissions occur well above ground level. For example, about 40% of aircraft NOx emissions at the airport are released more than 1,000 feet above the ground.

[160] California Air Resources Board. Zero-Emission Airport Ground Support Equipment. https://ww2.arb.ca.gov/our-work/programs/zero-emission-airport-ground-support-equipment.
[161] California Air Resources Board. Zero-emission Vehicle Fleet. https://ww2.arb.ca.gov/our-work/programs/zero-emission-vehicle-fleet.
[162] Sustainable Aviation Fuel: Greenhouse Gas Reductions from Bay Area Commercial Aircraft. October 2020. https://www.baaqmd.gov/~/media/files/planning-and-research/research-and-modeling/saf-report-final-for-distribution-to-baaqmd-pdf.pdf?rev=4f138a556aa743b8b6c508e5e780392a.
[163] South Coast Air Quality Management District. Multiple Air Toxics Exposure Study (MATES) V in the South Coast AQMD, Final Report August 2021. https://www.aqmd.gov/docs/default-source/planning/mates-v/mates-v-final-report-9-24-21.pdf?sfvrsn=6.
[164] K. Riley, R. Cook, E. Carr, and B. Manning. A systematic review of the impact of commercial aircraft activity on air quality near airports. City and Environment Interactions, Volume 11, August 2021, 100066. https://doi.org/10.1016/j.cacint.2021.100066.
[165] While measurements from these studies were not made in East Oakland, it is expected that similar sources exist and that the findings would be representative for airport-adjacent communities, including East Oakland.
[166] Note that NO_x from motor vehicles traveling to and from the airport were not split out from the total on-road inventory, making the contribution of airport-related sources even larger.
[167] This altitude of 3,000 feet represents an estimate of the atmospheric mixing height, or the distance from the ground up to where the mixing of turbulent air effectively disperses pollutants.

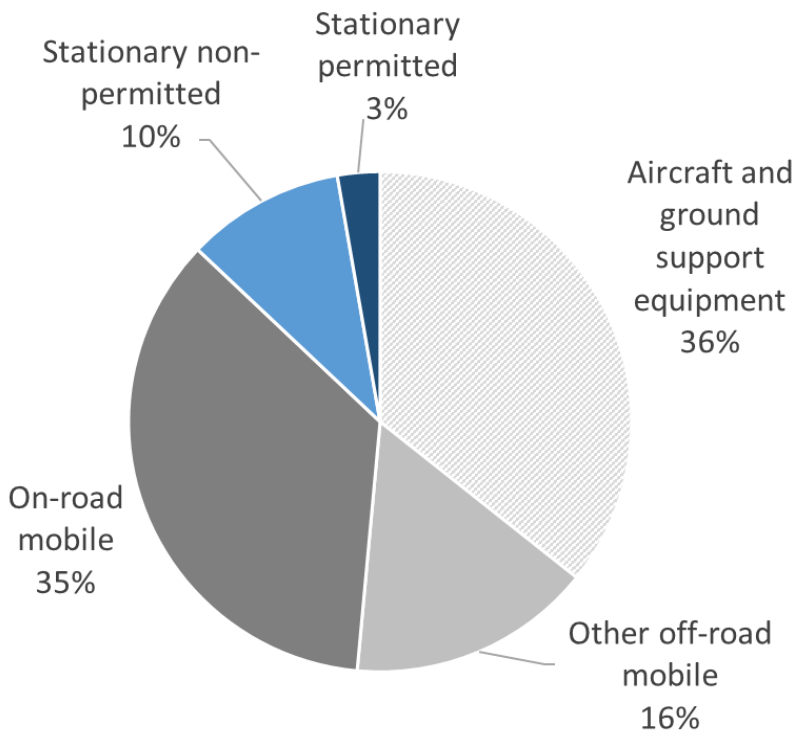


Figure 5-26: Breakdown of local NO_x emissions in East Oakland for 2021 (total = 2,230 tons).

Built Environment & Land Use

Though the Plan is mainly focused on improving ambient (outdoor) air quality, air pollution inside the home is also of concern because it significantly impacts the respiratory health of East Oaklanders, particularly for sensitive groups like children and the elderly. Many homes in the area are older and prone to mold and lead exposure, and indoor allergens and irritants can be significant triggers for asthma attacks. Additionally, residential fuel combustion is a significant source of nitrogen oxides (NO_x) and fine particulate matter ($PM_{2.5}$) emissions. As shown in Figure 5-16 above, residential fuel combustion emits 55.1 tons of $PM_{2.5}$ annually, or about 20% of total $PM_{2.5}$ emissions from local sources in and around East Oakland. Table 5-10 shows that natural gas combustion for water and space heating is the primary source of NO_x emissions from this source category, while wood combustion in woodstoves and fireplaces is the dominant source of $PM_{2.5}$ emissions.

Table 5-10: Summary of 2021 emissions from residential fuel combustion in East Oakland.

Source Description	Fuel	Emissions (tons/year)	
		NO_x	$PM_{2.5}$
Woodstoves	Wood	2.5	13.2
Fireplaces	Wood	3.1	26.2
Other Space Heating	Natural Gas	96.7	7.8
	Distillate Oil	0.4	0.0
Water Heating	Natural Gas	44.9	6.4
Cooking	Natural Gas	8.6	0.7
Other	Various	11.0	0.7
TOTAL		**167.2**	**55.1**

This area of concern also includes sensitive receptors that are near pollution sources, an important land use issue. As noted in Chapter 4, numerous daycare centers, hospitals, clinics, libraries, nursing homes, assisted living facilities, schools and parks in East Oakland are located near industrially zoned land.

Public Health & Wellness

Public health concerns include smoke from wildfires, which has caused periods of unhealthy air quality in East Oakland and throughout the Bay Area in recent years. Figure 5-27 shows 24-hour average (midnight to midnight) fine particulate matter ($PM_{2.5}$) concentrations at the Air District's *Oakland – East* monitoring site from 2018 to 2023. The bold blue line indicates data from 2023 to highlight the variability in $PM_{2.5}$ concentrations over a year, and the gray shaded area represents the range of daily $PM_{2.5}$ concentrations that were measured during the 2018-2023 period. The fluctuations in $PM_{2.5}$ concentrations from day to day are driven largely by changes in meteorology (wind patterns, mixing and ventilation) and in emissions. The highest $PM_{2.5}$ concentrations occurred during wildfire periods, during which the National Ambient Air Quality Standards (NAAQS) for daily average $PM_{2.5}$ of 35 µg/m^3 was exceeded on numerous occasions. Wildfire smoke also contains numerous other pollutants, including carbon monoxide (CO), nitrogen oxides (NO_x), and various toxic air contaminants (TACs) (see Figure 5-7). The U.S. EPA's AirNow program [168], California Air Resources Board (CARB) [169], and the Air District [170] have websites with information and resources on wildfire smoke and steps to take to reduce exposure to wildfire smoke. The AirNow Fire and Smoke Map website displays real-time $PM_{2.5}$ data from air quality agencies (such as the Air District) as well as data from PurpleAir lower-cost sensors (whose data are adjusted by a U.S. EPA-developed algorithm that

[168] U.S. EPA AirNow Wildfire website: https://www.airnow.gov/wildfires/.
[169] CARB's Protecting Yourself from Wildfire Smoke website: https://ww2.arb.ca.gov/protecting-yourself-wildfire-smoke.
[170] The Air District's Wildfire Safety website: https://www.baaqmd.gov/about-air-quality/wildfire-air-quality-response-program/wildfire-safety.

compensates for some of the inaccuracies of the sensors). [171]

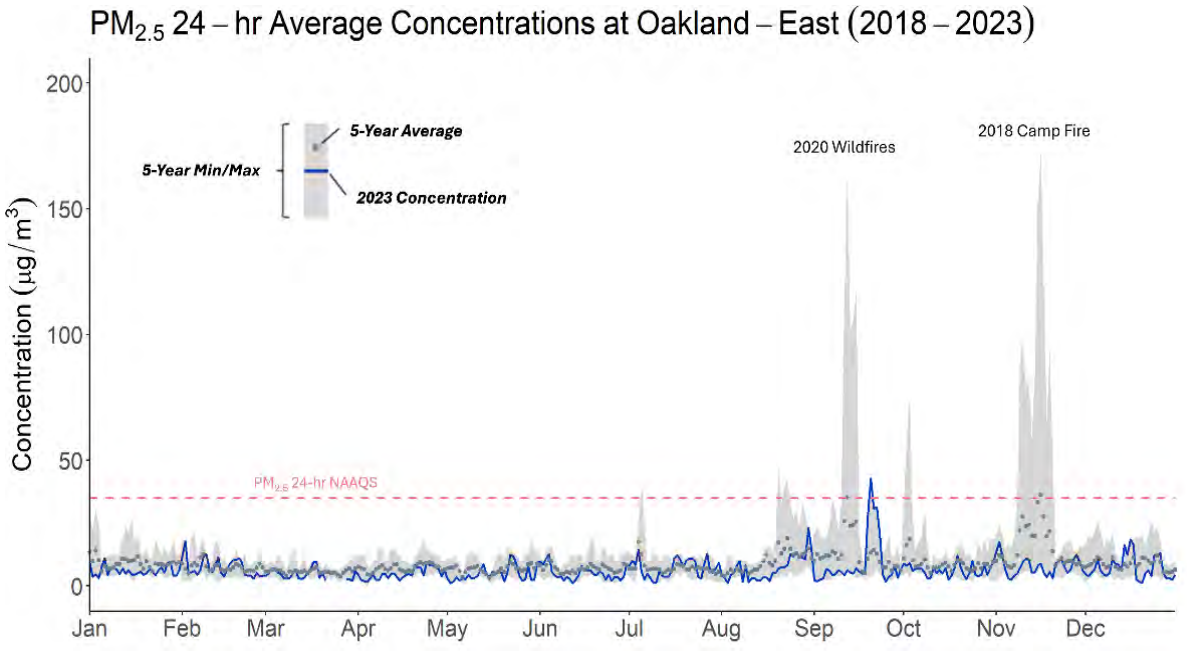


Figure 5-27: 24-hour average $PM_{2.5}$ concentrations at the Oakland – East monitoring site, 2018-2023. $PM_{2.5}$ concentrations typically vary considerably over a year. Some of the highest concentrations occurred during periods of wildfire smoke.

Real-time air quality data can help inform the public in making decisions about reducing exposure to unhealthy air quality, such as choosing to reschedule outdoor activities like exercise when air quality is or is expected to be unhealthy. The Air District's website provides real-time air quality monitoring data from Air District air monitoring sites on its website. Air quality meteorologists at the Air District also issue daily air quality forecasts for the Bay Area, as well as Spare the Air Alerts when air quality levels are expected to be unhealthy compared to the National Ambient Air Quality Standards (NAAQS). The public can view the daily air quality forecast and subscribe to receive forecasts and alerts by text and e-mail, and can download the Spare the Air mobile app, on the Spare the Air program website. [172] The Air District also issues Air Quality Advisories when air quality is expected to be poor in some areas for a short amount of time but not to the extent a health-based standard (based on a 24-hour average for $PM_{2.5}$) is exceeded. These Advisories are listed on a banner at the top of the Air District website and are posted on Air District social media pages. Bay Area residents can also opt in to receive Air Quality Incident Notifications via email and text message. [173]

[171] U.S. EPA AirNow Fire and Smoke Map for real-time $PM_{2.5}$ data: https://fire.airnow.gov/.
[172] Website for the Air District's Spare the Air program: https://www.sparetheair.org/.
[173] Website for the Air District's Air Quality Incident Notification Sign-Up: https://www.baaqmd.gov/en/contact-us/sign-up-for-information/air-quality-incident-notifications

Illegal Dumping

Illegal dumping is a major concern for the East Oakland community. In addition to being a quality-of-life issue, there can be air quality impacts related to illegal dumping, such as:

- Smoke (when illegally dumped materials are burned)
- Odors
- Airborne dust, fibers, and other materials (such as from construction sites)

Air quality impacts due to illegal dumping, such as smoke from burning materials and odors, are often intermittent and relatively localized. Technical tools that the Air District uses to characterize air quality issues, such as emissions inventories and air quality monitoring and modeling, are not especially well suited to inform the topic of illegal dumping and air quality. For example, impacts from burning illegally dumped materials would likely only be meaningfully represented in air monitoring if a monitor was located near the location at the time the materials were burning. In addition, depending on the pollutants being monitored, it may be difficult to differentiate smoke due to illegal dumping from smoke from other combustion sources. This is why community input on air quality concerns, such as via the Social Pinpoint map, is such an important dataset itself, since that information highlights air quality issues that are not well characterized by other air quality tools and datasets.

Illegal dumping can include a wide range of materials, including various metals, plastics, fuels, foams, fabrics, and other refuse. When burned, these materials release harmful pollutants into the air. Given the materials that are likely burning, and what we know from studies and observations of similar types of fires, the smoke can be expected to contain fine particulate matter ($PM_{2.5}$) and a host of toxic air contaminants (TACs), including particulate metals, volatile organic compounds (VOCs) such as benzene, polycyclic aromatic hydrocarbons (PAHs), and dioxins, among other pollutants.

Short-term exposure to high levels of fine particulate matter ($PM_{2.5}$) and toxic air contaminants (TACs) contained in smoke can be harmful, and residents should protect their health and avoid smoke exposure. To reduce exposure, residents are encouraged to stay inside with windows and doors closed until smoke levels subside, if temperatures allow. It is also recommended that those impacted by smoke set air conditioning units and car vent systems to re-circulate to prevent outside air from moving inside.

Smoke can irritate the eyes and airways, causing coughing, a scratchy throat and sinus irritation. Elevated particulate matter in the air can trigger wheezing in those who suffer from asthma, emphysema or Chronic Obstructive Pulmonary Disease (COPD). Elderly people, children and individuals with respiratory illnesses are particularly susceptible and should take extra precautions to avoid exposure.

Odors can also affect health and well-being, even if an odor is not associated with high levels of a particular pollutant. Different people have different sensitivities to odors, can detect odors at different thresholds, and have different responses to odors. Odors can also negatively affect mental health and lead to increased stress and stress-related health impacts, including increased susceptibility to additional stressors. Odors may indicate the presence of one or more pollutants. Odors can also indicate the presence of pollutants that don’t have odors but are being emitted at the same time.

Chapter 6: Enforcement Overview & Findings

The Air District and the California Air Resources Board (CARB) share enforcement responsibilities for air quality regulations in the East Oakland area, with the Air District primarily responsible for regulating stationary sources and CARB primarily responsible for regulating mobile sources. It is the goal of both agencies to implement robust enforcement programs in East Oakland through its inspections to document violations and continue to implement new strategies to ensure regulated facilities and sites operate in compliance with applicable air quality rules and requirements.

This chapter highlights the enforcement activities in East Oakland from 2021 to 2024, specifically in the zip codes of 94601, 94602, 94603, 94605, 94606, 94613, 94619, and 94621. The information presented in this chapter summarizes the most recent four years of enforcement data. The data review and analyses from this chapter will be used to formulate additional enforcement strategies identified in Chapter 7, which aim to be responsive to community concerns and improve enforcement outcomes in East Oakland.

Enforcement Authority

The enforcement programs of the Air District and CARB strive to ensure compliance and minimize local and regional impacts from air pollution. This section summarizes the enforcement authority for stationary and mobile sources.

Stationary Sources

The California Health and Safety Code (HSC) grants Air Districts authority to adopt and enforce air pollution regulations to achieve state and federal air quality standards. The Air District enforces federal, state, and Air District regulations for a variety of stationary sources in the East Oakland area. The following are a few examples of stationary sources in East Oakland and corresponding Air District regulations for those types of operations:

- Autobody shops (Rule 8-45)
- Asbestos renovation and demolition projects (Rule 11-2 and Rule 11-14)
- Boilers (Rule 9-7)
- Solvent and coating operations (Rule 8-4, Rule 8-16, Rule 8-19, Rule 8-31, and Rule 8-32)
- Gasoline dispensing facilities (Rule 8-7)
- Generators/Stationary engines (Rule 9-8)
- Aggregate, concrete & asphalt operations (Regulation 6, Rule 6-1, Rule 6-6)
- Waste & recycling operations (Rule 8-34)

There are currently no permitted facilities in East Oakland subject to Air District Rule 2-6, Major Facility Review Program (Title V). AB&I Foundry was the only Title V facility in the area and the facility closed in June 2022. The thresholds that trigger Title V Program permitting include facilities with potential to emit 100 tons per year of a criteria pollutant,10 tons per year of a single Hazardous Air Pollutant (HAP); or 25 tons per year of any combination of HAPs.

Mobile Sources

The California Air Resources Board (CARB) is the primary authority 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. The Air District may refer to, or partner with, CARB to investigate air quality concerns relating to the mobile sources listed below:

- Portable equipment
- Heavy-duty truck idling
- Cargo handling equipment (CHE)
- Off-road construction equipment
- Commercial harbor craft (CHC)
- Ocean-going vessels (OGV)
- At-Berth (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

While CARB has authority to regulate emissions from these sources, authority to regulate parking and truck routes lies with the City of Oakland's Police Department and Department of Transportation (OakDOT).

Enforcement of Stationary Sources

Air District Enforcement Program

The Compliance & Enforcement Division has primary responsibility for administering the enforcement program of the agency. Inspectors are assigned geographical regions, and their roles include, but are not limited to, the following enforcement activities:

- Unannounced compliance verification inspections of permitted facilities,
- Investigations at sites/facilities that may not have an Air District permit,
- Air quality complaint investigations and area patrols,
- Responding to and investigating major incidents such as fires associated with manufacturing or industrial processes, or other major air emission releases,
- Coordinating across divisions on permitting and emissions testing, and with regulatory partners on enforcement concerns.

As of December 2024, 45 field staff are assigned to enforce and verify compliance with Air District, state, and federal rules and regulations across the nine Bay Area counties. Two inspectors are assigned to East Oakland to conduct compliance inspections and respond to air pollution problems and compliance issues. Additional staffing resources are available to provide support and assistance in the East Oakland area when needed.

Stationary Sources in the East Oakland Area

This stationary source sub-chapter encompasses sites/facilities within the Plan community boundary area and sites/facilities within the East Oakland zip codes (94601, 94602, 94603, 94605, 94606, 94613, 94619, and 94621). This broader approach ensures the enforcement data for stationary sources is more inclusive and captures nearby air pollution sources that have the potential for affecting air quality in East Oakland. As of May 13, 2025, there are 285 facilities within the East Oakland zip codes that are permitted by the Air District (see Figure 6-1 for counts by facility type), as listed in Appendix E-3, List of Permitted Facilities in East Oakland. The facilities outside the Plan community boundary but within the listed zip codes are denoted by an asterisk in the appendices.

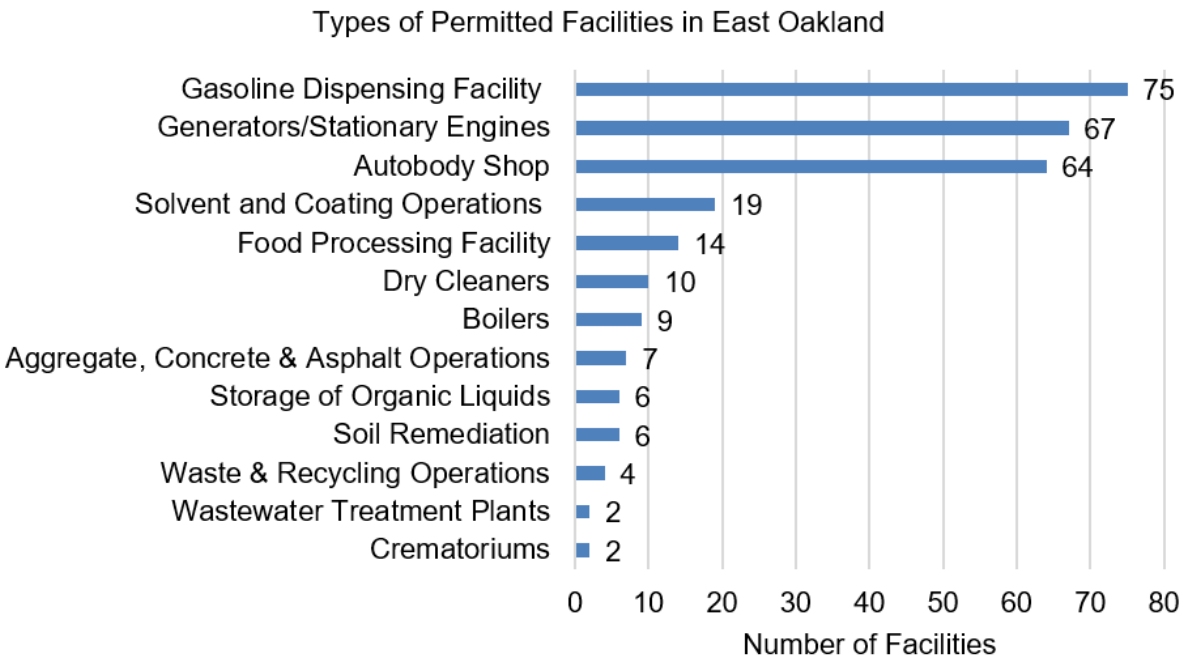


Figure 6-1: Types and number of permitted facilities in East Oakland as of May 13, 2025

4-Year Enforcement History of Stationary Sources

This section provides a closer look at the 4-year compliance and enforcement history in East Oakland. This data includes a summary of compliance inspections, air quality complaint investigations, and violations from January 2021 through December 2024.

Compliance Inspections

Inspectors conduct routine, unannounced inspections of permitted, stationary sources to ensure they are operating in compliance with air quality regulations. Inspections typically include the following:

- Review of permit requirements and conditions,
- Air District, state and federal rules that may apply,
- Operating parameters, monitoring and recordkeeping requirements,
- Process upsets and equipment malfunctions,

- Major incidents, such as fires or other air emission releases, and
- An assessment of any activities or operations without an Air District permit that may be an air quality concern.

In the 4-year period through 2024, staff completed 592 site/facility inspections at Air District permitted facilities in East Oakland. Of these inspections, 108 were asbestos demolition and renovation site inspections subject to the Air District's Asbestos Demolition and Renovation Program.

Air Quality Complaint Investigations

The Air District responds to and investigates all air pollution complaints. Resolving air quality complaints is one of the Air District's highest priorities. The Air District's goal is to respond to air quality complaints within 30 minutes during regular business hours and investigate community concerns expeditiously. While inspectors are not first responders, complaint response and investigations are prioritized to achieve early intervention and resolutions to air quality concerns. Community members are encouraged to report an air quality complaint to the Air District as they are often the first to become aware of and are impacted by odors, visible emissions or other air pollution concerns. Inspectors meet with complainants to gather information and conduct investigations, onsite inspections at the alleged site/facility, and area patrols to pinpoint the site/facility of concern.

Air quality complaint investigations make up a large portion of the inspection activities in East Oakland. From 2021-2024, a total of 763 air quality complaints were reported and investigated by the Air District. The full list of complaints is provided in Appendix E-1, Air Quality Complaints in East Oakland (2021-2024). Table 6-1 is a summary of air quality complaints by calendar year. The middle column lists complaints attributed to AB&I Foundry. AB&I Foundry was a large metal facility that operated under a Title V major facility permit in East Oakland until its closure in June 2022. The last column shows all the other complaints in the area when AB&I Foundry complaints are excluded.

Table 6-1: Summary of Air Quality Complaints by Calendar Year

Calendar Year	Complaints Alleging AB&I Foundry Reported to Air District	Complaints Reported to Air District (excludes AB&I Foundry complaints)
2021	249	134
2022	122	99
2023	1	73
2024	0	85
Total	**372 (49% of total complaints)**	**391 (51% of total complaints)**

Table 6-1 shows that AB&I Foundry was the most significant source of complaints in East Oakland. From 2021-2024, odor complaints alleging AB&I Foundry accounted for 372 of the 763 complaints, while only operating in 2021 and the first half of 2022. During the same 4-year period, 391 air quality complaints were received alleging other sites/facilities in East Oakland. While AB&I Foundry is now permanently closed, it is important to recognize the magnitude of impact it had on air quality complaint numbers in the East Oakland community. From 2021-2022, there was an average of 302 complaints a year. The average number of complaints dropped to 80 a year from 2023-2024, following closure of the AB&I Foundry.

Figure 6-2 shows the number of East Oakland air quality complaints by type that were reported to the Air District from 2021 to 2024. Odors were the greatest source of community complaints, with AB&I Foundry accounting for 60% of the total number of odor complaints in East Oakland. The next most common complaint types were complaints of dust, followed by complaints of illegal fires. For complaints listed, “Other”, the complainant did not specify a complaint type.

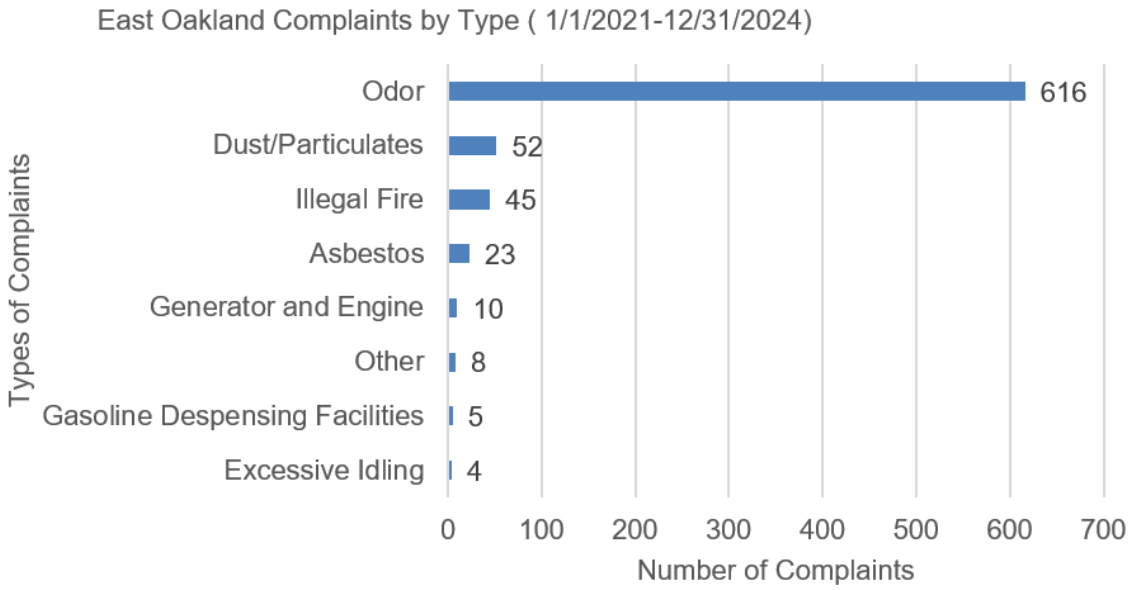


Figure 6-2: Types of Air Quality Complaints in East Oakland (including AB&I)

All air quality complaints are investigated regardless of whether an individual reports a complaint anonymously or provides their name and personal contact information. All personal information provided by complainants are treated as confidential information. The Air District respects the concerns of those complainants that choose to retain anonymity.

Figure 6-3 shows that 19% of complaints were filed anonymously. A benefit of the Air District taking anonymous complaints is that individuals who have privacy concerns are still empowered to raise air quality complaints. While anonymous complaints do not allow inspectors to obtain additional information during their investigation from the complainant, the Air District provides helpful tips and guidance on the Air District website on how to be more descriptive when reporting a complaint which helps the Air District pinpoint potential compliance concerns more quickly.

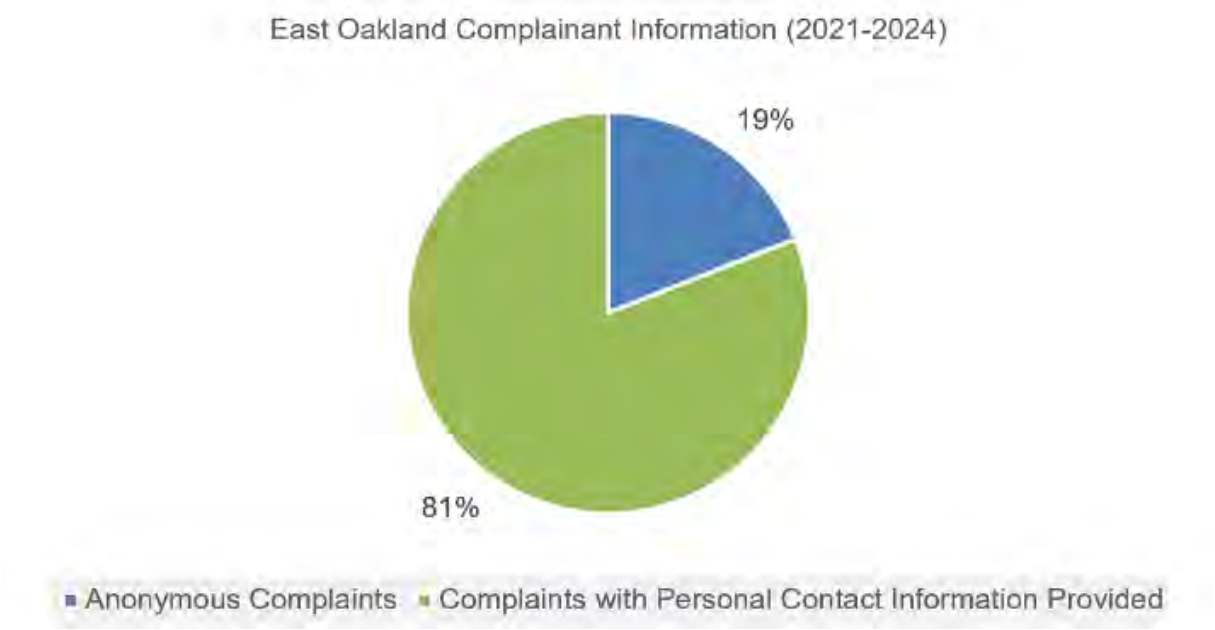


Figure 6-3: East Oakland Complaints - Anonymous vs Contact Information Provided

Following the air quality complaint investigation process, the inspector documents the findings in a report. The inspector makes the determination of whether the “emission was observed and could be traced to the source (site/facility identified),” or that the “emission was not observed and/or could not be traced to the source (site/facility not identified).”

If a violation is discovered, enforcement actions may include issuing a Notice to Comply (NTC) or Notice of Violation (NOV) for violation of Air District rules or regulations, permit requirement, or a documented public nuisance. In addition to documenting violations, inspectors may also provide compliance assistance and collaborate with regulatory partners on compliance concerns. While inspectors respond to and investigate all air quality complaints, not all complaints reported to the Air District result in the issuance of a violation to the alleged site or facility. A violation of a specific rule or regulation must be documented by the inspector for a violation to be issued.

Figure 6-4 shows that of the complaints received in East Oakland between 2021 and 2024, 12% of emissions were verified and traced to a site/facility. The chart also shows that 88% of complaint investigations resulted in the inspector not being able to observe the alleged emission and/or were not able to identify the source of the emission at the time of investigation. A complaint that is not verified or observed by the inspector at the time of an investigation can indicate that there may be other factors that influenced the presence of emissions such as changes in meteorological condition or operations at the facility at the time of the inspector’s investigation. Inspectors are trained to identify potential sources of emissions through reviewing monitoring records, operator logs, and utilize different enforcement tools to determine if a violation occurred. All complaints, whether or not the presence of emissions was verified by the inspector, are tracked and help provide data points to inspectors to identify potential compliance problems and violations.

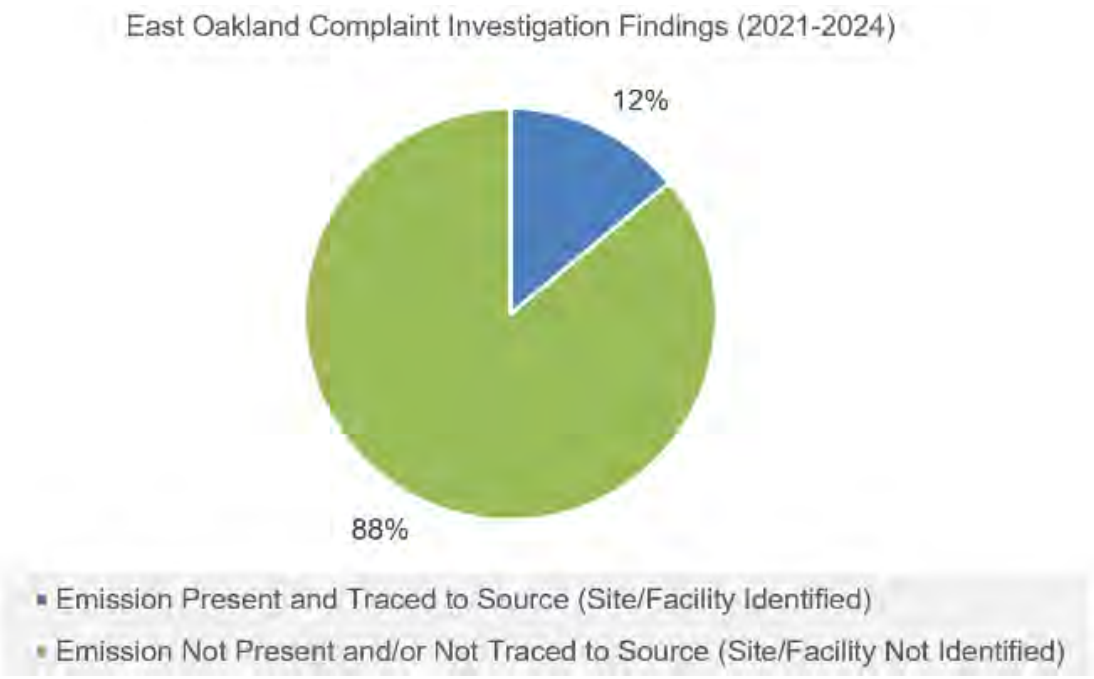


Figure 6-4: East Oakland Complaints - Emission Traced to Source vs Emission Not Traced to Source

Notice of Violation (NOV) and Notice to Comply (NTC)

When a site/facility is discovered to be in violation of Air District, state, or federal air quality regulations, inspectors may take enforcement action by issuing a Notice of Violation (NOV), or a Notice to Comply (NTC). Multiple violations may be cited on one NOV or NTC. A full list of Violations and NTCs can be found in Appendix E-2: Violations and Notices to Comply in East Oakland 2021-2024.

A Notice of Violation (NOV) is issued when a site/facility is operating in violation of an air quality regulation. NOVs serve to hold polluters accountable, discourage future non-compliance, and promote timely corrective actions. Following the issuing of a NOV, the inspector prepares a comprehensive report detailing the regulation(s) violated, the type of source(s) involved, the number of violations, supporting evidence, any information regarding the cause of non-compliance, the extent of associated harm, and how the violation was corrected. The inspector provides the owner/operator with assistance to help them understand how to achieve compliance and documents measures taken to prevent the violation from recurring. The inspector tracks facility progress with the corrective actions.

For minor violations, a Notice to Comply (NTC) may be issued to place the site/facility on notice that there is a compliance concern. A NTC may only be issued to address violations that are administrative or where emissions are negligible, or de minimus. Administrative violations are typically related to recordkeeping or late reporting. Sites/facilities must also demonstrate that a minor violation is promptly addressed, and corrective actions are taken. Inspectors track the compliance status of NTCs and if the violation is not resolved, the inspector may issue a Notice of Violation (NOV). From 2021 to 2024, 25 NTCs were issued in East Oakland. Out of the 25, a total of 23, or 92%, of those NTCs were issued to gasoline dispensing facilities with 87% of those being administrative violations.

From 2021 to 2024, NOVs were issued to both permitted and unpermitted sites/facilities in East Oakland citing 60 violations. Figure 6-5 groups the violations into three categories: Operational, Permit-related, and Administrative for calendar years 2021 to 2024, as discussed below:

- A total of 33, making up for 55%, were Operational violations. Operational violations include exceedances of emission limits, permitted usage limits, operating parameters, monitoring, maintenance, housekeeping, and abatement and control requirements. These operational requirements are specified in air quality rules and regulations, and the site/facility's permit conditions. A site/facility returns to compliance once they address operational issues to comply with applicable requirements. Examples of operational violations range from exceeding material usage limits, to exceeding maximum engine operating hours, operating below temperature requirements, not replacing air filters or closing solvent containers as maintenance or housekeeping requirements, or causing a public nuisance.
- A total of 15, making up for 25%, were Permit-related violations. These relate to installing or operating equipment without an Authority to Construct (A/C) or Permit to Operate (PTO). A site/facility comes into compliance by either ceasing operation or obtaining an AC/PTO through the District's permitting process. This approval involves application submittal, a processing fee, and detailed evaluation by the Air District's Engineering Division.
- A total of 12, making up for 20%, were Administrative violations. These types of violations include inadequate recordkeeping or late reporting. Administrative requirements are specified in air quality rules and regulations and the facility's permit conditions. A return to compliance can be demonstrated by the site/facility taking measures to keep required records and meet timelines.

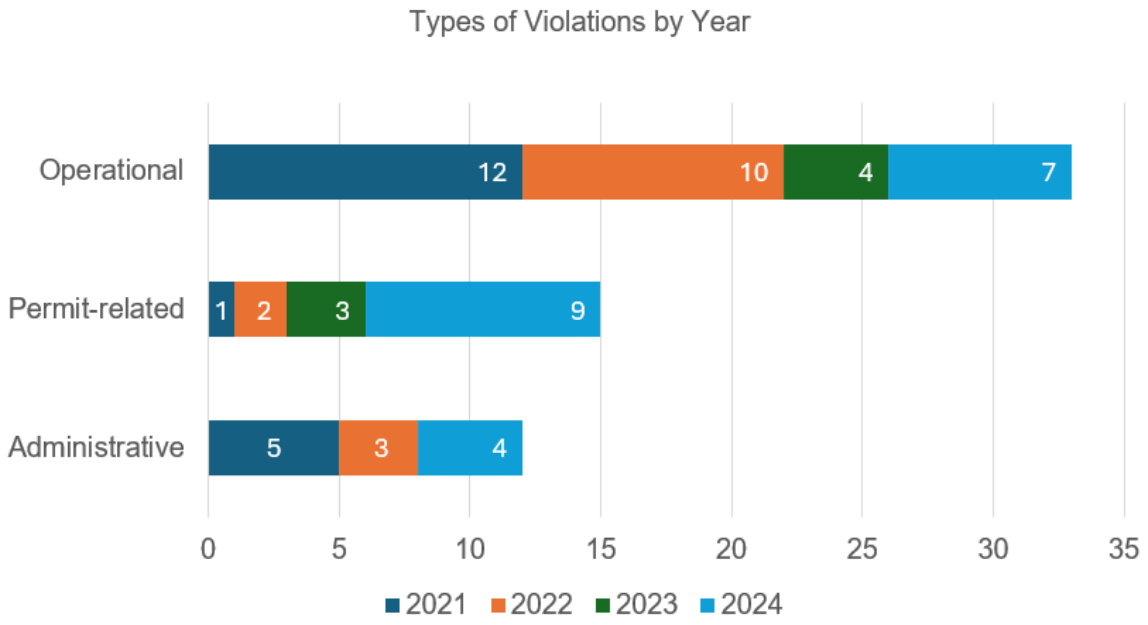


Figure 6-5: 2021-2024 East Oakland Violation Summary by Year

Figure 6-6 shows sites/facilities in East Oakland with two or more violations between 2021 and 2024. Of the 60 violations issued in East Oakland, 36, or 60%, were issued to sites/facilities with multiple instances of non-compliance. The remaining 24, or 40%, of violations were issued to sites/facilities with one-time violations in the four-year timeframe. AB&I Foundry is not reflected in this chart because only one violation was issued in 2021 for causing a public nuisance.

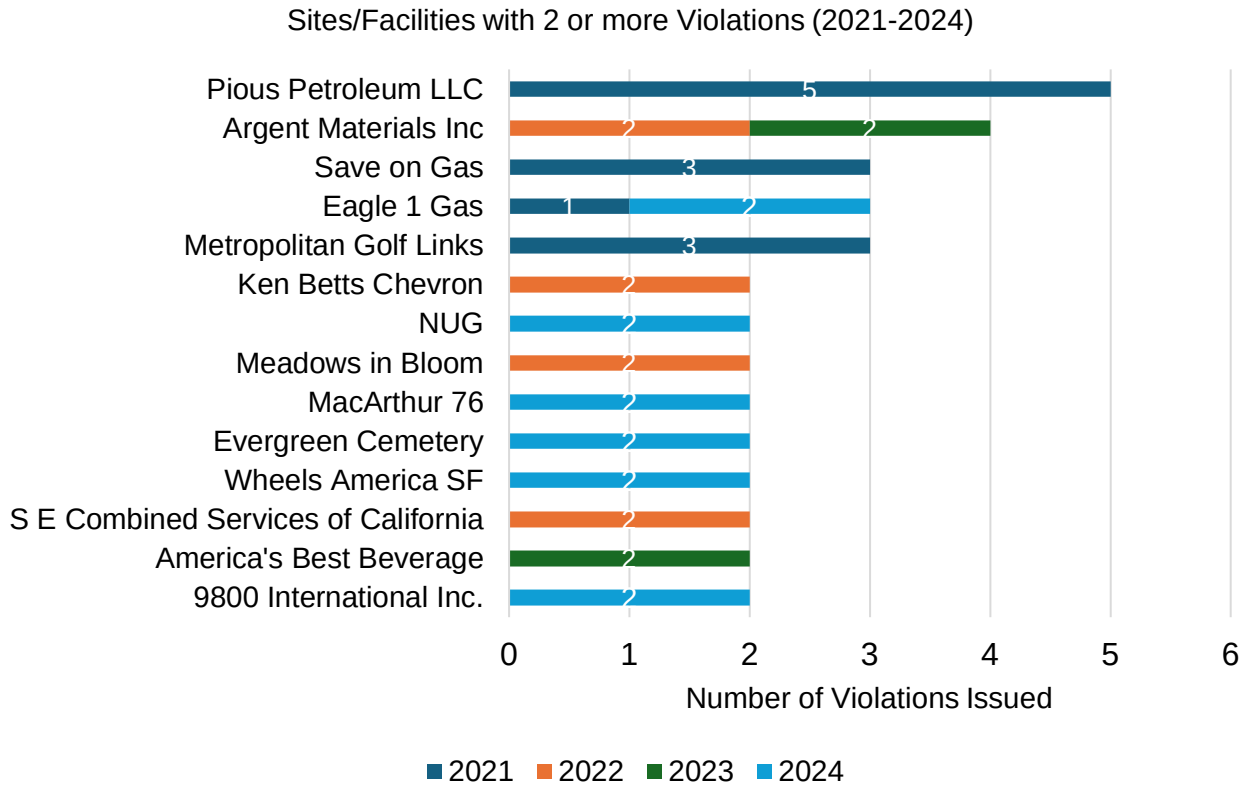


Figure 6-6: Summary of East Oakland Sites/Facilities with 2 or more Violations between 2021-2024

Enforcement of Mobile Sources

CARB Enforcement Programs

The California Air Resources Board's (CARB) Enforcement Division aims to develop partnerships with East Oakland community organizations to co-lead the development of community-focused action plans that reduce disproportionate exposures within the Plan area. CARB is charged with enforcing its regulations applicable to mobile sources, consumer products and other area-wide categories, such as fuels, and climate programs, while the Air District is primarily responsible for enforcement relating to stationary sources (e.g., boilers, refineries).

CARB enforcement programs cover the vehicles driven, the diesel engines that power the economy, consumer products that are purchase, and greenhouse gas (GHG) emissions from industries and activities. The goal of CARB enforcement programs is to achieve comprehensive compliance in every regulation the CARB adopts. Through enforcement, CARB works 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.

CARB applies enforcement programs in accordance with their enforcement policy, [174] which was updated in 2017. CARB uses data and inspections to identify potential non-compliance, and then investigate each case. Once a violation is identified, CARB notifies the potential violator and evaluates what happened. CARB works with the responsible party to achieve compliance and measure the relevant facts and circumstances of each case, relative to eight factors set in law and described in the 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, CARB works with 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 Clean Truck Check, Solid Waste Collection Vehicle, Statewide Truck and Bus, Tractor-Trailer Greenhouse Gas, Off-Road Diesel Equipment, Commercial Vehicle Idling, and Transport Refrigeration Unit. Field inspectors also conduct inspections for compliance with Public Agencies and Utilities, Cargo Handling Equipment, Commercial Harbor Craft, Ocean Going Vessel, and Shore Power regulations. CARB inspectors examine heavy-duty vehicles and equipment at numerous locations throughout California, such as along roadsides, at California Highway Patrol scale facilities, warehouses, fleet yards, construction sites, truck stops, rest areas, ports, and rail yards.

CARB's enforcement activities can be found in CARB's Enforcement Data Visualization System (EDVS), located here: Enforcement Data Visualization System – California Air Resources Board. [175] A guide to how to use EDVS is here: Enforcement Data Visualization System (ca.gov). [176] Additional information on CARB Enforcement Activity can be found in our Annual Reports: https://ww2.arb.ca.gov/resources/documents/enforcement-reports [177]

Heavy-Duty Diesel Vehicle Enforcement

The California Air Resources Board (CARB) regulations establish stringent emission requirements that new diesel vehicles must meet. These requirements require engine manufacturers to meet lower Particulate Matter (PM) and Nitrous Oxides (NOx) emission standards. Many manufacturers employ the installation of diesel particulate filters to meet the PM standard, as well as exhaust after treatment to meet the NOx emission standard. These devices remove more than 95% of toxic diesel emissions from Heavy-Duty Diesel Trucks (HDDTs) when properly functioning. In addition, because diesel engines and equipment are designed to last decades, CARB's diesel fleet regulations require operators to replace older, higher polluting vehicles and equipment with cleaner vehicles, equipment, and technologies to provide emission reductions as quickly as possible. These regulations apply to operators of on-road diesel vehicles such as trucks, and off-road diesel vehicles and equipment including construction and cargo handling equipment, transport refrigeration units, commercial harbor

[174] California Air Resources Board. "Enforcement Policy." April 2020. https://ww2.arb.ca.gov/resources/documents/enforcement-policy.
[175] California Air Resources Board. "Enforcement Data Visualization System." 2024. https://webmaps.arb.ca.gov/edvs/.
[176] California Air Resources Board. "Enforcement Data Visualization System". May 2021. https://ww2.arb.ca.gov/sites/default/files/2021-05/EDVS_052521_0.pdf.
[177] California Air Resources Board. "Enforcement Reports". 2021. https://ww2.arb.ca.gov/resources/documents/enforcement-reports.

craft, and other sources. As a result of these programs, according to the Enforcement Data Visualization System (EDVS), [178] CARB has greatly reduced diesel PM and NOx emissions and the statewide compliance rate was over 90% for diesel programs in 2024.

CARB has also developed a comprehensive heavy-duty vehicle inspection and maintenance regulation to ensure that vehicles' emissions control systems are properly functioning when traveling on California's roadways. The Board approved the regulation in December 2021, with implementation to be phased in starting January 2023. Dubbed the Clean Truck Check, the program combines periodic vehicle testing requirements with other emissions monitoring techniques and expanded enforcement strategies to identify vehicles in need of emissions related repairs and ensure any needed repairs are performed. The Clean Truck Check subjects nearly all non-gasoline vehicles with a gross vehicle weight rating over 14,000 pounds that operate in California to periodic emissions testing. Analogous to California's Smog Check program for light-duty vehicles, these testing requirements help ensure that heavy-duty vehicles operating in California remain equipped with properly functioning emissions controls, and when malfunctioning, that these systems get repaired in a timely manner. When fully implemented, the program will provide significant reductions in smog-forming and carcinogenic toxic air pollution necessary to achieve federal air quality mandates and healthy air in California's communities.

As reported in the Enforcement Data Visualization System (EDVS), CARB did not do any heavy-duty diesel inspections for years 2021 through 2024 within the Plan area, including all heavy-duty vehicle inspection programs, idling, transport refrigeration units and off-road. Although CARB did complete several inspections just outside the community boundary, ensuring that inspections were done for Heavy-Duty Diesel Trucks (HDDTs) entering and leaving the Plan area during that same time period. CARB will work with the Community Steering Committee (CSC) to prioritize inspection locations to ensure that sufficient enforcement is taking place in the community. In July of 2022, the CARB reached a settlement of an investigation with Nova Truck Repair (Nova), with its principal location in East Oakland, in the amount of $27,000. Nova failed to meet the in-use compliance requirements in several ways: By installing Verified Diesel Emission Control Systems (VDECS) without being an authorized installer; by installing VDECS without meeting the terms and conditions of the strategy; by installing VDECS on the incorrect engine; and by selling and installing VDECS which did not meet all the conditions of the respective Executive Order.

Truck and Bus Rule

Nearly all trucks and buses in California were required to have a certified 2010 or newer model year engine by January 2023, to comply with the California Air Resources Board (CARB)'s Truck and Bus rule to legally operate in California. In fact, California is entering its sixth year where the California Department of Motor Vehicles (DMV) is holding registration for some trucks and buses that are not in compliance with CARB's Truck and Bus rule as a requirement of Senate Bill 1 (Beall, Chapter 5, Statutes of 2017). Due to CARB regulation implementation and enforcement, the compliance rate statewide for heavy-duty and light-duty trucks was 98% in 2023. Trucks and buses that cannot demonstrate compliance with the statewide truck and bus rule will have registration holds placed on them with DMV and will be prevented from being driven legally in California.

[178] California Air Resources Board. "Enforcement Data Visualization System." https://webmaps.arb.ca.gov/edvs/.

According to the California Department of Motor Vehicles (DMV) data, in January 2024, vehicles registered in the East Oakland community zip codes had a 98.2% compliance rate for heavy-duty diesel vehicles and 98.4% for light-duty diesel vehicles. In 2023, the DMV placed 22 registration holds on Plan area heavy-duty diesel vehicles ranging from model year 1992 to 2010. Also in 2023, the DMV placed 24 registration holds on Plan area light-duty diesel vehicles ranging from model year 1997 to 2010.

Fuels

The California Air Resources Board (CARB) is authorized to adopt standards, rules, and regulations to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources to accomplish the attainment of the state ambient air quality standards at the earliest practicable date. CARB's fuels effort is made up of several components which broadly fall into two categories: (1) adopting and enforcing fuel specifications, and (2) controlling emissions from marketing and distributing fuels in California.

From 2021 through 2024, CARB conducted zero fuel inspections for diesel and biodiesel. CARB will enhance inspections for fuel violations to ensure compliance.

Other Areas of Mobile Enforcement

The California Air Resources Board (CARB) enforces many areas related to mobile vehicles including engines, fuel containers, refrigerants, and the windshield washer fluids. All these programs contribute to CARB’s overall efforts to tackle emissions of all types from all sources. From 2021 to 2024, CARB conducted six Vehicle and Engine inspections within the Plan area, as shown in Table 6-2.

Table 6-2: CARB Vehicle and Engine Inspections in the Plan Area

Program	Inspections	Violations
Portable Fuel Containers	3	0
Automotive Windshield Washer Fluid	3	0

Consumer Goods

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 Contaminants (TACs) and volatile organic compounds (VOCs) that community members bring into their homes. As reported in EDVS, CARB did not do any Consumer Goods inspections for years 2020 through 2023 within the Plan area. Enforcement is planning focused outreach and inspections in the Plan area to ensure chemically formulated products sold into this community are compliant.

Stationary Sources

California state law gives local air districts the primary authority to regulate stationary sources for criteria pollutants. The California Air Resources Board (CARB) has an important role in providing support to districts with training and enforcement. Stationary source-focused programs in CARB’s Enforcement Division are implemented consistently with legal authority through

training and support, conducting analyses of air district rules, regulations, variances, and policies as required by state law including direct enforcement.

CARB worked with the Office of the California Attorney General on a $2.5 million settlement with AB&I Foundry (AB&I), which manufactured cast-iron and metal pipe fittings in East Oakland. The settlement resolved two consolidated Proposition 65 lawsuits filed against AB&I, by the environmental justice organization Communities for a Better Environment (CBE) and the California Department of Justice's Bureau of Environmental Justice. Both lawsuits alleged that AB&I unlawfully emitted hexavalent chromium — an extremely potent carcinogen — into the air without providing clear and reasonable warnings to residents, in violation of Proposition 65. As part of the settlement, CARB and the Air District, also separately resolved nuisance odor allegations brought against AB&I for a long history of odor complaints in the community. CARB and the Air District began investigating odors emanating from the AB&I facility after receiving complaints from community members living in the vicinity of the operation. CARB issued a Notice of Violation (NOV) to AB&I in 2020 to remedy the nuisance odors. AB&I chose to cease all operations of its East Oakland foundry in 2022 and sold the property, thus resolving the nuisance odors. The settlement agreement resulted in two Supplemental Environmental Projects (SEPs), Breathe Oakland (SEP24-016) and East Oakland Air Quality Fund (SEP24-017), which are mentioned below.

Summary of Complaints Received

Reporting potential violations of air quality requirements can provide important information for Enforcement. Staff investigates tips about non-compliance and takes all complaints very seriously. Often details can't be discussed during the inspection process but every attempt to resolve the complaint will be made. The California Air Resources Board (CARB) takes enforcement action based on the investigation of the complaint which may lead to a notice of violation. Sometimes the CARB investigations can remain pending for extended periods, while other times the complaints are not actionable because CARB did not receive enough information to initiate an investigation. Based on the nature of the complaint, CARB may refer the complaint to another agency that has the appropriate jurisdiction. Table 6-3 contains the complaints received at CARB for the 2021 to 2024 period.

Table 6-3: Complaints Received at CARB 2021-2024

Complaint/Program Type	Number	Action Taken
Vehicles and Engines	2	Referred to another agency
Odor	3	Referred to another agency
Auto, Body and Upholstery Shop Emissions	4	Referred to another agency
Illegal Outside/Backyard Burning	9	Referred to another agency (8), Insufficient Information (1)
Fugitive Dust	1	Referred to another agency
Indoor Air Quality	1	Outside of Agency's Jurisdiction/Authority
Cannabis	1	Referred to another agency
Gas Station	2	Referred to another agency
Leaf Blowers	1	Outside of Agency's Jurisdiction/Authority
Portable Generator Emissions	3	Referred to another agency
Schnitzer Steel – Smoke	1	Investigated by California Environmental Protection Agency (CalEPA) External Agency Partner
AB&I Foundry - Odor*	76	Settlement Agreement - Penalty Paid

*AB&I Foundry had approximately 128 complaints from 2019-2022.

CARB received 76 complaints regarding a strong metallic/chemical odor coming from the AB&I Foundry from 2021-2022. This, and other complaints, resulted in a Notice of Violation (NOV) and a Settlement Agreement was reached (as mentioned above).

CARB also received 9 illegal outside/backyard burning complaints. Portable generator received 3 complaints. These get referred to the Air District for action. In addition, several complaints were received from 2021-2024, mostly consisting of odors, dust, leaf blowers, cannabis, and issues from stationary source facilities, which were referred to the Air District or other California Environmental Protection Agency (CalEPA) agencies for action. CARB did not receive any complaints regarding on-road HDDTs or other diesel programs.

An important part of AB617 is increasing community awareness of the tools that are available to residents. Reporting complaints to both the Air District and CARB enables members of the public to play an active role in addressing air pollution concerns in their community. Both agencies rely on community input for identifying additional locations and sources of concern. CARB accepts and addresses all air quality complaints as they come into the system, including mobile sources and oil and gas facilities. To report a complaint to CARB regarding

environmental concerns, please go to CARB's online complaint page at: https://ww2.arb.ca.gov/environmental-complaints. [179]

Supplemental Environmental Projects

The California Air Resources Board (CARB) has a Supplemental Environmental Project (SEP) policy that allows community-based projects to be funded from a portion, up to 50%, of the penalties received during the settlement of enforcement actions. SEPs can improve public health, reduce pollution, increase environmental compliance, and bring awareness to communities most burdened by environmental harm. Currently, three SEPs are funded in East Oakland:

- New Voices Are Rising (NVAR): Envisioning Resilience Hubs in the Community (SEP22-019): In partnership with Communities for Better Environment (CBE) and the Local Clean Energy Alliance (LCEA), the Rose Foundation engages with 15 New Voices Are Rising Fellows to lead community workshops in East Oakland and Contra Costa County. The workshops bring together residents to develop a vision for modifying affordable housing complexes to become clean powered resilient community hubs. Workshop participants develop visual and written representations of the changes that are required to convert a particular affordable housing development into a clean energy hub. The Rose Foundation's goal is to share this with relevant decision-makers. (Amount Funded: $42,676)

- Breathe Oakland (SEP24-016): Roots Community Health Center proposes to expand the scope and role of their existing Breathe Oakland program and Oakland Street Team Outreach Medical Program (STOMP) program. The goal of the Breathe Oakland program is to identify adults and children with asthma; assess their living environment and mitigate exacerbating conditions; help eliminate asthma triggers and improve indoor air quality; provide and ensure adherence to appropriate treatment; and equip them with knowledge and tools, including an action plan for self-management. The Oakland STOMP program provides widespread screening of homeless individuals throughout Oakland, as well as ongoing medical care and self-management support for those diagnosed with a respiratory condition. (Amount Funded: $300,000)

- East Oakland Air Quality Fund (SEP24-017): Rose Foundation for Communities and the Environment will utilize their experience and contacts to create and manage a community-centered grantmaking process which will provide grassroots activists and local organizations with the opportunity to submit a proposal for a grant. All Supplemental Environmental Project (SEP) funds would be allocated to community-based organizations that address crucial air quality concerns in East Oakland. (Amount Funded: $300,000)

CARB staff can help community members or organizations identify where SEPs would be more impactful and assist with the submittal of proposals. For more information on SEPs, please visit: Supplemental Environmental Projects (SEP) [180] or email us at SEP@arb.ca.gov.

[179] California Air Resources Board, "Environmental Complaints." 2025. https://ww2.arb.ca.gov/environmental-complaints.
[180] California Air Resources Board. "Supplemental Environmental Projects (SEP)." 2025. Supplemental Environmental Projects (SEP) | California Air Resources Board.

Strategies

CARB Enforcement has begun developing a community-based approach that builds on the fundamental idea that part of achieving environmental justice is making sure CARB is partnering directly with community members to truly understand community issues more holistically. Rather than solely focusing on our traditional enforcement programs in a community, CARB proposes instead, to bring our expertise and labor as part of a team collaborating with community members as partners to investigate and document community concerns more broadly and work together to identify strategies that may help to solve the problems community members are experiencing. CARB aims to provide a broader array of assistance through this approach. CARB's goal is to develop co-designed and co-led projects that empower communities, focus on community identified priorities, leverage enforcement, that result in community investigations that help CARB understand how to develop stronger enforcement approaches in East Oakland Communities.

See Chapter 7 Transportation and Mobile Sources Strategy 1 for actions related to CARB's enforcement efforts.

Chapter 7: Focus Areas, Strategies, and Actions

Introduction and Overview

This chapter describes the approach used by the Co-Leads, the Air District and Communities for a Better Environment (CBE), and the CSC to develop focus areas, community concerns, strategies, and actions. It also presents the Plan's strategies, organized by community concerns, and a list of actions to achieve each strategy.

The Co-Leads engaged in several months of data-gathering and information-sharing efforts (titled Preliminary Activities) to identify Plan focus areas and set the table for productive brainstorming with the CSC in early 2024. This was followed by ten months of strategy development in collaboration with the CSC, Air District technical experts, and agency partners.[181] Figure 7-1 represents the building blocks of this process, and the following sections go into these elements in some detail. The final sections of this chapter lay out Plan strategies and actions arranged by focus area.

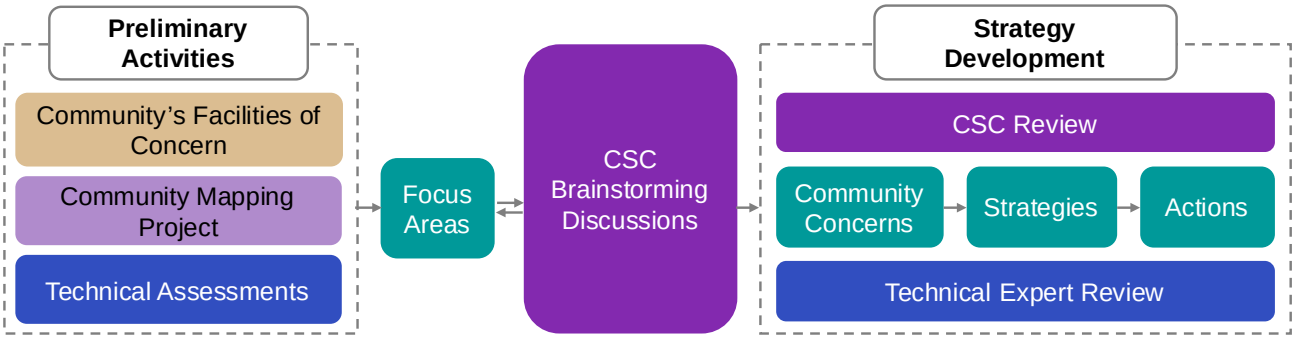


Figure 7-1: Strategy development process for the East Oakland Plan.

Preliminary Activities

Community's Facilities of Concern

As an early step to assist strategy development, Communities for a Better Environment (CBE) and the CSC identified facilities of concern in East Oakland that have been on the community's radar. For four critical facilities, CBE developed 'Problem Statements' to characterize their impact on the East Oakland community. These facilities and statements helped prioritize facility-focused actions, particularly in the Commercial and Industrial focus area. Key insights from this effort are documented in Appendix F-1: Facility Problem Statements.

Community Mapping Project

The Air District launched the East Oakland Community Mapping Project with community-based organizations[182] in September 2023 to better understand the air pollution concerns that are

[181] Agency partners include the City of Oakland, Port of Oakland, Alameda County Public Health Department (ACPHD), California Department of Transportation (Caltrans), California Air Resources Board (CARB), and the Office of Environmental Health Hazard Assessment (OEHHA).
[182] See Appendix A: Community Steering Committee, Public Process, and Community Outreach for further details on the Community Mapping Project.

most important to the community. Assisted through these organizations' outreach efforts, East Oakland community members were able to visit an online map and add information that identified air pollution concerns, community assets, and gathering places in their neighborhoods. This helped ensure that strategy development was grounded in community knowledge and lived experiences in addition to technical information.

The map received 488 pins and comments, most of which spoke about air pollution concerns. Key themes included climate impacts, commercial and industrial activity impacts, stationary and mobile emissions sources, enforcement, environmental justice and racism, health and infrastructure, land use and zoning, waste management, community strengths, resources, and spaces, and public safety. These themes were eventually grouped into the six Plan focus areas.

Technical Assessments

East Oakland Emissions Inventory

In 2023, the Air District generated an emissions inventory [183] for East Oakland and presented a summary to CSC members in August of that year. The East Oakland emissions inventory covered local stationary and mobile sources, included data for nearly 400 permitted facilities, and reported on Criteria Air Pollutants (CAPs) and Toxic Air Contaminants (TACs) for the year 2021. It provided critical information about pollution and sources that supported the development of Plan strategies and actions. The data from the emissions inventory is captured in Chapter 5.

Community Health Impacts in East Oakland

Alameda County Public Health Department (ACPHD) in 2023 presented community health data specific to East Oakland. The data included key indicators such as CalEnviroScreen (CES) cumulative percentiles, asthma emergency visits and hospitalizations, cancer, heart disease, and stroke mortality rates, and life expectancy in East Oakland as compared to Oakland and Alameda County. It also laid out key population characteristics such as demographics, poverty, and the age of housing units. This information increased understanding of the severity of health inequities in East Oakland as correlated to pollution burdens, and centered the improvement of health outcomes in Plan strategies. Chapter 4 includes updated 2019-2023 health data from ACPHD on a variety of health conditions related to air pollution.

Compliance and Enforcement in East Oakland

The Air District conducted a data review of compliance verification inspections, air quality complaints, and notices of violations (NOVs) from 2020 to 2023, [184] and presented this report to the CSC in December 2023. Among other information, the report laid out the number and types of air quality complaints, highlighting odor as a major complaint type. The report also noted sites with multiple violations in East Oakland. This information supplemented the community's concerns and helped develop actions for the Commercial and Industrial focus area. Chapter 6 captures compliance and enforcement data in East Oakland.

[183] An emissions inventory is an estimate of the amounts and types of air pollutants emitted by identified sources within a defined geographic region during a specified time period (e.g., one year).
[184] Report did not include data from December 2023.

Strategy Framework

Focus Areas

Focus areas are the overarching categories of the East Oakland community's air pollution concerns that organized strategy development for the Plan. They also help determine relevant subject matter expertise needed, as well as community and agency collaborators. The focus areas were derived from the preliminary activities described above, which provided foundational information on community perspectives and technical data. They evolved during the strategy development process based on discussions with the CSC (see Figure 7-2).

The six focus areas identified are listed as follows:

1. Built Environment and Land Use (Page 136)
2. Commercial and Industrial Sources (Page 144)
3. Illegal Dumping, Trash, and Odors (Page 162)
4. Public Health and Community Wellness (Page 164)
5. Transportation and Mobile Sources (Page 175)
6. Urban Greening and Workforce Development (Page 187)

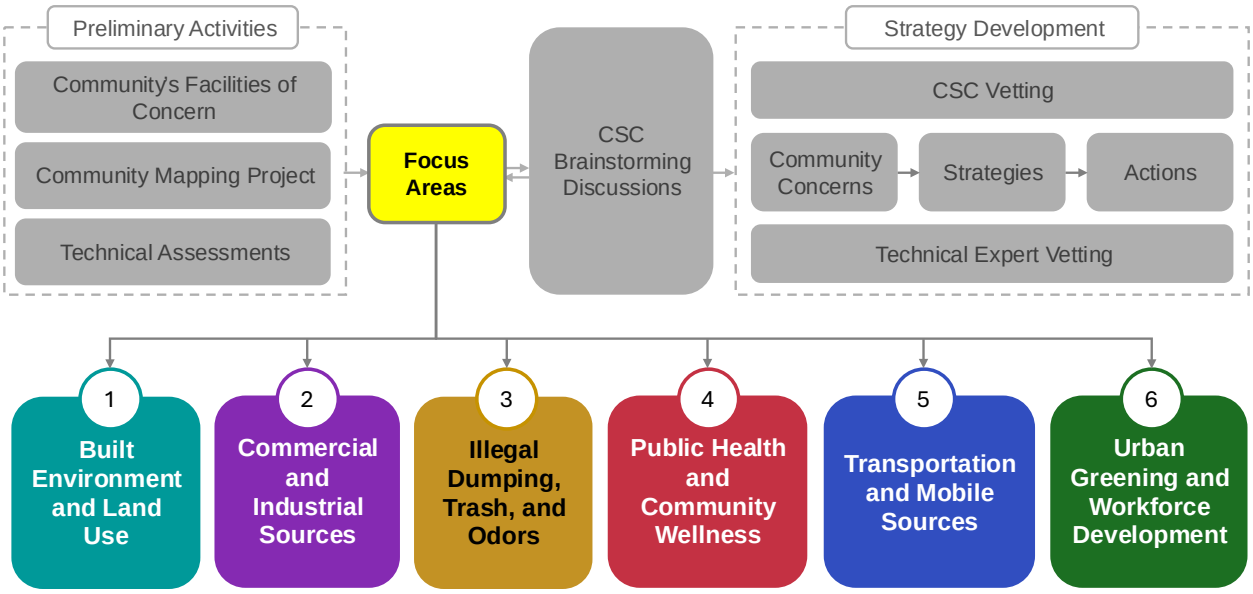


Figure 7-2: The six Plan focus areas.

Community Concerns

Community Concerns are foundational statements that identify the major challenges affecting air quality and health in East Oakland, describing concerns that have a significant negative impact on the lives of residents and families in the community. Each statement addresses three questions:

- **What is the concern?** A high-priority community issue that addresses air quality and health concerns.
- **What do we know?** Includes local knowledge, the technical assessment, complaints and violations data regarding the concern.
- **What are the consequences?** Describes the risk to the community and identifies sensitive populations that are near pollutants of concern.

Community concern statements are organized by focus area and were developed through three months [185] of brainstorming discussions with the CSC that followed the knowledge-sharing and community education stages mentioned under Preliminary Activities. The hybrid discussions primarily used a 'madlib' format to facilitate conversation, which asks participants to fill in the blanks to create a statement (see Figure 7-3). CSC members were given thematic prompts within each focus area (for example, freeways and highways in the Transportation and Mobile Sources focus area) to draw out points of concern. Staff then collected the results of these discussions and summarized them to create community concern statements. The topics of these concerns are listed in Figure 7-4, and the detailed statements are written under each focus area.

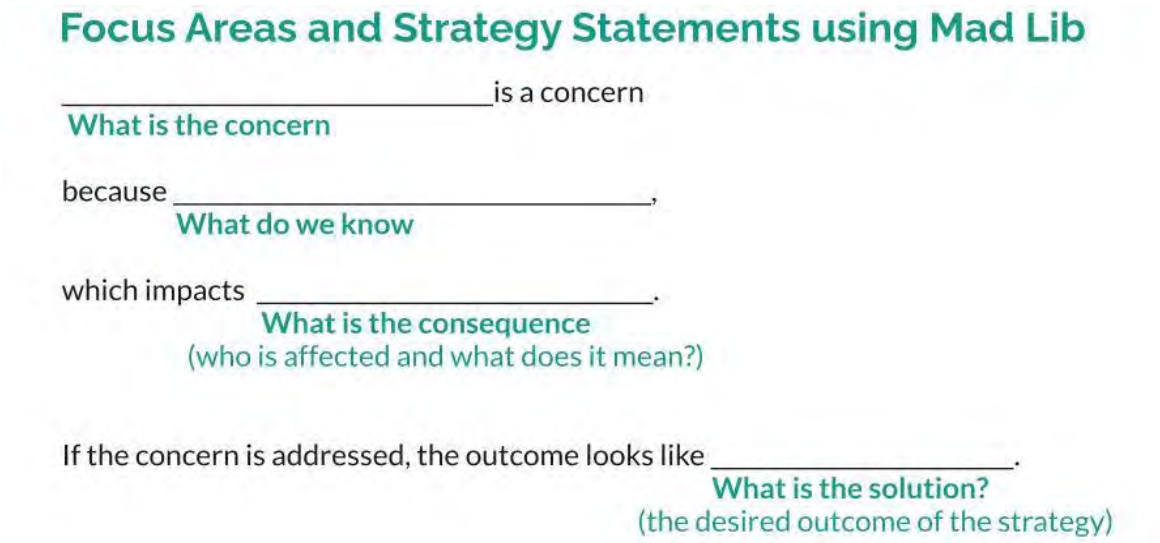


Figure 7-3: East Oakland CSC members and community members used this 'madlib' template to create community concerns and strategy objectives.

[185] CSC Meeting #16 on February 8, CSC Meeting #18 on April 11, 2024, CSC Meeting #19 on May 9, 2024, and responses submitted through Google Forms.

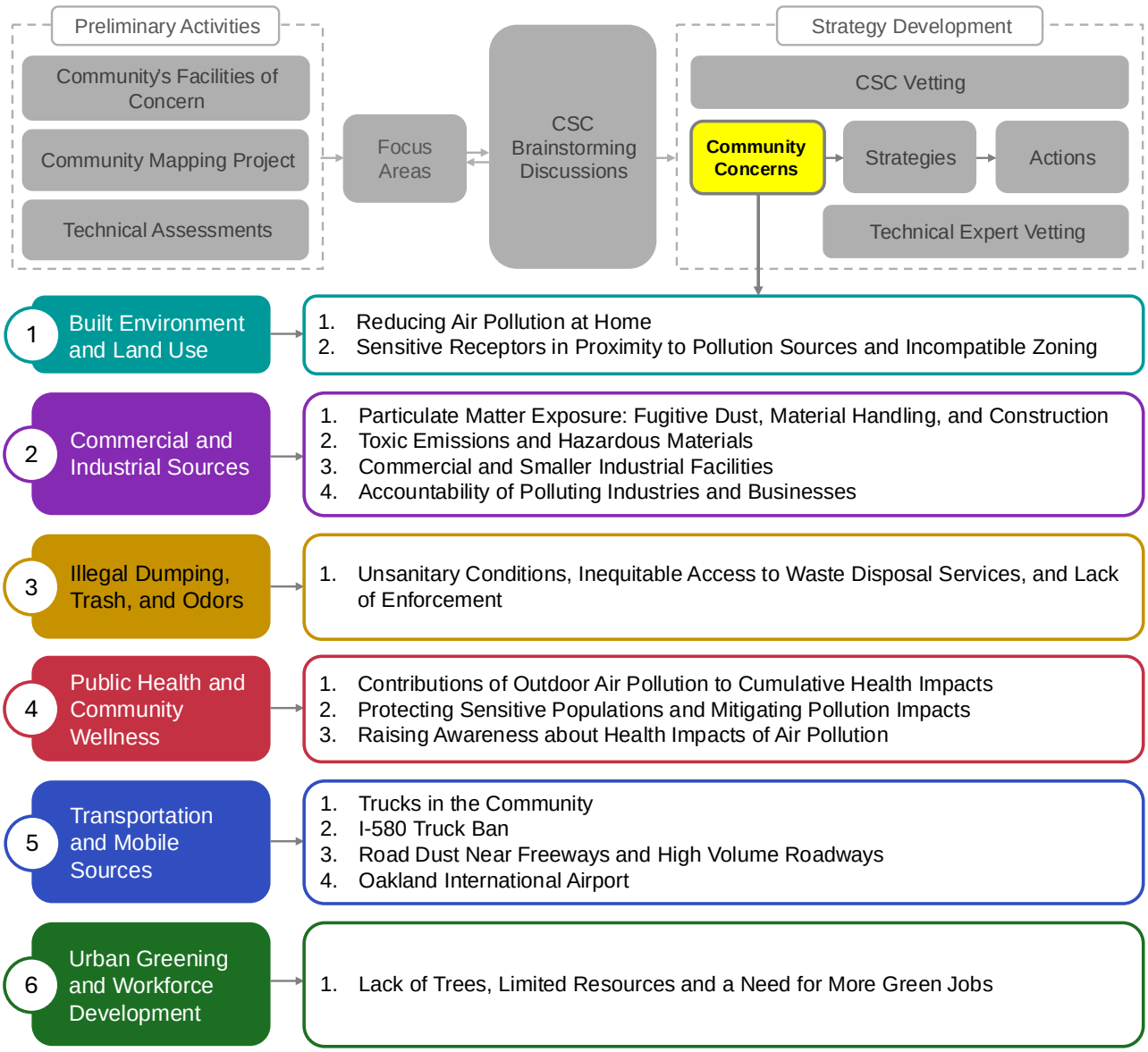


Figure 7-4: Titles of Community Concerns by Focus Area.

Strategies and Actions

Strategies and actions respond to the community concerns by identifying solutions and laying out a path to achieve the identified solution. Each strategy has the following components:

- **Strategy Objective:** The objectives state the changes that community members want a strategy to achieve, or the desired future outcome of the strategy.
- **Actions:** The actions chart specific and implementable measures that will achieve the strategy objective. Each action identifies the lead implementing agency or organization to implement the stated measure, along with an anticipated time frame.

From July 2024 to May 2025, strategy writers[186] developed strategies and actions for all focus areas in alignment with the community's desired future outcomes, while considering the specific goals of reducing emissions and improving health outcomes in East Oakland. The team conducted a landscape review of a vast set of adopted plans and policy documents to identify strategies and actions relevant to each of the focus areas. This process allowed scoping of ongoing efforts at partner agencies to avoid duplication and ensure tracking, while devising unique, specific, and actionable strategies for East Oakland. Alignment with the Air District 2024–2029 Strategic Plan[187] (Air District Strategic Plan) was also emphasized to allow more efficient use of resources, and a more coordinated approach towards addressing air quality and environmental justice issues, rather than a fragmented or siloed effort that could duplicate work, create inconsistencies, or limit the overall effectiveness of the actions (see Chapter 9). The development process followed the sequence outlined in Figure 7-5, starting with compiling community concern statements, conducting a landscape review, writing strategy objectives, developing draft actions, and completing the action compilation.



Figure 7-5: Strategy writing and review process.

The CSC vetted every step of this process, with each CSC meeting being dedicated to discussing strategy and action drafts of a particular focus area. The discussion formats were both in-person and virtual, based on CSC preference, with participants typically reviewing draft documents and answering prompts like "What resonates with you in this action?", "What is something we have not addressed through this action?", or "What thoughts and questions do you have?" Additionally, due to the technical nature of the Commercial and Industrial focus area, "office hours" were held by Communities for a Better Environment (CBE) to provide CSC members additional time to digest and discuss the actions.

The strategies and actions were simultaneously reviewed by subject matter experts and relevant external agencies to ensure alignment and to check if they were implementable. Reviewers were invited based on their assignment as lead implementers for actions and their expertise with particular focus areas. This included technical experts from the Air District, City of Oakland, Port of Oakland, Alameda County Public Health Department (ACPHD), California Department of Transportation (Caltrans), California Air Resources Board (CARB), and the Office of Environmental Health Hazard Assessment (OEHHA).

[186] Strategy writing team included staff from the Air District, CBE, and consultant Just Cities.
[187] "Bay Area Air District 2024-2029 Strategic Plan." Bay Area Air District. 2024. https://strategicplan.baaqmd.gov/

The following sections cover each focus area's community concerns, strategies, and actions in detail. Each action also notes an approximate timeframe of implementation. The timeframes, defined below, are meant to capture when an action can be initiated, as well as the length of time it could take to complete:

1. **Early Action:** Can be started immediately
2. **Short Term:** Within less than 2 years of Plan implementation
3. **Medium Term:** 2-3 years of implementation
4. **Long Term:** 4+ years of implementation

Built Environment and Land Use

Built environment refers to constructed spaces – such as homes, schools, stores, roads, and parks – that people use for living, working, and recreation.[188] As described in Chapter 4, East Oakland has seen rapid urbanization and industrial growth over the decades, reshaping its built environment as experienced by community members. Racist planning and policy practices such as redlining and urban renewal resulted in systemic inequities across quality-of-life outcomes in East Oakland communities.

Residents have raised issues about the way their neighborhoods look and feel, particularly with respect to housing quality and its impact on health. Chapter 4 describes that the housing stock in East Oakland is old - nearly 36% of homes in East Oakland were built in 1939 or earlier, compared to 19% across the county- exposing residents to indoor air pollutants. Community members have mentioned being unable to escape outdoor pollution inside their homes, and additionally experiencing exposure to lead, mold, and smoke, leading to allergies and asthma attacks.

This issue is compounded by the prevalence of industrial areas zoned for manufacturing, transportation, warehousing, and other high-impact industrial and commercial activities in East Oakland, which has created a pattern of incompatible land uses. As shown in Chapter 4, many locations where vulnerable populations[189] gather—such as in schools, daycare centers, and health clinics—are located near industrially zoned areas in East Oakland. Community members have raised concerns about the proximity of children and community spaces to polluting facilities, and the lack of general awareness about it. The East Oakland community is seeking equitable environmental standards and advocating for the same level of support and resources that are available to wealthier neighborhoods. They would like their children to breathe clean air in any building that they live, learn, and play in. Therefore, this focus area aims to leverage technology and incentive programs to improve air quality at home and in schools. It also aims to use zoning and land use tools like buffer zones and phasing out incompatible land uses to better protect populations that are particularly vulnerable to air pollution.

Fortunately, Oakland Unified School District (OUSD) is set to benefit from state funding aimed at improving air and water quality, in addition to energy efficiency. OUSD received $7 million in grant funding from the California Schools Healthy Air, Plumbing, and Efficiency (CalSHAPE) Program to upgrade heating, ventilation, and air conditioning systems at 83 schools. The work

[188] U.S. EPA webpage on Built Environment: https://www.epa.gov/smm/basic-information-about-built-environment.

[189] Vulnerable populations are groups of people who are especially at risk for adverse health effects from air pollution. This includes infants, children, the elderly, individuals with pre-existing conditions (e.g., asthma), pregnant women, and athletes (due to higher breathing rates). See also "Sensitive Populations" in the Glossary.

will include installing high-efficiency filters and carbon-dioxide sensors to improve air quality in classrooms. OUSD expects to complete these upgrades by December 2025.[190] This effort builds on a 5-year project by the Air District to install air-filtration upgrades and filter replacements to East Oakland schools, including Fruitvale Elementary School and Wilson Elementary School. The installations were completed in June 2020, and the most recent filter replacement took place in May 2024. These investments are a step in the right direction, but further action is needed to reduce the disproportionate pollution and exposure impacting vulnerable populations in East Oakland.

Strategies in this focus area would be closely coordinated with ongoing efforts at the City of Oakland, particularly in the implementation of relevant Oakland General Plan Environmental Justice Element (EJ Element), Housing Element, and Safety Element policies, while supporting the development of the Land Use and Transportation Element. The goal is to leverage cross-agency opportunities and tools to secure a clean and healthy built environment for the residents of East Oakland.

Actions from this focus area may be referenced with the abbreviation BE, followed by the strategy number and action number, for example, **BE 1.1**.

Community Concern Statement 1: Reducing Air Pollution at Home

Air pollution inside the home is the concern because it significantly impacts the respiratory health of East Oaklanders. Many homes in the area are older and prone to mold and lead exposure, and they often retain cigarette smoke odors. Indoor allergens and irritants are significant triggers for asthma attacks. Additionally, gas appliances can worsen indoor air quality. For example, studies have consistently shown that the use of gas appliances can result in indoor concentrations of nitrogen dioxide (NO_2) that exceed ambient (outdoor) air quality standards.[191] $PM_{2.5}$ (particulate matter with diameters that are generally 2.5 micrometers and smaller) is particularly dangerous because fine particles can penetrate deep into the lungs and bloodstream. This may lead to premature deaths, long-term conditions such as heart disease and emphysema, and short-term issues like bronchitis and asthma attacks. NO_x (nitrogen oxides) exposure is associated with coughing, wheezing, difficulty breathing, asthma, and increased susceptibility to respiratory infections. This exposure severely impacts respiratory health, especially for sensitive groups like the elderly and children, some of whom may already suffer from existing conditions such as asthma.

[190] A Presentation to the Facilities Committee, on the status of the District's California Schools Healthy Air, Plumbing and Efficiency (CalSHAPE) District-wide Energy Conservation and Infrastructure Improvement Project. Hearing before the OUSD Board of Education (2024). https://ousd.legistar.com/LegislationDetail.aspx?ID=6663762&GUID=C2B28552-835D-4859-8646-75F9EBF255A5&Options=ID|Text|&Search=CalSHAPE.

[191] Zhu, Y., Connolly, R., Lin, Y., Mathews, T., Wang, Z., 2020: Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California. UCLA Fielding School of Public Health. https://ucla.app.box.com/s/xyzt8jc1ixnetiv0269qe704wu0ihif7.

Strategy 1. Healthy Homes, Healthy Lives: Clean Indoor Air and Zero-Emission Homes

Strategy Objective: East Oakland homes have healthy indoor air quality to improve respiratory health among residents. Indoor air pollutants such as lead and asbestos are reduced, emissions from fuel-burning heat sources are eliminated, common indoor allergens are decreased, indoor exposure to volatile organic compounds (VOCs) is limited, and the infiltration of outdoor pollutants including smoke and particulate matter (PM) is minimized without passing costs of improvements to renters.

Every home, beginning with older ones, uses clean and renewable energy sources. Harmful emissions from household energy use are reduced or eliminated, leading to improved health. Existing homes become more energy efficient and protected from external air pollution through electrification, weatherization, air filtration, and other retrofitting measures. Frontline communities benefit first but are not burdened with the costs of improvements or retrofits. This effort contributes to a Just Transition in East Oakland. [192]

Strategy Metrics:

- Number of air filtration units provided to homes in East Oakland.
- Number of wood-burning heating equipment units decommissioned or replaced with heat pumps through incentive programs.
- Amount of funding available for community-identified projects.

#	Actions
BE 1.1	**Air Filtration for East Oakland Homes:** Explore and, if available, secure funding that continues the Air District's Home Air Filtration Programs to distribute home air filters, connect with community organizations, and conduct targeted outreach to vulnerable populations in East Oakland. **Lead:** Air District **Timeframe:** Short Term (Less than 2 years)
BE 1.2	**Access to Existing Clean Energy Home Retrofit and Weatherization Programs:** Explore and implement strategies to help more low-income East Oakland homeowners and renters benefit from existing local, state, and federal programs that offer financial assistance, energy audits, and other support for clean energy home retrofits and weatherization [193] improvements. Examples of existing programs include the Bay Area Regional Energy Network Home+ Program (BayREN), California Weatherization Assistance Program (California Department of Community Services and Development), and the Low-Income Home Energy Assistance Program (U.S. Department of Health and Human Services).

[192] The City of Oakland Climate Emergency and Just Transition Resolution (2018) defines "Just Transition" as "A framework for a fair shift to an economy that is ecologically sustainable, equitable, and just for all its members." The resolution can be accessed at: https://www.oaklandca.gov/files/assets/city/v/1/city-administrator/documents/sustainability/87397-cms-climate-emergency-declaration.pdf

[193] Weatherization involves making improvements to a home that reduce energy use and help keep it warm in the winter and cool in the summer. This can include adding or upgrading insulation, improving ventilation, or sealing gaps around doors and windows.

#	Actions
	Lead: Air District **Timeframe:** Medium Term (2-3 years)
BE 1.3	**Woodsmoke Reduction:** Evaluate and, within two years, report back to the CSC on incentives for removal or replacement of wood-burning equipment (used for heating or cooking) with cleaner technologies, such as electric heat pumps. If funding is identified, open a program and prioritize applicants in Community Emissions Reduction Plan (CERP) communities, including East Oakland, and look for ways to increase participation in East Oakland. Connect with the CSC to amplify existing woodsmoke reduction education efforts in East Oakland. **Lead:** Air District **Timeframe:** Short Term (Less than 2 years)
BE 1.4	**Explore Funding Opportunities for Community-Identified Projects:** Evaluate and, within two years, report back to the CSC on the availability of funding from sources outside of the Air District for the following community priorities: zero-emission appliances for homeowners, such as electric stoves or water heaters. This work may include engagement with external partners, such as BayREN, City of Oakland energy programs, and PG&E, to connect the community to their incentive programs or to collaborate on development or expansion of their funding programs. **Lead:** Air District **Timeframe:** Short Term (Less than 2 years)
BE 1.5	**Support Unhoused Communities During Air Quality Emergencies:** Partner with Alameda County to explore opportunities to improve existing outreach and support efforts for unhoused populations during wildfire smoke events and other air quality emergencies. **Lead:** Air District **Timeframe:** Long Term (4+ years)
BE 1.6	**Proactive City Updates & CSC Engagement on Safe and Healthy Homes:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives: • 2023 - 2031 Housing Element [194]

[194] City of Oakland, "2023-2031 Adopted Housing Element." Oakland General Plan. 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Housing-Element/2023-2031-Adopted-Housing-Element.

#	Actions
	• Environmental Justice [195] See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland, Planning & Building Department **Timeframe:** Long Term (4+ years)

Community Concern Statement 2: Vulnerable Populations in Proximity to Pollution Sources and Incompatible Zoning

Vulnerable populations—including infants, children, the elderly, individuals with pre-existing conditions (e.g., asthma), pregnant women, and athletes (due to higher breathing rates)—are especially at risk for adverse health effects from air pollution. Vulnerable populations in proximity to pollution sources and incompatible zoning is the concern because in East Oakland, sensitive land uses such as schools, playgrounds, daycare centers, and residential areas are located near or adjacent to pollution sources. This creates an environmental justice issue, as past land use planning and zoning decisions have resulted in a disproportionate concentration of pollution sources in Black, Indigenous, and People of Color (BIPOC) communities. For example, neighborhoods that were historically redlined often experience higher poverty rates, elevated temperatures, lower life expectancy, increased chronic diseases, poorer mental health, and reduced life expectancy at birth. In East Oakland, the high density of polluting facilities exacerbates these issues. The absence of vegetative barriers and buffer zones between these facilities and sensitive land uses, coupled with a lack of signage and community engagement to caution people of toxic pollution sources near them, worsens the problem. Significant pollution sources include warehouses, factories, and junkyards, which also generate heavy truck traffic. Additionally, the cannabis industry is noted by CSC members as contributing to both pollution and traffic concerns. The CSC cited three examples of land use conflicts. The first example is Sterling Environmental Corporation (Sterling Environmental), which temporarily stores asbestos waste from remediation work performed off-site. Sterling Environmental stores the asbestos waste at their property that is located next to Esperanza Elementary School, Korematsu Discovery Academy, Stonehurst Child Development Center and the Stonehurst Edible Schoolyard, where a school garden is located. A second example is the Evergreen Crematory which is surrounded by residential homes, multiple schools, and a park. The third example is Argent Materials, located less than a mile upwind from Acorn Woodland Elementary School, the 81st Ave Branch Library, and the Tassafaronga Recreation Center.

[195] City of Oakland, "Environmental Justice Element." Oakland General Plan. 2023. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element.

Strategy 2. Promote Clean Air in High-Priority Facilities

Strategy Objective: Exposure to harmful pollutants is reduced and indoor air quality is improved at high-priority facilities where populations that are particularly vulnerable to air pollution gather outside the home. These include schools, libraries, or senior centers situated near significant sources of transportation-related, commercial, or industrial pollution, as identified through technical assessments and community knowledge.

Strategy Metrics:

- Number of air filtration upgrades delivered to high-priority facilities in East Oakland.

#	Actions
BE 2.1	**Air Filtration for East Oakland High-Priority Facilities:** Explore the feasibility of expanding the existing Air Filtration program, or starting a new program, to support high-efficiency air filtration upgrades for high-priority facilities, such as Head Starts in public buildings, schools, libraries, and senior centers. Connect with community organizations and conduct targeted outreach to vulnerable populations in East Oakland. **Lead**: Air District **Timeframe:** Long Term (4+ years)

Strategy 3. Advancing Environmental Justice Through Zoning and Land Use Tools

Strategy Objective: The City of Oakland (City) uses its land use authority to phase out existing nonconforming and incompatible land uses, resulting in improved health outcomes for populations that are particularly vulnerable to air pollution. New developments have more stringent requirements to limit pollution and protect residents and workers. Zoning rules are revised to ensure that new industrial and commercial developments are sited and designed to limit potential adverse effects on air quality and health. The clean-up and redevelopment of contaminated sites is encouraged, prioritizing the reduction of air quality impacts while promoting economic, social, health, and environmental benefits for the community.

Strategy Metrics:

- Protocols developed to track nonconforming truck-attracting activities or facilities (yes/no).
- Adoption of zoning or land use policy to address nonconforming land use conflicts in East Oakland (yes/no).
- Number of facilities in East Oakland included in the pilot amortization policy.

#	Actions
BE 3.1	**Tracking Nonconforming Truck-Attracting Businesses:** Develop protocols to identify and track nonconforming truck-attracting activities or facilities, as described by Chapter 17.114.050 of the Oakland Planning Code. The goal of this action is to ensure that when these businesses close, they are not improperly re-permitted, and the parcels are brought into compliance with the health-protective zoning regulations adopted by the City of Oakland in 2023 through the Industrial Planning Code Amendments.[196] One possible tracking method could involve keeping a list of businesses that became nonconforming following the adoption of 17.114.050 Nonconforming Activity—Discontinuance[197] and incorporating flags into the City's Accela permit tracking system. **Lead:** City of Oakland, Planning & Building Department **Timeframe:** Medium Term (2-3 years)
BE 3.2	**Air Quality Protection Information for Communities Located Near Sources of Harmful Pollutants:** For residents, workers, property and business owners, and community-serving institutions located within 1,000 feet of: ● Industrially zoned land, and ● Top permitted sources of fine particulate matter ($PM_{2.5}$) emissions, cancer and chronic Toxicity-Weighted Emissions (TWE) in East Oakland (as identified in Chapter 5 of the Plan), and ● I-880 and I-580 freeways. Create: 1. Multi-lingual, accessible informational materials that explain the potential health and environmental impacts of harmful pollutants in the area and offer practical guidance on how residents can protect themselves from this exposure. 2. List of recommended activities and measures that can meaningfully reduce pollution exposure and its impacts. 3. List of potential zoning and land use policy measures to facilitate the implementation of effective actions that reduce air pollution. Collaborate with the CSC to explore ways of making outreach more effective and equitable—for example, by engaging them in identifying community-serving institutions. **Lead:** City of Oakland, Planning and Building Department **Timeframe:** Medium Term (2-3 years)

[196] "Exhibit D. Industrial Zones Package." Accessed July 9, 2025. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Ord-Exhibit-D_-Industrial-Zones.pdf.
[197] "Oakland Planning Code 1997 (Supplement, December 17, 2024). Accessed July 9, 2025. https://cao-94612.s3.us-west-2.amazonaws.com/documents/Planning-Code-after-12-17-24_Chpt.17.101B-Brooklyn-Basin_CLEAN.pdf.

#	Actions
BE 3.3	**Community Informed Amortization**: Implement a pilot amortization policy [198] in East Oakland, developed in consultation with the CSC and with support from the Air District. When identifying nonconforming uses, include: ● Any facility of concern to the CSC located within 1,000 feet of places where populations that are particularly vulnerable to air pollution gather. ● Any facility that no longer complies with the health-protective zoning adopted by the City in 2023. Consider the following criteria when designing the pilot: ● Establish clear timeframes for nonconforming uses to comply with updated zoning laws. ● Number of local East Oakland residents employed by these businesses and the potential unintended economic impacts, such as job losses or reduced income. ● Racial Equity Impact Analysis: Assess whether the pilot policy can help reduce health inequities and lower the disproportionate pollution burden in East Oakland. ● Incentives for businesses to relocate, such as relocation assistance and potential tax relief. ● Incentivize or require businesses to conduct environmental cleanup of their sites before ceasing operations, with technical assistance provided to help them apply for environmental cleanup grants. Evaluate the effectiveness of the amortization policy pilot, gather community input for potential revisions or updates, and establish timeframes to create a permanent program. Support from the Air District could include working with the City of Oakland to engage the CSC during a regularly scheduled quarterly meeting. **Lead**: City of Oakland, Planning & Building Department **Timeframe:** Long Term (4+ years)
BE 3.4	**Oakland's Anti-Displacement Action Plan**: Support the CSC's involvement in monitoring the implementation of the City of Oakland's Anti-Displacement Strategic Action Plan, [199] which builds upon the City's recently adopted Housing Element and other related housing initiatives. The equity framework for this plan includes: ● Homelessness Prevention ● Tenant Anti-Displacement ● Homeowner Anti-Displacement

[198] "Policy Strategy B – Non-Conforming Polluting-Use Transition Incentives." Air District. Accessed July 9, 2025. https://www.baaqmd.gov/~/media/files/planning-and-research/sb-1000/policy-initiatives/policy-b-stripped-pdf.pdf?rev=926daf44dd7b441d99ce4e3feb8a5e2b.

[199] "2023-2027 Strategic Action Plan." City of Oakland, Housing and Community Development. https://cao-94612.s3.us-west-2.amazonaws.com/documents/HCD-2023-2027-Strategic-Action-Plan.pdf

#	Actions
	• Citywide Stabilization, ensuring a protective policy and regulatory environment See Appendix F-2 for a list of other strategies, policies and actions of interest to the CSC. **Lead**: Communities for a Better Environment (CBE) **Timeframe:** Short Term (Less than 2 years)
BE 3.5	**Oakland's General Plan Update:** Support the CSC in participating in the City of Oakland General Plan Land Use and Transportation Element (LUTE) Update to identify opportunities to relocate truck attracting and heavy industrial business away from East Oakland neighborhoods. See Appendix F-2 for a list of other strategies, policies and actions of interest to the CSC. **Lead**: Communities for a Better Environment (CBE) **Timeframe:** Early Action (Immediate)
BE 3.6	**Proactive City Updates & CSC Engagement on Brownfield Sites and Other Contaminated Sites:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives: • Safety Element [200] • Environmental Justice Element [201] See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland, Planning & Building Department **Timeframe:** Long Term (4+ years)

Commercial and Industrial Sources

The Commercial and Industrial Sources focus area targets stationary (permitted and non-permitted) [202] sources of air pollution in East Oakland, including large industrial facilities and smaller sources. Due to its early industrial character and the ensuing history of discriminatory zoning and real estate lending practices, East Oakland has a disproportionate number of

[200] "Safety Element." City of Oakland. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Safety-Element
[201] "Environmental Justice Element." City of Oakland. https://www.oaklandca.gov/Planning-Building/General-Plan-Neighborhood-Plans/City-of-Oakland-Current-General-Plan-Elements/Environmental-Justice-Element
[202] For emissions inventory purposes, 'permitted facilities' refers broadly to sources with facility-specific emissions estimates, including those that are permitted, registered, or permit-exempt. 'Non-permitted sources' are stationary sources not tied to a specific facility, such as construction dust and commercial cooking. This definition is specific to the emissions inventory and differs from how 'permitted' and 'non-permitted' are used in Engineering and Compliance & Enforcement contexts, where the definition is more narrow.

commercial and industrial facilities adjacent to residential neighborhoods. Chapter 4 finds that Oakland has 17 solid waste facilities with the largest cluster in East Oakland, [203] following national trends for the siting of hazardous waste facilities near low-income communities of color. Chapter 5 finds that permitted stationary sources such as Davis Street Transfer Station and Miller Milling Company combine to account for 27% of local fine particulate matter ($PM_{2.5}$) emissions (particulate matter with diameters that are generally 2.5 micrometers and smaller), while non-permitted stationary sources such as construction dust and commercial cooking account for 44%. Over the decades, East Oakland residents in collaboration with grassroots organizations such as Communities for a Better Environment (CBE) have been a powerful voice against polluters in their community, but much work remains to be done in reducing the exposure of residents against these sources.

The development of this focus area began with CBE and the Community Steering Committee identifying facilities [204] that have been on the community's radar, developing 'Problem Statements' for four critical facilities to capture the community's understanding of issues. These statements are summarized in Appendix F-1: Facility Problem Statements. Results of the East Oakland Emissions Inventory also brought into focus facilities such as the Davis Street Transfer Station, Miller Milling Company, Peet's Coffee and Tea, and others (see Chapter 5); where 11 permitted facilities account for 98% of local $PM_{2.5}$ emissions from the permitted source sector. In terms of toxics exposure, permitted sources play a small role in the overall Toxic Air Contaminant (TAC) inventory, though individual facilities or groups may still be important emitters due to the specific compounds or their proximity to sensitive populations. Smaller commercial and industrial sources have also been an issue for the community for these reasons, with backup (diesel) generators, auto body shops, gas-dispensing facilities, cannabis production facilities, and smaller food production facilities contributing to localized exposure.

Finally, fugitive dust [205] remains a significant source of concern for the community, with residents speaking of being exposed to unknown dust, and having visible debris on their cars and front steps. This is reflected by the data, with fugitive dust sources in East Oakland accounting for about 40% of all $PM_{2.5}$ emissions from local stationary sources, while the other 60% is emitted by stationary sources such as commercial and residential fuel combustion, industrial processes, and commercial cooking (see Chapter 5).

Residents have voiced physical and mental health impacts due to living near commercial and industrial sources, with particular concern about the impacts of these sources on their children, the elderly and the disabled. Therefore, this focus area aims to address Particulate Matter (PM) exposure from fugitive dust, material handling, and construction, and toxics exposure from facilities producing toxic emissions. The strategies and actions leverage Air District authority over stationary sources and CBE's grassroots advocacy abilities to bring about meaningful changes in exposure to commercial and industrial sources in East Oakland.

Actions from this focus area may be referenced with the abbreviation C&I, followed by the strategy number and action number, for example, **C&I 1.1**.

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[203] Active, closed, and inactive as of February 2025. See Chapter 4.

[204] Community's Facilities of Concern list included AB&I Foundry (now Prologis Redevelopment), Argent Materials, Crematorium on 98th Ave (SE Combined Services of California), and Sterling Environmental, (CSC Meeting #10 on July 13, 2023).

[205] PM that enters the atmosphere without passing through a stack/duct designed to direct or control its flow. Via U.S. EPA webpage on Fugitive Dust: https://www.epa.gov/system/files/documents/2022-02/fugitive-dust-control-best-practices.pdf.

Community Concern Statement 1: PM Exposure: Fugitive Dust, Material Handling, and Construction

Fugitive dust from operations and facilities that process or store loose, raw, and/or uncovered materials is a concern because fugitive dust is a source of Particulate Matter (PM) that mixes into the air resulting in primarily PM_{10} (Inhalable particulate matter with diameter of 10 micrometers or less) and at times $PM_{2.5}$ (particulate matter with diameters that are generally 2.5 micrometers and smaller) exposure, which increases health risks for the community. Sources of fugitive dust in the East Oakland area include, but are not limited to, concrete and asphalt recycling and disposal, aggregate products such as sand, gravel and crushed stone, paving and grading materials, waste transfer, storage and sorting, wheat milling, and other raw/loose material operations. Additional sources of fugitive dust include construction, demolition, and environmental cleanup activities, such as those ongoing at the former AB&I property. Some fugitive dust can also have hazardous and toxic components, such as asbestos and toxic metals like lead.

Strategy 1. Reduce Exposure from Fugitive Dust, Material Handling, and Construction Activities

Strategy Objective: Exposure from sources of fugitive dust (dust in the air from open areas, uncovered materials, and construction), including from materials handling, recycling, disposal, and construction activities is minimized through the adoption of rule amendments and incentives, and dust complaints are reduced.

Strategy Metrics:

- Draft rule amendments published (yes/no)
- Opportunities to provide input on future rule amendments
- Rule amendments to address fugitive dust adopted (yes/no)

#	Actions
C&I 1.1	**Rule Amendments to Address Fugitive Dust:** The Air District will develop and propose rule amendments, as recommended in the Air District's Fugitive Dust White Paper.[206] This could include amendments to Regulation 6 - Rule 1 (General Requirements) and Rule 6 (Prohibition of Trackout), and should help address locations with the potential to generate fugitive dust, including construction sites, earth-moving facilities, and bulk material handling sites. The Air District will seek and consider community input during the rule development process. The rule amendments should aim to: ● Increase accountability through stronger rule requirements for facilities, ● Implement best management practices (BMPs) to control dust at facilities, ● Improve enforceability of the rules,

[206] Tang, Mark and Lara, Eric. "Fugitive Dust White Paper: Regulatory analysis and recommendations to further address fugitive dust and particulate matter emissions." Bay Area Air Quality Management District, March 2023. https://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-6-particulate-matter---common-definitions-and-test-methods/2023-amendment/documents/20230517_dustwhitepaper_r0601and0606-pdf.pdf

#	Actions
	• Add fenceline air monitoring requirements for some facilities, and • Reduce fugitive dust emissions and exposure. Community engagement efforts should aim to educate the CSC and broader community on the rule development process, as well as seek feedback on the specific rule amendments being developed to reduce dust/particulate matter exposure. Engagement could be accomplished, for example, via workshops and/or meetings that are scheduled to provide appropriate lead time for the community to digest presented content and develop comments before the formal public comment period ends. Communities for a Better Environment (CBE) could serve as a community resource to help develop comments. **Lead**: Air District **Timeframe:** Early Action (Immediate)
C&I 1.2	**Advocate for and/or Implement Local Best Practices at Facilities with the Potential to Produce Fugitive Dust:** This action aims to ensure the application of Best Management Practices (BMPs) for fugitive dust at key East Oakland facilities including but not limited to Argent Materials, Davis Street Transfer Station, Gallagher & Burk, Sterling Environmental, and the former AB&I site. • Air District maintains its list of BMPs on their CEQA webpage so that BMPs are easily accessible and available to local government agencies as well as project implementers. • The recommended list of BMPs is updated as applicable, including adding any best practices that may result from the Air District's Fugitive Dust White Paper and subsequent rule development activity (i.e., implementation of C&I 1.1). • Whenever the BMP list is updated, Air District will conduct outreach and education to City of Oakland Planning & Building Department staff with respect to conditions of approval for fugitive dust, emphasizing the importance of good site management (frequent waterings, etc.) and vigilant enforcement of permit conditions as some of the most powerful tools to address dust. **Lead**: Air District **Timeframe:** Early Action (Immediate)
C&I 1.3	**Review and Comment on California Environmental Quality Act (CEQA) Analysis of Proposed Projects:** The Air District reviews and comments on California Environmental Quality Act (CEQA) analysis of proposed projects that may have potentially significant air quality, climate, environmental justice, and/or cumulative impacts in East Oakland. The Air District also encourages CSC/community/local organizations to alert Air District to projects potentially having a significant impact within the purview of the Air District. The Air District reviews CEQA documents and comments on issues wherein the Air District holds expertise, and in alignment with the Air District's CEQA Thresholds and Guidelines including: air quality emissions, health risk assessment, health impacts, greenhouse gas (GHG) emissions, environmental justice, civil rights, transparency and

#	Actions
	adequacy of data and methodology, consistency with Air District policy and plans, sufficiency of relevant mitigation measures or alternatives. In particular, CEQA Guidelines Chapter 2, Best Practices for Centering Environmental Justice, Health and Equity will help with centering environmental justice and equity in project review. When reviewing projects, the Air District will aim to meet with CSC, Communities for a Better Environment (CBE), and/or other interested communities and organizations to discuss key concerns. The Air District will continue to alert relevant partner agencies of proposed projects of concern in a timely manner. **Lead**: Air District **Timeframe:** Early Action (Immediate)

Community Concern Statement 2: Toxic Emissions and Hazardous Materials

Facilities of concern: Crematoriums (Evergreen and East Bay), Cultured Marble Products, PCC Structurals.

Multiple large industrial and manufacturing facilities are a concern because of their Toxic Air Contaminant (TAC) emissions. Examples of toxic emissions include mercury, nickel, arsenic, hydrochloric acid, and styrene. These emissions may result in cancer, chronic health impacts, and other health hazards. As of May 2025, several facilities in East Oakland are required to be evaluated for existing health risk impacts from air toxic emissions pursuant to Air District Rule 11-18.

Strategy 2. Improve Implementation of Rule 11-18 and the Facility Risk Reduction Program While Engaging Community

Strategy Objective: Health risk from Toxic Air Contaminants (TACs) from existing facilities is reduced to below the cancer risk, chronic hazard, and acute hazard thresholds set in Rule 11-18.

Strategy Metrics:

- Name and number of applicable facilities for which Rule 11-18 implementation is initiated
- Draft Rule 11-18 amendments published (yes/no)
- Rule 11-18 amendments adopted (yes/no)
- Facility Risk Reduction Program website improvements completed (yes/no)

Note for details on Rule 11-18, see the Air District's webpage: https://www.baaqmd.gov/en/rules-and-compliance/rules/regulation-11-rule-18-reduction-of-risk-from-air-toxic-emissions-at-existing-facilities. [207]

[207] Bay Area Air District. "Regulation 11 Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities – 2025 Amendments (Draft)." 2025. https://www.baaqmd.gov/en/rules-and-compliance/rules/regulation-11-rule-18-reduction-of-risk-from-air-toxic-emissions-at-existing-facilities.

#	Actions
C&I 2.1	**Implement Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities:** The purpose of Rule 11-18 is to focus on existing facilities causing the highest toxic air contaminant (TAC) health impacts and require these facilities to reduce those impacts if shown to exceed the health protective thresholds in the regulation. The Air District will prioritize implementing Rule 11-18 at applicable facilities located in East Oakland, and engage the community throughout the process. This includes completing and publishing Health Risk Assessments and, when applicable, Risk Reduction Plans. The Air District will work with Communities for a Better Environment (CBE) and/or other community-based organizations to conduct outreach to notify and inform interested community members of the Health Risk Assessments and Risk Reduction Plans, if applicable using clear, non-technical, and otherwise accessible language in an effort to promote informed responses, particularly from community members who may be most impacted by the results. CBE will support community members in drafting public comment letters. The current list of applicable facilities in the East Oakland Plan area (as of April 2025) that trigger implementation of Rule 11-18 include Evergreen Cemetery (crematory), East Bay Crematory, and East Bay Municipal Utility District (EBMUD) Upper San Leandro Waste Treatment Plant. The list is evaluated each year based on the annual reported throughput and emissions. During this review, facilities may come off the list and/or additional facilities may be added. The list of facilities that trigger 11-18 is available on the website at https://www.baaqmd.gov/en/community-health/facility-risk-reduction-program/facility-risk-reduction-list **Lead**: Air District **Timeframe:** Long Term (4+ years)
C&I 2.2	**Rule Amendments to Improve Implementation of Rule 11-18 and the Facility Risk Reduction Program:** The Air District is developing amendments to Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities. The amendments are intended to streamline and expedite the implementation of Rule 11-18, including those concepts evaluated in the Rule 11-18 Amendments Concept Paper which proposed measures to accelerate health risk reductions and improve program efficiency. The Concept Paper was the initial step in the process of developing amendments to Rule 11-18 and can be found on the Rule 11-18 amendments webpage.[208] The development of Rule 11-18 amendments will occur in two phases: (1) the first phase will focus on efficiency and accelerating the timeframe to get to the Risk Reduction Plan phase faster, and (2) the second phase will focus on expanding the rule to make it more health protective. Additionally, the Air District may evaluate whether to require affected facilities to prepare and submit health risk assessments to the Air District for review. This includes considering improvements to ensure adherence to established and standardized guidelines. The Air District will engage with and seek feedback from the community during the rule development process using CSC meetings, public workshops, public comment periods

[208] Bay Area Air District, "Regulation 11 Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities - 2025 Amendments (Draft) ", 2025. https://www.baaqmd.gov/en/rules-and-compliance/rules/regulation-11-rule-18-reduction-of-risk-from-air-toxic-emissions-at-existing-facilities?rule_version=2024%20Amendments.

#	Actions
	and individual meetings as requested. Moreover, Communities for a Better Environment (CBE) will work with the CSC and the community to assist in reviewing the regulatory proposal and providing public comment during the rule development process (e.g., draft amendments and reports). **Lead**: Air District **Timeframe:** Early Action (Immediate)
C&I 2.3	**Webpage Improvements for Rule 11-18 Facilities**: Air District staff update the Rule 11-18 Risk Reduction Facilities webpage [209] to include Phase II facilities in a searchable table to improve accessibility, beginning with an update to include facilities located in AB617 communities and other priority communities (e.g., overburdened communities experiencing cumulative health impacts from facility operations). The current list of Phase II facilities is included in a PDF on the website at https://www.baaqmd.gov/community-health/facility-risk-reduction-program/facility-risk-reduction-list. [210] A map of permitted facilities and their prioritization scores is available on the website at https://www.baaqmd.gov/en/about-air-quality/emission-inventory/toxic-air-contaminants/toxic-mapping-tool. [211] **Lead**: Air District **Timeframe**: Short Term (Less than 2 years)

Strategy 3. Improve Regulatory Oversight, especially Pertaining to Permitting Processes, in order to Better Protect Communities that are already Heavily Impacted by Pollution

Strategy Objective: Air District permitting process for new and expanded facilities is timely, transparent, and accessible, and incorporates environmental justice principles to ensure stronger protections and health-protective measures for community members.

Strategy Metrics:

- Number of touch points (meetings, emails, etc.) with Air District to inform and engage the CSC members to discuss improvements to public outreach on permitting accessibility and transparency
- Launch an interactive web portal with facility related information including permitting, emissions and compliance information. (yes/no)
- Permit rule amendments initiated (yes/no)

[209] Bay Area Air District. “Rule 11-18 Risk Reduction Facilities.” 2025. https://www.baaqmd.gov/community-health/facility-risk-reduction-program/facility-risk-reduction-list.
[210] Ibid.
[211] Bay Area Air District. “Facility Toxic Emissions and Prioritization Tool.” 2025. https://www.baaqmd.gov/en/about-air-quality/emission-inventory/toxic-air-contaminants/toxic-mapping-tool.

#	Actions
C&I 3.1	**Improve Permitting Processes to be More Efficient and Timely:** The Air District will allocate resources and update resource management to ensure permits can be reviewed efficiently and in a timely manner to better align with timeframes outlined in our regulations. This includes better tracking of permit applications and addressing bottlenecks in the permitting process. This could be accomplished by improving internal coordination, identifying and utilizing enhanced resource management systems and tools, and/or establishing dedicated project teams for complex permits. At the same time, efforts will be made to ensure that improved timeframes does not sacrifice transparency, public participation, nor the proper application of permit requirements. This Action is to be completed in close alignment with the Air District Strategic Plan Strategy 4.1 “Timely Permits.” Permit applications for facilities located in overburdened communities, with a history of community concern, and/or with a history of notices of violation will be prioritized for timely review. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
C&I 3.2	**Provide Clear and Accessible Air District Permitting Information:** The Air District will improve the transparency of the permitting process by providing clearer, more accessible information to both applicants and the public. This may include offering user-friendly reports, enhancing web-based tools for permit applications and online tracking, using clear, accessible language in public notifications, and ensuring easy access to data on permitted sources, permit activity, and related emissions. The Air District will simplify communications about permits and the permitting process, using clear, less technical language to better engage communities and applicants. Action aligns with the Air District Strategic Plan Strategy 4.2 “Transparent Permit Process.” The Air District will improve public outreach through methods which may include working with the CSC to identify low-cost distribution channels such as email and social media. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
C&I 3.3	**Develop a Tool for Accountability and Transparency:** The Air District will develop a public-facing tool that leverages a map platform to consolidate facility permitting, enforcement and emissions information in one place. The tool may include permits, permit status, public notices, inspection frequency, violations, and emissions inventory data. The tool is intended to promote transparency, accountability and meaningful community participation. There is an existing facilities map on the Air District’s website, available at: https://www.baaqmd.gov/en/about-air-quality/interactive-data-maps **Timeframe**: Medium Term (2-3 years)

#	Actions
C&I 3.4	**Evaluate Rule Amendment Opportunities to Strengthen and Improve Permitting Rules:** The Air District envisions two phases of permit rulemaking. The first phase would address necessary clarifications and updates to promote timely and consistent permit review. The second phase would include substantive changes in how we evaluate permits and could include: ● Rule 2-1: Evaluate possible refinements of exemptions ● Rule 2-1: Assess potential adjustments to overburdened community (OBC) maps, including consideration of expanded buffer zones ● Rule 2-2: Evaluate potential updates to New Source Review requirements in light of $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) revisions ● Rule 2-5: Examine opportunities to update Table 2-5-1 Toxic Air Contaminant (TAC) Trigger Levels, which contains the list of TACs and health effects values [212] ○ Add newer California Office of Environmental Health Hazard (OEHHA) Assessment compounds and values and become consistent with the state laws ● When the rule development process is started, engage CSC and community to identify rule concepts **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
C&I 3.5	**Reduce Industrial Pollution on Unhealthy Air Quality Days**: The Air District will examine possible regulatory pathways in a white paper to curtail commercial & industrial pollution during unhealthy air quality days and assess potential rule and policy updates to reduce emissions and protect community health. The Air District will provide a 30–45-day public comment period on the whitepaper for Bay Area residents. Analysis should include a review of air quality data indicating unhealthy air quality days in East Oakland in recent years (Federal Air Quality Index “unhealthy for sensitive receptors” and more severe) and correlated health impacts in the context of East Oakland’s high rates of respiratory disease and other environmental health indicators. The Air District will assess rule and policy strategies including, but not limited to, updating Regulation 4 Air Pollution Episode Plan, updating source-specific rules to curtail the most health-impacting industries, and targeted inspection to ensure commercial & industrial emissions do not increase during air quality events. **Lead**: Air District **Timeframe**: Long Term (4+ years)

[212] “Table 2-5-1 Toxic Air Contaminant Trigger Levels.” Bay Area Air District. https://www.baaqmd.gov/~/media/Files/Engineering/Air%20Toxics%20Programs/table_2-5-1.ashx

Community Concern Statement 3: Commercial and Smaller Industrial Facilities

Facilities of concern: Auto body shops, gas-dispensing facilities (GDFs), cannabis production facilities, back-up (diesel) generators (BUGs), restaurants, food trucks, street food vendors, and unlicensed food production.

Commercial and smaller industrial facilities are a concern because, while individual sources and businesses within this category may be small, their collective impacts can present significant issues for the community, especially because these operations are located in or right next to residential neighborhoods. Restaurants, for example, can contribute to localized $PM_{2.5}$ and air toxics exposure. Auto body shops, gas-dispensing facilities (GDFs), cannabis production facilities, back-up (diesel) generators (BUGS), and smaller food production facilities and operations are additional sources, often similarly small in size and interspersed throughout neighborhoods; all of these have the potential to adversely impact nearby residences.

Source evaluation (e.g., white paper) for BUGs completed (yes/no)

Strategy 4. Reduce Emissions from Backup Diesel Generators (BUGs)

Strategy Objective: Local emissions from backup generators are evaluated and reductions are achieved via mechanisms such as new or modified rules and permitting requirements to regulate usage, especially near sensitive areas such as schools.

Strategy Metrics:

- Source evaluation (e.g., white paper) for BUGs completed (yes/no)

#	Actions
C&I 4.1	**Evaluate Opportunities to Reduce Localized Emissions and Address Impacts from BUGs:** Conduct a rule development source evaluation for Backup Diesel Generators (BUGs) through a white paper or rulemaking that reviews BUGs, BUG usage, and impacts, including scrutinizing the valid use of BUGs during emergencies (particularly those near sensitive areas like schools) and reviewing alternative technology options. The evaluation will also clarify what qualifies as an emergency under existing Rule 9-8 and how emergency use is tracked and verified through inspections and permit conditions. The analysis should also include a review of potential amendments to permitting rules for new or modified BUGs and amendments and/or new rules for existing BUGs. Additionally, the analysis should include a review of facilities with larger volumes of BUGs, such as the Oakland San Francisco Bay Airport. Evaluate further guidelines, compliance actions, and incentives that could be used to reduce impacts from backup generators. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)

Strategy 5. Reduce Exposures from Restaurants and Other Food Preparation Businesses Through More Sustainable Operations and Technologies

Strategy Objective: Restaurants and other food preparation operations operate in a sustainable manner and a framework is established that protects the health of workers, patrons, and neighbors by reducing localized Particulate Matter (PM) and toxics while still supporting local, small businesses.

Strategy Metrics:

- California Air Resources Board (CARB) commercial cooking technology assessment released (yes/no)
- Restaurants white paper produced (yes/no)
- Restaurants white paper recommendations initiated (yes/no)
- CSC discusses and submits comments/recommendations to the Oakland General Plan team about air quality and restaurant operations (yes/no)

#	Actions
C&I 5.1	**Rules Evaluation and Technology Assessments:** The California Air Resources Board (CARB) will conduct a technology assessment of commercial cooking rules and control strategies and propose incentives and/or a Suggested Control Measure for commercial cooking. Air District will collaborate with Communities for a Better Environment (CBE) to share CARB's commercial cooking technology assessment with interested CSC and community members. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)
C&I 5.2	**Restaurants White Paper:** Air District will develop a restaurants white paper that may integrate the California Air Resources Board (CARB) commercial cooking technology assessment, potential focus areas include: ● Examining air pollution sources from food preparation in East Oakland, including restaurants, food trucks, and street food vendors; ● Assessing strategies to enhance worker safety related to indoor air pollution exposure, including education and potential improvements in ventilation, filtration system maintenance, electrification of cooking equipment, and non-toxic cleaning methods; ● Evaluate further guidelines, compliance actions, and incentives that could be used to reduce impacts from restaurants, food trucks, and street vendors. **Lead:** Air District **Timeframe**: Long Term (4+ years)

#	Actions
C&I 5.3	**Food Preparation General Plan Policies and Incentives:** City of Oakland collaborates with the CSC to ensure new General Plan policies and zoning amendments about restaurants, food trucks, and street food vendors reflect the latest research and technology for reduced indoor and outdoor air pollution from commercial food preparation. These may include policies or zoning amendments related to ventilation and filtration systems upgrades and maintenance, electrification of cooking equipment, healthier cleaning products, location and design of businesses, among other characteristics. Policies should be sensitive to the limited resources of small businesses and provide incentives and support where possible. The City should educate restaurants in East Oakland's AB617 plan area about the City's restaurant electrification resources list.[213] See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe**: Medium Term (2-3 years)

Strategy 6. Reduce Emissions from Automobile-Related Operations (Auto Body Shops, Mechanics, and Gas Dispensing Facilities)

Strategy Objective: Air emissions from automobile-related operations, including volatile organic compounds (VOCs) such as toluene, benzene and formaldehyde, metals such as lead, and particulate matter (PM), are identified and reduced. A priority is given to areas of East Oakland where autobody shops, mechanics, and gas-dispensing facilities are most dense and in close proximity to sensitive receptors such as schools and daycares.

Strategy Metrics:

- Auto body white paper produced (yes/no)
- Unpermitted auto body list created by Communities for a Better Environment (CBE), vetted/prioritized by CSC, and submitted to Air District
- CSC discusses and submits comments/recommendations to the Oakland General Plan team about air quality and automobile-related operations (yes/no)

#	Actions
C&I 6.1	**Auto Body White Paper:** Air District develops an auto body white paper that may include an assessment of East Oakland sources. The white paper should evaluate stricter emission controls, best practices for auto body shops to reduce toxic fumes and airborne particles, and potential incentives to support auto body retrofits and technology upgrades

[213] City of Oakland. "Building Electrification for Business Owners and Commercial Property." 2025. https://www.oaklandca.gov/Government/Oakland-Improvement-Projects/Building-Electrification/Building-Electrification-for-Business-Owners-and-Commercial-Property.

#	Actions
	to reduce air quality impacts. The white paper could also consider the impact of smaller auto body businesses that may be exempt from permit requirements, as well as temporary auto body operations, and explore potential ways to address any related concerns. **Lead:** Air District **Timeframe**: Long Term (4+ years)
C&I 6.2	**Gather Community Knowledge of Unpermitted Auto Body Facilities:** Communities for a Better Environment (CBE) will work with community members and gather community knowledge to create a list or map of unpermitted auto body facilities in support of promoting regulatory compliance, including proper permitting, as described in **C&I 6.3**. Prioritize sites before sharing list with the Air District and City of Oakland indicating sites that may have safety/access issues. **Lead:** Communities for a Better Environment (CBE) **Timeframe**: Medium Term (2-3 years)
C&I 6.3	**Address Unpermitted Auto Body Facilities:** The Air District will work to verify compliance of unpermitted auto body facilities, including ensuring proper permitting. This work will be informed by community-gathered information with support from Communities for a Better Environment (CBE) as described in **C&I 6.2**. **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)
C&I 6.4	**Auto Body General Plan Policies:** City of Oakland collaborates with the Air District and the CSC to ensure that new General Plan policies and zoning amendments about auto body shops, mechanics, tow yards, and gas dispensing facilities reflect the latest research and technology for reduced indoor and outdoor air pollution from auto-related businesses and activities. Limit auto-related businesses near residential and other sensitive uses. A green auto body operations checklist example [214] provides some ideas from an effort in Oregon. **Lead:** City of Oakland **Timeframe**: Short Term (Less than 2 years)

[214] Eco-Logical Business Program. "Automotive Services Application." https://www.ecobiz.org/_files/ugd/fea5d8_e29b9f5f305044ceb7164816c382b110.pdf.

Community Concern Statement 4: Accountability of Polluting Industries and Businesses

The lack of accountability for polluting industries and businesses in East Oakland is the concern because this exposes residents to a disproportionate amount of harmful pollutants and serious health risks. This issue is exacerbated by illegal activities that cause pollution. Rules are complicated, bureaucratic and difficult for community members to wade through which limits the community's ability to hold polluters accountable and stop harmful practices.

Strategy 7. Enhance Investigation and Enforcement Protocols

Strategy Objective: The Air District enhances enforcement that aims to hold top polluting industries accountable.

Strategy Metrics:

- Number of touch points (meetings, emails, etc.) with Air District to inform and engage CSC members on the new Targeted Inspection Program
- Number of Notice of Violations (NOVs) issued and resolved
- Number of new permitted operations ("start-up inspections") at facilities that have been inspected
- Website improvements made (yes/no)

#	Actions
C&I 7.1	**Targeted Inspections to Address Repeat Violators:** The Air District is developing a new Targeted Inspection Program that enhances enforcement in overburdened communities (OBC), such as East Oakland. The program targets inspection resources to address community concerns by using comprehensive data analysis to prioritize inspections. The program will identify local compliance issues, pinpoint patterns of non-compliance and repeat violations, and establish inspection timeframes at priority facilities. The program will also seek new strategies with the Engineering Division to address compliance concerns at facilities operating with pending permit applications and increase opportunities to collaborate with regulatory agencies and community to enhance coordination, increase inspection transparency, spotlight compliance concerns, and ensure that inspection resources are directed strategically. The Air District is piloting new strategies in the Bayview Hunters Point (BVHP) community and will report back program findings and outcomes to the community. Program actions are detailed in the Air District Strategic Plan Strategy 4.5 “Improve Compliance Investigations.” **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)
C&I 7.2	**Improved Website Information and Accessibility:** Promote industry compliance by improving the compliance assistance program, which functions to assist facilities in understanding and complying with applicable air quality regulations. This will include use of better information technology (IT) tools (e.g., website tools) and access to compliance resources, as noted in the Air District Strategic Plan Strategy 4.5 “Improve Compliance Investigations.”

	Lead: Air District **Timeframe**: Medium Term (2-3 years)
C&I 7.3	**Inspection of Facilities with New Permits:** The Air District will inspect facilities to verify compliance with permit conditions and Air District, State and Federal rules for all newly permitted operations to ensure early compliance. **Lead**: Air District **Timeframe**: Short Term (Less than 2 years)
C&I 7.4	**Regular Enforcement Updates:** Provide annual updates to the CSC and the general public on facility inspections and enforcement activities initiated by the Targeted Inspection Program and identified by the community. **Lead**: Air District **Timeframe**: Short Term (Less than 2 years)

Strategy 8. Improve Accessibility to and Effectiveness of the Air Quality Complaint Program

Strategy Objective: The Air District Air Quality Complaint Program is more-widely understood and effective through the development of an expanded public information campaign and improved public engagement activities. Making program improvements and bridging gaps will help build community trust and confidence, and encourage greater participation in the program.

Strategy Metrics:

- Publicly accessible air quality complaint tool created (yes/no)
- Number of touch points (meetings, emails, etc.) with Air District to inform and engage CSC members on the air quality complaint tool

#	Actions
C&I 8.1	**Promote the Complaint Program Through a Public Information Campaign:** The Air District initiates a public information outreach campaign including press release, digital advertising and social media campaign to promote the Air Quality Complaint Program in overburdened communities (OBC). **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)

#	Actions
C&I 8.2	**Develop a Publicly Accessible Complaint Data Tool:** Develop a complaint data tool on the Air District's website for the public to easily search air quality complaints reported in their communities. The tool will make complaint information available in all nine Bay Area counties, while maintaining the confidentiality of complainants. The complaint tool will be developed and shared with the CSC for input and publicized through the Air District's social media posts, etc. This aligns with the Air District Strategic Plan Strategy 2.5 "Air Quality Complaints." **Lead:** Air District **Timeframe**: Medium Term (2-3 years)
C&I 8.3	**Develop an Air Pollution Log as a Tool to Collect Community Observations**: Develop a user-friendly Air Pollution Log for communities to submit observations of air pollution issues through the Air District website. The information will allow the Air District to identify potential patterns of non-compliance that would initiate further investigation and follow-up. **Lead:** Air District **Timeframe**: Medium Term (2-3 years)
C&I 8.4	**Explore Whistleblower Tip Line for Workers in Industrial Businesses:** The Air District will explore creating a whistleblower tip line for workers to anonymously report violations and concerning activities that may have an impact on air quality and public health. A plan will be developed to promote the tip line and shared with communities. This aligns with the Air District Strategic Plan Strategy 2.2 "Collect Community Data." **Lead:** Air District **Timeframe**: Medium Term (2-3 years)
C&I 8.5	**Invite Community Perspectives to Improve the Complaint Program:** Establish forums at CSC meetings where the Air District invites community members to share their ideas on how to improve the complaint program. **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)

Strategy 9. Improve Emissions Estimates and Emissions Monitoring Requirements

Strategy Objective: Improve estimates of emissions and the demonstration of compliance with emissions limits for key sources and facilities.

Strategy Metrics:

- Annual update provided on source testing conducted by the Air District (yes/no)
- List provided of any rules that included strengthened emissions monitoring, recordkeeping, or reporting over the past year (yes/no)

#	Actions
C&I 9.1	**Update Source Test Prioritization List for Improved Emissions Characterization:** The Air District will expand the Targeted Inspection Program (7.1), which includes feedback from the East Oakland CSC, to update the list of facilities prioritized for Air District-conducted source tests and review of facility-conducted source tests. In addition to compliance history of facilities and community input, we will also incorporate the level of uncertainty in emissions estimates. This list will identify facility processes and emission sources where current monitoring methods may not fully capture actual emissions profiles. The Air District will use this source test data collected from facilities on the prioritization list to reduce uncertainties in emissions estimates as resources allow. In addition to or in lieu of source testing, the Air District could conduct air and emissions monitoring projects to assess under-characterized emissions and check for compliance issues. The Air District could also reevaluate emissions estimate methods and existing relevant emissions information. Results from the studies could inform revisions to future emissions inventories and modeling, new or revised rules, or new or modified permits. This work is aligned with implementation of the Air District Strategic Plan Strategy 4.1 “Timely Permits” and Strategy 4.5 “Improve Compliance Investigations”. Progress reports will be available to the public on the Strategic Plan dashboard. **Lead**: Air District **Timeframe**: Short Term (Less than 2 years)
C&I 9.2	**Improve Facility Emissions Monitoring, Recordkeeping, and Reporting:** As Air District regulations are developed or revised, consider strengthening requirements for facilities to measure emissions or related operational source parameters, and to record and report emissions-related parameters. These requirements could include continuous emissions monitoring systems (CEMS), source tests, enhanced parametric monitoring, mass balance calculations, standardized data reporting, quality management systems to assess and document data uncertainty, or periodic evaluation studies. This work is aligned with implementation of the Air District Strategic Plan under Strategy 1.2 “Stronger Regulations”, Strategy 4.3 “Consistent Permits”, and Strategy 4.5 “Improve Compliance Investigations”. Progress reports will be available to the public on the Strategic Plan dashboard. **Lead**: Air District **Timeframe**: Long Term (4+ years)

Strategy 10. Empower Community Members with the Knowledge and Tools Needed to Promote Greater Environmental Accountability from East Oakland Polluters and Agencies

Strategy Objective: Community members are equipped with expanded knowledge and skills to actively engage in processes to improve air quality and hold industry and agencies accountable, fostering a culture of informed, impactful advocacy for environmental justice and community health to enhance community ownership of the Plan implementation.

Strategy Metrics:

- Number of air quality-related educational materials developed
- Number of educational events (meetings, trainings, etc.) held
- Number of air quality-related creative arts collaborations

#	Actions
C&I 10.1	**Informed Advocacy Around Air Quality Information.** Communities for a Better Environment (CBE) develops a curriculum and educational materials about air quality-related health and environmental impacts, science, regulations, and policy processes that aim to expand community capacity and skills to: ● Critically review and assess air quality claims, information, and data from and about East Oakland polluters; ● Understand regulatory and policy processes related to these polluters and advocate for transparency within the process; and ● Learn about the most effective pathways for posing questions, raising concerns, and promptly obtaining answers. Actions may include hosting community meetings and trainings, Environmental Justice tours, virtual engagement (post materials on website and on social media), at libraries, and other community spaces and institutions, collaborating with youth and family-oriented community-based organizations (CBOs) to support integrating information into parent groups and school curriculums, and fostering awareness through the arts and creative expression. **PH 6.1** “Improve Air Pollution Awareness” addresses improved Air District community engagement efforts. **Lead:** Communities for a Better Environment (CBE) **Timeframe**: Short Term (Less than 2 years)
C&I 10.2	**Creative Arts and Air Quality:** Communities for a Better Environment (CBE) explores funding and partnership opportunities with local artists and cultural arts groups to enhance outreach conducted under **C&I 10.1** through efforts such as community arts activities, educational performances, art for outreach materials, murals for community education, among other creative endeavors. **Lead:** Communities for a Better Environment (CBE) **Timeframe**: Medium Term (2-3 years)

Illegal Dumping, Trash, and Odors

Illegal dumping refers to the disposal of trash without legal permission or disposing to land that does not accept waste. This practice can impact public health by contaminating soil, water, and air, providing a habitat for rodents and insects which often carry pathogens and disease, and causing physical safety risks (toxic substances, sharp objects, etc.). Illegal dumping is linked to impacts such as neighborhood disinvestment, negative effects on property value, an increase in violent crime, and costs to taxpayer money for clean-up and abatement. [215]

East Oakland residents are severely impacted by illegal dumping. The Community Mapping project resulted in a significant volume of comments (235 out of 488) citing illegal dumping, uplifting the issue to a focus area. Residents have brought up acute mental and physical health impacts related to the presence of trash in their neighborhoods, including depression, lack of safety, reduced quality of life, and exposure to emissions and odors from trash burning. Burning waste such as metals, plastics, fuels, foams, fabrics, and other refuse releases harmful pollutants that may expose nearby communities to $PM_{2.5}$ (particulate matter with diameters that are generally 2.5 micrometers and smaller) and Toxic Air Contaminants (TACs) including particulate metals, volatile organic compounds (VOCs) such as benzene, polycyclic aromatic hydrocarbons (PAHs), and dioxins (Chapter 5). Additionally, dumped materials often contain or generate mold spores that can become airborne. Health impacts from these types of pollutants relate to increased asthma triggers, respiratory inflammation and exacerbate cumulative health impacts. However, the highly localized and ephemeral nature of these emissions make them challenging to characterize with tools such as air quality modeling and monitoring.

Given the pressing nature of this concern and the lack of Air District authority or expertise over illegal dumping, Community Steering Committee (CSC) members and the community came together to devise creative, community-driven solutions to address illegal dumping in East Oakland through collective action. The CSC engaged in a special meeting focused on illegal dumping on February 27, 2025, with multiple agencies at the table to brainstorm actions and held discussions at monthly CSC meetings. As a result of this process, the actions in this focus area aim to uplift the work of the Oakland Public Works Department (OPW) to strengthen enforcement. The actions also include improving educational outreach, finding funding for local clean-up, and tracking relevant EJ element policies by working closely with the City of Oakland.

Key collaborators include Oakland Public Works Department (OPW) as the responsible authority over illegal dumping, and the CSC and their valuable networks within the community.

Actions from this focus area may be referenced with the abbreviation ID, followed by the strategy number and action number, for example, **ID 1.1**.

[215] Marc A Zimmerman and Roshanak Mehdipanah, “Preventing Illegal Dumping to Address Community Violence,” accessed May 19, 2025, https://reporter.nih.gov/search/34EDAMTwq0WpTTi-UxMBwg/project-details/10593246.

Community Concern Statement: Unsanitary Conditions, Inequitable Access to Waste Disposal Services, and Lack of Enforcement

Illegal dumping is a concern because it creates unsanitary conditions, promotes mold, and releases toxic compounds from burning of trash and cars. This impacts mental, physical, and financial health due to hospital costs, lost workdays, depression, lowering property values and other effects, compounded by lack of studies on public health impacts of unaccounted pollutants.

Lack of enforcement measures and resources for cleaning up illegal dumping is a concern, particularly in vacant lot dumping hotspots, because there is insufficient allocation of resources and consequences to prevent and prohibit illegal dumping.

Inequitable access to waste disposal services and high fees associated with bulky item disposal is a concern because it leads to irresponsible waste disposal practices. This issue is particularly significant for tenants who rely on their landlords' waste management systems.

Strategy 1. Collective Action to Tackle Illegal Dumping

Strategy Objective: East Oakland's collective action helps transform the area into a well-maintained collection of neighborhoods where residents are not subjected to piles of unsightly, hazardous and foul-smelling debris and instead feel uplifted by their clean environment.

Strategy Metrics:

- Advocacy campaign for better waste hauling services (yes/no)
- Were illegal dumping prevention outreach materials developed and disseminated? (yes/no)

#	Actions
ID 1.1	**Improve Waste Hauling Services:** With the support of the CSC, Oakland City Council District 7 Councilmember creates a campaign to support better waste hauling services (including but not limited to more public trash cans, more bulky waste pickups, and more opportunities for free bulky waste pickups) for East Oakland. **Lead:** Oakland City Council District 7 Councilmember **Timeframe**: Medium Term (2-3 years)
ID 1.2	**Illegal Dumping Prevention Community Outreach:** Oakland Public Works Department (OPW) works with the CSC to increase awareness about illegal dumping prevention. Oakland Public Works Department (OPW) consults with the CSC on effective outreach and education in East Oakland. The materials focus on the CSC-identified outcomes to: 1) boost collective responsibility for reporting illegal dumping and publicize success; 2) promote recycling initiatives; 3) encourage a zero-waste mindset and support reusing materials whenever possible; and 4) boost awareness about

#	Actions
	Oakland Public Works Department's (OPW) licensed haulers and list of permitted construction and demolition haulers. **Lead:** Oakland Public Works Department (OPW) **Timeframe**: Short Term (Less than 2 years)
ID 1.3	**CSC Dissemination of Illegal Dumping Prevention Materials:** The CSC works to disseminate illegal dumping education and outreach materials generated through **ID 1.2** to East Oakland community members. **Lead:** Community Steering Committee (CSC) **Timeframe**: Short Term (Less than 2 years)
ID 1.4	**Driving Local Clean Up and Beautification Activities:** The CSC actively drives clean up and beautification in the East Oakland Plan area by informing local non-profit organizations and networking partners of locally available grants available to fund projects benefiting East Oakland. **Lead:** Community Steering Committee (CSC) **Timeframe**: Medium Term (2-3 years)
ID 1.5	**Proactive Policy Tracking by the CSC Related to Illegal Dumping:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives: ● EJ Element (policies related to Blight Control and Prevention; Proactive Illegal Dumping Cleanup; Illegal Dumping Enforcement; Community Education on Illegal Dumping) See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland **Timeframe**: Short Term (Less than 2 years)

Public Health and Community Wellness

Public health focuses on protecting and improving the health of people and their communities.[216] It considers recurring health patterns across communities and the structural roots of health disparities. The issues affecting the health of East Oakland residents often occur at a community scale and are linked to the cumulative impacts and disproportionate pollution burdens that the community experiences (See Chapter 4). According to the Alameda County Public Health Department (ACPHD), life expectancy at birth can vary by over 10 years between

[216] Centers for Disease Control and Prevention (CDC) Foundation, https://www.cdcfoundation.org/what-public-health

certain East Oakland and Oakland Hills census tracts.[217] Rates of asthma-related emergency care visits and hospitalizations among children under the age of 5 in East Oakland are almost twice those in Alameda County. Similarly, East Oakland also experiences higher premature birth rates, and rates of mortality for cardiovascular disease, lung cancer, and chronic obstructive pulmonary disease (COPD) than Alameda County.

Community members have frequently spoken about their experiences with respiratory illnesses, cardiovascular diseases, cancer, and other health issues among their families and community. They have also raised the extreme stress and mental health impacts of managing health conditions, like lost income and school days, and increased financial insecurity. Access to healthcare and community resources remains an issue in East Oakland, with particular concern about resource availability during pollution events such as wildfires.

Residents want to address the structural roots of their health issues as well as the lack of physical and social infrastructure available to them, caused in part by a history of systemic disinvestment in East Oakland. They also want pollution burdens and health impacts to be considered cumulatively, considering the multiple environmental and economic stressors they face daily. Though the Plan as a whole aims to reduce health disparities in the long term, this focus area houses targeted actions towards improving community health. The actions use varied mechanisms of inter-agency collaboration, community-directed funds, local air monitoring, community resilience spaces, data accessibility, and community empowerment to begin addressing the community's concerns. Key collaborators include the Alameda County Public Health Department (ACPHD) given their charge of protecting public health in the county, and the City of Oakland due to aligned efforts in the Oakland General Plan.

Actions from this focus area may be referenced with the abbreviation PH, followed by strategy number and action number, for example, **PH 1.1**.

Community Concern Statement 1: Contributions of Outdoor Air Pollution to Cumulative Health Impacts

Cumulative health impacts from outdoor air pollution and other stressors are a concern because low-income Black, Indigenous, and People of Color (BIPOC) communities experience disproportionately higher rates of respiratory illnesses, lower life expectancy, increased emergency room visits and hospitalizations from asthma, child development issues, stress, and overall poor health. These issues are exacerbated by the impacts of air pollution from businesses like auto body shops and cleaners, the I-880 freeway with its high volume of truck traffic, and the airport. These problems are also tied to systemic racial segregation and the lasting impacts of government-sanctioned discrimination measures like redlining.

Strategy 1. Consider Cumulative Health Impacts in Decision Making

Strategy Objective: Environmental justice and health equity informs all air quality-related decision-making processes in East Oakland. There is improved consideration of cumulative health impacts in Air District programs, while advocating and coordinating for similar best practices among other agencies. Health protective methodologies developed with community

[217] Alameda County Public Health Department, Healthy Alameda County Dashboard: https://www.healthyalamedacounty.org/indicators/index/view?indicatorId=8195&localeTypeId=4.

input are used to determine potential effects of proposed policy, program, or project on community health. Improved tools exist for identifying cumulative health impacts in East Oakland and are shared with other agencies.

Strategy Metrics:

- Begin working with the Air District Advisory Council to address cumulative impacts of air pollution (yes/no)
- Develop recommendations for more fully incorporating cumulative impacts into the permitting process for the Air District Board of Directors (yes/no)

#	Actions
PH 1.1	**Develop Methods for Understanding Cumulative Impacts:** Collaborate with partners (e.g. California Air Resources Board (CARB), California Office of Environmental Health Hazard Assessment (OEHHA)) and engage interested East Oakland community members to develop methods for understanding which communities and community members are most heavily impacted by cumulative environmental burdens and other chronic stressors and why. Identify or develop approaches for integrating multiple data sources and perspectives. Identify or develop approaches for characterizing the potential health-protective effects of proposed policies, programs, or projects. This action is aligned with implementation of the Air District Strategic Plan Strategy 2.11 “Cumulative Health Impacts” and Strategy 2.4 “Community Health Data.” **Lead:** Air District **Timeframe:** Medium Term (2-3 years)
PH 1.2	**Consider Cumulative Impacts in Air District Programs**: In parallel with PH 1.1, expand and refine the consideration of cumulative impacts in Air District programs. Explore applications in permitting, regulations, and compliance. This action is aligned with implementation of the Air District Strategic Plan Strategy 2.11 “Cumulative Health Impacts” and Strategy 4.3 “Consistent Permits.” **Lead:** Air District **Timeframe:** Long Term (4+ years)
PH 1.3	**Support Local Government in Incorporating Cumulative Impacts in Decision Making:** Provide the City of Oakland with guidance on how to incorporate a more complete understanding of cumulative impacts in land use plans, policies, and practices for siting, designing, and permitting projects. This action is aligned with implementation of the Air District Strategic Plan Strategy 2.11 “Cumulative Health Impacts.” **Lead:** Air District **Timeframe:** Long Term (4+ years)

The following actions in the Commercial and Industrial focus area additionally address this strategy objective:

- C&I 2.2. Rule Amendments to Improve Implementation of Rule 11-18 and the Facility Risk Reduction Program
- C&I 3.3. Evaluate Rule Amendment Opportunities to Strengthen and Improve Permitting Rules

Strategy 2. Increase Community Investment

Strategy Objective: Increased community investments form part of the effort to redress the health impacts of structural disinvestment in East Oakland. Increased community input on the allocation of penalties, community benefit funds and other community investments equitably benefit East Oakland. Through increased partnerships between agencies, industries, and the community, efforts are made towards building and establishing trust and care in the East Oakland community.

Strategy Metrics:

- Implement community investment initiative (yes/no)
- Amount of penalty dollars awarded to East Oakland communities through the Community Investments Office
- Number of touchpoints (meetings, emails, etc.) with Air District to inform and engage Community Steering Committee (CSC) members on the Air District's community-benefit initiatives
- Number of touch points with City of Oakland to inform and engage CSC members on the Economic Development Action Plan and the General Plan Environmental Justice (EJ) Element Actions EJ-A.34 and EJ-A.3 regarding participatory budgeting

#	Actions
PH 2.1	**Reinvest in Community:** Engage the East Oakland CSC and local community-based organizations to provide input to the Air District's community-benefit initiatives. This action is aligned with the implementation of the Air District Strategic Plan Strategy 2.8 "Community-Directed Funds." **Lead:** Air District **Timeframe:** Early Action (Immediate)
PH 2.2	**Proactive City Updates and CSC Engagement on Improving the Local Economy:** The City of Oakland will proactively update and seek input from the CSC during the development and implementation of the Economic Development Action Plan (EDAP) in order to retain, support, and grow local businesses in East Oakland. See Appendix F-2 for a list of other strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe:** Medium Term (2-3 years)

PH 2.3	**Proactive City Updates and CSC Engagement on Participatory Budgeting:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of Environmental Justice (EJ) Element Actions EJ-A.34 and EJ-A.36. These actions aim to develop a participatory budgeting process for EJ Community investments and integrate community-led and community-driven initiatives into City planning processes, such as "the Capital Improvement Program (CIP) process, the adopted City budget, bond measures, and other City investments and resource allocations." (Environmental Justice Element). See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe:** Short Term (Less than 2 years)

Other targeted or place-based investments through Air District incentives programs included across focus areas additionally address this strategy objective.

Community Concern Statement 2: Protecting Sensitive Populations and Mitigating Pollution Impacts

Protecting sensitive populations and mitigating pollution impacts is the concern because children, seniors, and unhoused individuals are particularly vulnerable to poor air quality. This issue is exacerbated by frequent wildfires, which increase cumulative pollution exposures for East Oakland residents and further impact their health.

Strategy 3. Provide Air Pollution and Health Impact Data, and Center Community Knowledge

Strategy Objective: Improved partnerships with communities are established to understand their lived experience and knowledge about air pollution, including understanding of sources. Resources and partnerships are made to meaningfully involve community members in collecting data, particularly near pollution hotspots and sensitive receptors. There is increased transparency and accessibility of air pollution and health data, provided to the East Oakland community in ways that meet their needs.

Strategy Metrics:

- Feedback loop with East Oakland residents to inform Alameda County Health Dashboard created (yes/no)
- East Oakland air monitoring project findings shared with CSC (yes/no)
- Inventory of air monitoring and related datasets made available (yes/no)
- Number of workshops, trainings, and other convenings regarding air monitoring data and projects, and the number of attendees at those events.

#	Actions
PH 3.1	**East Oakland Air Monitoring Project:** Collaborate with the CSC to engage with community members interested in informing the East Oakland Air Monitoring Project, which will use the Air District's monitoring van to perform exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM), including ultrafine particles (UFPs). Follow-up studies will use short- or medium-duration stationary measurements to investigate issues identified through exploratory measurements. Measurements will be focused around specific facilities and air quality concerns identified and prioritized by community members, including (but not limited to): ● Oakland San Francisco Bay Airport ● Argent Materials ● Davis Street Transfer Station ● AB&I redevelopment ● Crematories (East Bay Crematory and Evergreen Cemetery) ● Sterling Environmental ● Gallagher & Burk (asphalt manufacturer) ● CEMEX Construction Materials ● Miller Milling Co. ● Restaurants and food preparation operations ● Auto body shops ● Gasoline-dispensing facilities ● East Bay Municipal Utility District (EBMUD) Upper San Leandro Water Treatment Plant ● Metal operations/recyclers ● Other industrial and commercial facilities and operations, many of which are located along the I-880, International Blvd., Hegenberger Rd., High St., and San Leandro St. corridors, and ● Nearby community assets where people spend time, such as schools and parks The measurements are expected to aid in identifying areas where VOC and PM levels are unusually high compared to surrounding areas and inform efforts to reduce pollution emissions and exposure through a variety of Air District programs. Broader outreach about this project will be conducted in several ways, including (but not limited to) community meetings to communicate insights and findings and publicly accessible reports and underlying datasets. This action is aligned with the implementation of the Air District Strategic Plan Strategy 2.2 "Collect Community Data" and 2.7 "Understand Local Air Pollution." **Lead:** Air District **Timeframe:** Short Term (Less than 2 years)
PH 3.2	**Make Air and Emissions Monitoring Data More Accessible:** Coordinate with the CSC and interested local partners to build descriptions of existing air and emissions monitoring data, enable data downloads where feasible, and provide resources or visualization tools to clearly communicate insights, empowering communities to interpret and act on air and emissions data effectively. Initial work will include developing an inventory of air monitoring and emissions data in East Oakland. This action is aligned with the implementation of the Air District Strategic Plan Strategy 2.3

#	Actions
	"Make Data Accessible." **Lead:** Air District **Timeframe:** Medium Term (2-3 years)
PH 3.3	**Support Local Air Monitoring or Air Quality Data Projects:** The Air District and the Bay Air Center [218] (an Air District-sponsored community resource) will work with community based organizations that are conducting air monitoring or data projects in the East Oakland Plan area, such as air monitoring projects funded by California Air Resources Board (CARB) Community Air Grants or U.S. EPA grants (for example, projects led by Lifers' Leaving a Legacy and by New Voices are Rising). Bay Air Center support for these projects can include grant application assistance, guidance on air monitoring technology and network design, on-site troubleshooting, and data analysis and interpretation. The Air District and Bay Air Center will work with the CSC to implement new types of support for the East Oakland community. These new activities will include (but are not limited to) 1) informational workshops for the CSC and community on using and interpreting information from different air quality data websites and on insights from local air monitoring projects and 2) convening recurring meetings to bring together community air monitoring project teams to facilitate collaboration and strengthening of air quality monitoring projects throughout the Bay Area. This action is aligned with the implementation of the Air District Strategic Plan Strategy 2.2 "Collect Community Data" and 2.7"Understand Local Air Pollution." **Lead:** Air District **Timeframe:** Early Action (Immediate)
PH 3.4	**Health Dashboard:** Share information about the Alameda County Health Dashboard [219] with East Oakland community members. Take into account community experiences and ground-truthing, to deliver localized health information and facilitate the monitoring of health metrics for East Oakland. Develop a feedback loop with East Oakland residents to assess accessibility and allow iterative improvement. **Lead:** Alameda County Public Health Department (ACPHD) **Timeframe:** Early Action (Immediate)

Strategy 4. Improve Access to Healthcare Services

Strategy Objective: Access to comprehensive healthcare services including preventative health is increased for East Oakland residents. Social determinants of health and mental health

[218] Bay Air Center website: https://bayaircenter.org/
[219] Alameda County Public Health Department. "Healthy Alameda County." Accessed October 2, 2025. https://www.healthyalamedacounty.org/

impacts are improved for East Oakland residents, particularly among vulnerable populations.

Strategy Metrics:
- Number of meetings among partner agencies and community-based health centers to facilitate access to healthcare

#	Actions
PH 4.1	**Facilitate Linkages to Health Services:** Support partnerships and coordination with Alameda County and community-based health centers in East Oakland to increase awareness and access to Asthma Start Program, and preventative services for asthma and other health conditions associated with air pollution exposure. Support linkages to other healthcare services such as mental health services, and efforts to equitably serve East Oakland residents. As part of this effort, identify potential solutions to address barriers to healthcare services. Services should be community-friendly and reach populations vulnerable to air quality, including but not limited to children and youth, seniors, low-income communities, transit-dependent and unhoused populations. **Lead:** Alameda County Public Health Department (ACPHD) **Timeframe:** Long Term (4+ years)

Strategy 5. Equitable Distribution of Emergency and Climate Response Services

Strategy Objective: Emergency and climate response services like hospitals, health care facilities, clean/cool air centers, and resilience hub spaces are distributed equitably across Oakland to alleviate the burden on East Oakland during emergencies and extreme climate impacts like wildfire events, with a priority on protecting vulnerable populations. These services are easily accessible, culturally supportive, responsive to community needs, and usable by everyone, regardless of their age, ability, language spoken, or citizenship status. Backup power for individuals who rely on life-supporting medical devices, such as wheelchairs and oxygen tanks, is prioritized.

Strategy Metrics:
- Resilience hub established (yes/no)
- Number of emergency response toolkits delivered to low-income households in East Oakland

#	Actions
PH 5.1	**Help Create Community Resilience Spaces:** Partner with established community resilience groups like Communities for a Better Environment (CBE), East Oakland Collective (EOC), Rise East organizations, and East Oakland Neighborhood Initiative (EONI) implementation to develop a Resilience Hub network[220] in East Oakland with reference to San Leandro's network. This includes supporting community-based organizations in securing funding from the state Community Resilience Centers

[220] Urban Sustainability Directors Network. 2024 (August 23). "The Resilience Hub Series: East Bay Resilience Hub Network" (Video): https://www.youtube.com/watch?v=XN6q7xYOdjc

	program, [221] among other sources. In collaboration with the community, identify and prioritize well-used community facilities such as places of worship, schools, libraries in underserved neighborhoods, while supporting existing informal resilience hub spaces in East Oakland. In the long term, ensure that all residents in the East Oakland AB617 area have easy access to a resilience hub that provides indoor air filtration, power backup, has programming to meet community members' needs, and is sustainably funded. **Lead:** City of Oakland **Timeframe:** Long Term (4+ years)
PH 5.2	**Bring Emergency Response Tools to Households:** In collaboration with partner agencies such as Alameda County Public Health Department (ACPHD) and Emergency Medical Services (EMS), and community-based organizations such as Communities for a Better Environment (CBE), deliver emergency response toolkits to low-income households in East Oakland. Toolkits may include air filtration units, masks, first aid supplies, and other essential items during an air quality/climate emergency. For residents living within 1,000 feet of freeways, the toolkit should include information and resources on air pollution exposure reduction. Materials are best delivered in preparation for, and not in reaction to, a potential emergency event. **Lead:** City of Oakland **Timeframe:** Medium Term (2-3 years)
PH 5.3	**Proactive City Updates and CSC Engagement on Emergency Training for Community Members:** In alignment with Oakland General Plan Safety Element [222] policy SAF-8.10 “Community Training and Awareness”, connect interested East Oakland community members with the CORE (Communities of Oakland Respond to Emergencies) Program, Community Emergency Response Training (CERT) program, and other emergency training opportunities, particularly as they align with air quality incidents and emergencies like wildfires. See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe:** Short Term (Less than 2 years)

The following air filtration actions in the Built Environment and Land Use focus area additionally address this strategy objective:

- BE 1.1. Air Filtration for East Oakland Homes
- BE 2.1. Air Filtration for East Oakland High-Priority Facilities

[221] Strategic Growth Council.”Community Resilience Centers” webpage: https://sgc.ca.gov/grant-programs/crc/
[222] “Oakland Safety Element.” City of Oakland. https://www.oaklandca.gov/files/assets/city/v/1/planning-amp-building/documents/sp/gp/safety-element/safety-element_adopted-9.26.23_89907-c.m.s-1.pdf

Community Concern Statement 3: Raising Awareness about Health Impacts of Air Pollution

Raising awareness about the health impacts of air pollution is the concern because individuals often engage in normal activities without understanding the harmful effects of poor air quality. As wildfires throughout California increase in frequency and intensity, East Oakland residents are facing cumulative exposure to toxic chemicals and Particulate Matter (PM) from wildfire smoke. This added pollution compounds the existing emissions from industrial operations. The lack of awareness about these combined sources of pollution negatively affects overall health and exacerbates health disparities.

Strategy 6. Increase Awareness of Health Impacts of Air Pollution and Solutions to Pollution Problems

Strategy Objective: There is enhanced awareness of the health impacts of poor air quality among residents of East Oakland, with an emphasis on youth, along with the availability of resources to reduce impact of pollution events like wildfires and facilities releases. Residents are kept informed of local air pollution problems, health impacts, and air pollution improvement initiatives. Community members are also educated about the risks associated with poor indoor air quality, including lead hazards, indoor air pollutants, and asthma triggers, as well as methods and resources available to help protect their health. Information is accessible to all community members, is American Disability Act (ADA) compliant, and is also culturally relevant and provided in diverse formats, such as text, videos and graphics, in the languages spoken within East Oakland communities.

Strategy Metrics:

- Air pollution health impact educational materials developed and disseminated (yes/no)
- Number of touch points (meetings, emails, etc.) with City of Oakland to inform and engage CSC members on Oakland General Plan Environmental Justice (EJ) Element Policy EJ-4.4 related to indoor air pollution awareness

#	Actions
PH 6.1	**Improve Air Pollution Awareness:** Improve understanding of local air pollution problems, pollution reduction opportunities, health improvement goals, and the air pollution improvement initiatives currently planned or in development. In consultation with the CSC, determine the outreach channels most likely to reach diverse groups. Provide information that is culturally and linguistically appropriate. **Lead:** Air District **Timeframe:** Medium Term (2-3 years)

#	Actions
PH 6.2	**Proactive City Updates and CSC Engagement on Indoor Air Pollutant Awareness:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of Environmental Justice (EJ) Element Policy EJ-4.4, which aims to provide property owners and residents with culturally appropriate and linguistically accessible information and resources about indoor air pollutants, asthma triggers, and other home health topics to raise awareness. See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe:** Early Action (Immediate)

Strategy 7. Improve Response to Air Quality Incidents and Notification Systems

Strategy Objective: The East Oakland community is proactively notified of air quality incidents and potential health concerns with accessible alerts in multiple languages, including transparency around post-incident resolution. This includes warnings around wildfire events, air pollution incidents, and strong odor.

Strategy Metrics:

- Information is disseminated about the Air District's new Air Quality Incident Notifications system (yes/no)
- All schools and other sensitive receptors in East Oakland are signed up to receive alerts (yes/no)

#	Actions
PH 7.1	**Air Quality and Odor Incident Notifications System:** Information and dissemination on the Air District's new Air Quality Incident Notifications system [223] is improved in East Oakland, ensuring that sensitive receptors such as schools are aware of the notifications system and signed up to receive alerts. The CSC along with interested community-based organizations in East Oakland make recommendations to the Air District on improving the notifications system, with including improving and expanding odor notifications. The incident alerts should be short, language-accessible, understandable, and actionable, and include robust and transparent after incident resolution and investigations. **Lead:** Air District **Timeframe:** Medium Term (2-3 years)

[223] Bay Area Air District webpage on Air Quality Incident Notifications: https://www.baaqmd.gov/contact-us/sign-up-for-information/air-quality-incident-notifications

Transportation and Mobile Sources

Transportation and mobile sources refer to on-road sources of air pollution such as cars, trucks, motorcycles, and off-road equipment such as aircraft, locomotives, heavy equipment, etc. [224] Per Chapter 5, mobile sources operating in East Oakland are a significant source of $PM_{2.5}$ (particulate matter with diameters that are generally 2.5 micrometers and smaller), nitrogen oxide (NO_x) emissions, Diesel particulate matter (DPM), and benzene. East Oakland's exposure to mobile source emissions is of concern because of its proximity to I-880, the Oakland San Francisco Bay Airport, and the presence of truck-attracting businesses. The I-580 truck ban likely has a significant impact on emissions in the East Oakland flatlands, routing truck movement through I-880 and increasing DPM exposure for residents living near the transit corridor, which include sensitive receptors (see Chapters 4 and 5 for more details).

Community members have spoken about regular truck idling near their homes, citing increased traffic, noise, road damage, and safety concerns. They have brought up certain neighborhood streets such as East 14th Street and International Boulevard being used as highways. They are experiencing daily impacts on their lives from mobile source pollution, including dust on their windowsills, limited ability to spend time outdoors, and negative health impacts. Among these intersecting problems, emissions and noise pollution from the Oakland San Francisco Bay Airport remain high on their list of concerns, particularly as expansion is considered. The East Oakland Emissions Inventory using 2021 data finds that aircraft and other airport-related sources are the largest contributors to NO_x emissions in East Oakland at 36%, and aircraft is the largest sulfur oxides (SO_x) source in the community at 80%.

Given these concerns, the focus area aims to leverage technology, incentives, improved enforcement, health protective policies, and restorative justice principles to reduce the impacts of mobile emissions in East Oakland. Strategies and actions include the use of cleaner fuels, electrification of heavy-duty trucks and airport operations, and creating safer streets for walking and biking. Key collaborators include the City of Oakland Department of Transportation (OakDOT), California Air Resources Board (CARB) as the primary authority managing mobile source emissions, Port of Oakland as overseeing the Oakland San Francisco Bay Airport, and Caltrans as the agency responsible for managing the state's transportation system, including freeways.

Actions from this focus area may be referenced with the abbreviation T&M, followed by the strategy number and action number, for example, **T&M 1.1.**

[224] U.S. EPA webpage on Mobile Source Pollution: https://www.epa.gov/mobile-source-pollution/learn-about-how-mobile-source-pollution-affects-your-health.

Community Concern Statement 1: Trucks in the Community

Diesel trucks are a concern because they travel near residential areas and on residential streets and park and idle (leave their engines on while parked) illegally in neighborhoods. Trucks traveling with raw materials in open containers release fugitive dust and contribute to litter in the community. Diesel trucks and delivery trucks contribute to traffic in residential neighborhoods. The City and Port foreign trade zone policy incentivizes truck operators to use East Oakland neighborhood streets. Heavy trucks cause road damage, adding to disrepair on already poorly maintained streets and freeways. Truck traffic exposes East Oaklanders to Diesel Particulate Matter (DPM), nitrogen oxides (NO_x), road dust and other air pollution through vehicle emissions and brake and tire wear. Exposure to air pollution contributes to negative health effects, including respiratory diseases, heart attacks, increased medical expenses and early death for East Oaklanders. Community members are particularly worried about the effects on the elderly, and children with asthma, who must limit outdoor activities like running, playing sports, or being outside on days with poor air quality.

Strategy 1. Address Trucking Near Neighborhoods through Proactive Truck Management and Enforcement

Strategy Objective: Truck management (including establishment of limited truck routes, design guidelines, signage, enforcement, etc.) becomes a priority for local and regional agencies to minimize the impact of transport trucks and freight activities in East Oakland with special emphasis on minimizing truck impacts to surrounding neighborhoods. Streets are retrofitted with truck traffic calming measures designed to minimize community exposure to air pollution and to alleviate conflicts between freight vehicles and other travel modes in collaboration with residents. Public agencies are held accountable to regular collaboration with the Community Steering Committee (CSC). East Oaklanders are treated with the reverence that other more affluent neighborhoods have historically received in Oakland.

Strategy Metrics:

- Indirect Source policy package developed (yes/no)
- Truck management update initiated (yes/no)
- Number of roadside inspections of heavy-duty trucks
- Number of touch points (meetings, emails, etc.) with the California Air Resources Board (CARB) to inform and engage CSC members on preventing idling

#	Actions
T&M 1.1	**Indirect Source Policy Package:** Study feasibility and approach for a Bay Area Indirect Source (Magnet Source) policy package to address the impacts of large warehouses and other types of businesses that are “magnets” for heavy duty truck trips. The policy package could include rule making, model ordinances and technical support to local governments to develop their own policies. The Air District will proactively update and seek input from all Bay Area CSCs and other impacted communities across the region. **Lead**: Air District

#	Actions
	Timeframe: Short/Medium Term (2-3 years)
T&M 1.2	**Truck Signage and Safety Improvements:** Identify and secure funding to implement improvements at location prioritized in the *Northern Alameda County Truck Access Management Plan* (2021) to incorporate treatments such as signage communicating truck routes, installation of pedestrian and bicycle facilities and safety treatments at the following locations: 42nd Ave./High St./ Alameda Ave. (Fruitvale to International), Hegenberger Rd. (Doolittle to International), and 98th Ave. (Airport Access Road to San Leandro). **Lead**: Caltrans and Oakland Department of Transportation **Timeframe**: Long Term (4+ years)
T&M 1.3	**Truck Management Update:** City of Oakland Department of Transportation (OakDOT) will engage with the CSC to get feedback on opportunities to better manage trucks in East Oakland including potential updates to truck routing, truck signage and truck parking regulations. Topics will also include truck conflicts with pedestrians, bicyclists, transit and rail. Engagement efforts will include a focus on community members most affected by heavy duty trucking in East Oakland (e.g. unhoused residents on International Boulevard and residents of the Hegenberger tiny home community). **Lead**: City of Oakland Department of Transportation **Timeframe**: Long Term (4+ years)
T&M 1.4	**Proactive Enforcement:** Use proactive, coordinated enforcement to uphold high standards in East Oakland. Conduct traffic enforcement spot-checks on non-truck routes where trucks are often seen and conduct targeted truck parking and truck idling enforcement at specific times and locations. Ensure coordinated and prompt response to enforcement of trucking-related issues for neighborhoods adjacent to industrially zoned land and within 500 feet of truck routes. Develop non-carceral traffic enforcement techniques and provide support to small, local businesses and independent truck operators for complying with truck-related regulations. This builds on the Environmental Justice Element policy EJ-1.6. **Lead**: California Air Resources Board (CARB) (idling; engine compliance), City of Oakland Department of Transportation (OakDOT) (truck parking enforcement), City of Oakland Police Department **Timeframe**: Medium Term (2-3 years)
T&M 1.5	**Idling Prevention and Outreach:** The California Air Resources Board (CARB) will work with the CSC and local agencies to identify locations, where it's feasible, to install No Idling signs on roadsides, at schools, and parks. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)

#	Actions
T&M 1.6	**Enhance Diesel Program Enforcement**: The California Air Resources Board (CARB) will work with the CSC and California Highway Patrol (CHP) to identify locations to deploy roadside inspections within the East Oakland area, that have high heavy-duty truck traffic or are a concern to the community. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)
T&M 1.7	**Heavy-Duty Diesel Trucks Inspections:** The California Air Resources Board (CARB) will work with CSC to review enforcement data to determine how to direct and prioritize diesel vehicle enforcement activities and locations. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)
T&M 1.8	**Update Enforcement Strategies as Applicable:** The California Air Resources Board (CARB) staff are committed to updating enforcement strategies as requested by the CSC, if said strategies are enforceable by CARB staff or if CARB can reasonably accommodate the request. **Lead:** California Air Resources Board (CARB) **Timeframe**: Short Term (Less than 2 years)

Strategy 2. Landscaped, Clean Streets Allow for Comfortable Walking, Biking and Public Transit Use

Strategy Objective: East Oakland's streets are clean, landscaped and well maintained. Streets are designed to control vehicle speed and to encourage walking and biking and are accessible for all mobility levels. The streetscape environment encourages walking and other active transportation choices through culturally sensitive and celebratory design which promotes a sense of pride and dignity for East Oaklanders. Transit, bike and walking improvements outlined in the City of Oakland existing plans such as the East Oakland Mobility Action Plan are prioritized, funded and built that provide safe, comfortable and affordable options to connect residents to jobs, education, healthcare and recreation.

Strategy Metrics:

- Number of traffic safety/calming, bikeway and transit projects initiated or constructed
- Number of touch points (meetings, emails, etc.) with the City of Oakland to inform and engage CSC members on the City of Oakland's implementation of the East Oakland Mobility Action Plan and the Equitable Climate Action Plan (ECAP)

#	Actions
T&M 2.1	**Street Design to Lower Speeds:** Advance and assess East Oakland-focused implementation of the Environmental Justice (EJ) Element policy EJ-7.3 to implement street redesign policies focused on lowering speeds and increasing safety through the City of Oakland's Safe Oakland Streets initiative. The City will proactively update and seek input from the CSC. **Lead**: City of Oakland Safe Oakland Streets Initiative: City of Oakland Department of Transportation (OakDOT), Department of Race and Equity, Police Department, and City Administrator's Office **Timeframe**: Long Term (4+ years)
T&M 2.2	**Foothill Boulevard Transit Study:** Participate in the development of Alameda County (AC) Transit's Foothill Boulevard Project Planning Study focused on improving transit on Foothill Boulevard. **Lead**: Communities for a Better Environment (CBE) **Timeframe**: Medium Term (2-3 years)
T&M 2.3	**Implement Transportation Improvements that Advance Transit Access and Safety in East Oakland:** ● Install more bus boarding islands and bus bulbs to improve rider boarding safety, enhance American Disability Act (ADA) accessibility, and reduce bus dwell time ● Upgrade crosswalks, sidewalks and curb ramps, including at bus stops ● Add bus shelters in East Oakland ● Modify traffic signals throughout East Oakland to include transit signal priority and reduce bus waiting time at lights to improve reliability **Lead**: City of Oakland Department of Transportation (OakDOT) **Timeframe**: Medium Term (2-3 years)
T&M 2.4	**Proactive City Updates and CSC Engagement on Traffic Safety, Walkability, and East Bay Greenway Projects:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives: ● Safe Oakland Streets ● Equitable Climate Action Plan (ECAP) See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland **Timeframe**: Short Term (Less than 2 years)

Strategy 3. Transition to Zero Emission Vehicles and Related Funding

Strategy Objective: A comprehensive funding landscape is assembled through inter-agency collaboration, community outreach and engagement, to focus on funding and incentivizing zero emissions technology, vehicles, equipment, and supporting infrastructure (including provisions for small local businesses) and fleet transition to clean power sources.

Strategy Metrics:

- Incentive funds awarded
- Number of projects completed
- Emission reduction estimates

#	Actions
T&M 3.1	**Lawn and Garden Equipment:** Launch a new program that will offer up to $4.5 million to lawn and garden equipment owners who scrap combustion equipment and replace it with new, all-electric alternatives. Over the next five years fund at least $500,000 to projects that benefit East Oakland through dedicated marketing and specialized assistance to eligible local equipment owners. **Lead:** Air District **Timeframe**: Early/Short Term (Less than 2 years)
T&M 3.2	**Cleaner Automobiles and Automobile Alternatives Vehicle Buy Back Program:** Operate the Vehicle Buy Back (VBB) program to give Bay Area residents the opportunity to receive a cash award of $1,500 for retiring and scrapping an operable, registered, 1998 model year or older vehicle that they have owned for at least two years. Use targeting marketing to local residents to complete over 200 vehicle buybacks in the next five years that benefit East Oakland. To increase the possibility of success, pursue approval from the California Air Resources Board (CARB) to increase the cash award for scrapping a vehicle and to include cars newer than model year 1998. **Lead:** Air District **Timeframe**: Early Action (Immediate)
T&M 3.3	**Cleaner Automobiles and Automobile Alternatives Clean Cars for All Program:** Operate the Clean Cars for All program that will pay Bay Area residents up to $12,000 to turn in their qualifying 2007 or older vehicle and replace it with a new or used plug-in hybrid electric vehicle (PHEV), a battery electric vehicle, or a fuel cell electric vehicle. Residents that don't want a replacement vehicle can receive up to $7,500 for a mobility option that can be used for public transit and/or bicycle sharing. **Lead:** Air District **Timeframe**: Early/Short Term (Less than 2 years)
T&M 3.4	**Replacement of Heavy-Duty Vehicles and Equipment:** Offer grants to owners of older, heavy-duty diesel on-road trucks and buses and off-road cargo-handling, construction, agricultural, and airport ground support equipment to help reduce the cost of replacing

#	Actions
	vehicles and equipment with new, cleaner, and all-electric alternatives. Over the next five years, find and fund over $10 million for projects benefiting East Oakland through a combination of dedicated marketing and specialized assistance to local small business owners. **Lead:** Air District **Timeframe**: Early/Short Term (Less than 2 years)
T&M 3.5	**Grant Assistance:** Develop a new, specialized, heavy-duty diesel vehicle replacement program that streamlines the application process. Collaborate with the California Air Resources Board (CARB) and other partners to help local businesses and small fleet and independent truck operators learn about and apply successfully for these funds. Launch program in early 2026 and over five years find and fund $1 million in projects that benefit East Oakland through a combination of dedicated marketing and specialized assistance to local small businesses and equipment owners. **Lead:** Air District and California Air Resources Board (CARB) **Timeframe**: Early/Short Term (Less than 2 years)

Community Concern Statement 2: I-580 Truck Ban

The I-580 truck ban is a concern because it forces diesel trucks to use I-880 and travel through East Oakland neighborhoods. The I-580 ban is an environmental justice issue because it is a government sanctioned policy from the 1960s prohibiting truck traffic on I-580 and instead directing diesel truck traffic to I-880 which disproportionately impacts the health of low-income Black, Indigenous and People of Color (BIPOC) communities in the East Oakland flatlands. I-880 truck traffic exposes East Oaklanders to diesel pollution which is linked to adverse health problems and is a human carcinogen. Vehicle emissions from brake wear, tire wear, and road dust also contribute to Particulate Matter (PM) emissions, which is a significant health concern.

Strategy 4. Restorative Justice Guides Decisions about the Future of the I-580 Truck Ban

Strategy Objective: Restorative justice principles are applied to ensure the harm caused by the I-580 truck ban is meaningfully addressed. These principles include examining the harmful impact of the policy and determining measures to repair the harm. East Oakland residents are actively and equitably represented in the community process evaluating the I-580 truck ban. Restorative justice, specifically as it pertains to the I-580 truck ban, is clearly defined and prioritized in future planning processes to guide new investments. Racial equity criteria are integrated into future project planning and investment decisions to assess whether a project could create disparate impacts based on race, color, socioeconomic status, or other factors. Additionally, government actions related to future decisions comply with the Civil Rights Act, ensuring that disparate impacts are addressed effectively.

Strategy Metrics:

- I-580 truck ban study conducted (yes/no)
- Number of I-580 truck ban study meetings in East Oakland
- Study materials developed and disseminated to East Oaklanders (yes/no)

#	Actions
T&M 4.1	**Study Impacts of I-580 Truck Ban:** Conduct comprehensive studies to assess the air quality and public health impacts of allowing truck traffic on I-580. **Lead**: California Department of Transportation (Caltrans) **Timeframe**: Short Term (Less than 2 years)
T&M 4.2	**Consider Racial Equity in Future Decision-making Related to the I-580 Truck Ban:** Examine the racial and environmental inequities of the I-580 truck ban by completing a Historical Disparities and Root Causes Memo that documents the historical disparities and root causes that have led to social, economic, health and racial inequalities and barriers to opportunity in areas impacted by the I-580 truck ban including East Oakland. Base recommendations for restorative policy on the Memo findings and engagement with impacted communities including the East Oakland CSC. **Lead**: California Department of Transportation (Caltrans) **Timeframe**: Short Term (Less than 2 years)
T&M 4.3	**Implement Findings from Racial Equity Assessment:** Upon the conclusion of the Historical Disparities and Root Causes Memo (Action T&M 4.2) Caltrans will seek to implement the report findings to further restorative outcomes related to the I-580 truck ban in East Oakland and elsewhere. **Lead:** California Department of Transportation (Caltrans) **Timeframe**: Short Term (Less than 2 years)

Community Concern Statement 3: Road Dust Near Freeways and High Volume Roadways

Road dust (resuspended dust from paved roads) contributes to on-road fine particulate matter $PM_{2.5}$ emissions. $PM_{2.5}$ poses serious health risks to community members living in homes and senior housing, attending school, or visiting recreation centers near the I-880 freeway and arterial roads. Road dust emissions are projected to increase due to the growth of vehicular traffic.

Strategy 5. Road Dust Control

Strategy Objective: Road dust is significantly reduced through the implementation of diverse dust control measures to minimize exposure to Particulate Matter (PM) generated by brake wear, tire wear, and road dust.

Strategy Metrics: Study findings evaluated (yes/no)

#	Actions
T&M 5.1	**Study Efficacy of Street Sweeping Programs**: Evaluate findings from available studies to validate the efficacy of street sweeping and identify areas in greatest need, particularly communities disproportionately impacted by disinvestment. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
T&M 5.2	**Enhance Street Sweeping Programs**: Pending results of the street sweeping study in Action **T&M 5.1,** City to develop an enhanced street sweeping program, likely increasing street sweeping frequency near schools, truck routes, and freeways, and businesses that generate fugitive dust avoiding increased ticketing as a result of more aggressive street sweeping. **Lead**: Oakland Public Works Department (OPW) **Timeframe**: Medium Term (2-3 years)

Community Concern Statement 4: Oakland San Francisco Bay Airport

The airport is the concern because it is a large source of several types of harmful emissions (toxics, Particulate Matter (PM), Greenhouse Gases (GHGs), and lead) from ground equipment, aircraft, and passenger auto traffic to and from the airport. These emissions impact East Oaklanders' health. In addition, there is an airport expansion proposal, which community members and public health stakeholders are concerned could have compounding negative impacts on the health of frontline workers and East Oakland residents.

Strategy 6. Emission Reductions at the Oakland San Francisco Bay Airport

Strategy Objective: Relevant government agencies will utilize their respective authority to assess and implement airport-related emissions reduction strategies to lower airport-related emissions. Projects may include electrification of airport ground support equipment and ground access vehicles, and eliminating leaded aviation gas. Reductions will be achieved through a combination of policies, regulations, projects, and incentives.

Strategy Metrics:

- Airport Emissions Reduction Plan completed (yes/no)
- Number of airport ground support equipment electrified
- Zero Emissions Airport Ground Operation Regulation adopted (yes/no)

#	Actions
T&M 6.1	**Port Zero Emissions Plan Airport-specific Elements:** The Port of Oakland is preparing a Port-wide Zero Emissions Plan that will include Airport Carbon Accreditation Program elements (Carbon Management Plan, Stakeholder Engagement Plan, etc.), provide emissions inventories, when possible, and incorporate relevant Plan actions below. The Port of Oakland - Wide Zero Emissions Plan will include stakeholder engagement which will include engagement with the CSC, partner agencies, neighboring communities in East Oakland, airport workers and labor unions, independent third-party experts, and environmental organizations. The Port of Oakland will assess opportunities and pursue grant funding with community partners to implement potential improvements such as air filters and weatherization of homes and community hubs to reduce airport impacts. Alameda County Public Health Department (ACPHD) will contribute research on best practices to reduce health impacts and pollution exposure near airports. The Port of Oakland will maintain public-facing reporting with annual updates to the CSC on the Port's implementation progress on environmental initiatives. The Port of Oakland will also continue to attend and participate in the CSC meetings and activities. The Port of Oakland will prioritize early implementation of airport-related elements of the Zero Emissions Plan to meet pressing air quality and climate change issues to the extent possible. **Lead**: Port of Oakland **Timeframe**: Short Term (Less than 2 years)
T&M 6.2	**Electric Ground Support Equipment:** The Port of Oakland to use legal means to support and drive transition of remaining fossil-fuel Ground Support Equipment (GSE) to Electric GSE (eGSE) where commercially available by 2030. The Port of Oakland and Air District to identify and deploy incentives as available for eGSE and necessary electrical infrastructure. **Lead:** Port of Oakland, Air District **Timeframe**: Medium Term (2-3 years)
T&M 6.3	**Accelerate Airport Ground Access Vehicle Electrification:** The Port of Oakland to use legal means to facilitate accelerated transition of ground access vehicles (GAV) that provide passenger pickup services at commercial airports, such as buses and taxis, and necessary electrical infrastructure, including Port-owned and tenant or operator-owned vehicles. The Port of Oakland and Air District to identify and deploy incentives as available for all-electric vehicles and necessary electrical infrastructure. **Lead:** Port of Oakland, Air District **Timeframe**: Medium Term (2-3 years)

#	Actions
T&M 6.4	**Best Practices in Construction and Maintenance Work:** As identified in the Port of Oakland's 2023 Airport Carbon Accreditation Carbon Management Plan, Port to update standard contract language so all construction and maintenance work requires zero emissions equipment or reduced emissions technology to the fullest extent possible. Update request for qualifications (RFQ) and request for proposals (RFP) criteria. Require contractors to submit fuel tracking logs for construction activities. Update to be completed by 2026. **Lead**: Port of Oakland **Timeframe**: Short Term (Less than 2 years)
T&M 6.5	**Accelerate Phase-Out of Leaded Aviation Gas:** The Port of Oakland to use legal means to promote early compliance with Senate Bill 1193, the statewide ban on leaded aviation gas (AvGas) going into effect in 2031. Port will consider and evaluate phase-out strategies including developing an incentive program for fixed-base operators ("FBOs") to help ensure unleaded AvGas is available at a competitive price. **Lead**: Port of Oakland **Timeframe**: Long Term (4+ years)
T&M 6.6	**Zero Emissions Airport Ground Operation Regulation:** California Air Resources Board (CARB) will propose Zero Emission Airport Ground Operations Regulation to require zero emissions taxiing, ground support equipment, and/or gate operations. CARB expects to introduce regulatory concepts for Board consideration by 2027. CARB will consult with CSC, East Oakland residents and organizations, and airport workers to prioritize community needs in ongoing airport regulatory work. **Lead**: California Air Resources Board (CARB) **Timeframe**: Medium Term (2-3 years)

Strategy 7. Collaboration With and Accountability to Community on Airport Impacts

Strategy Objective: East Oakland communities neighboring the airport will be meaningfully informed of airport impacts and partner with The Port of Oakland and relevant agencies to lessen impacts. The Port of Oakland collaborates with neighboring communities, airport workers, and organizations to advance environmental justice initiatives and ensure transparency and accountability. This community collaboration will be consistent, accessible, and proactive.

Strategy Metrics:

- Number of grants secured to conduct airport-related outreach
- Number of meetings or events to educate the community about the air quality impacts of the airport
- Port of Oakland implementation of environmental health awareness training (yes/no)

- Port of Oakland implementation of fenceline monitoring at Oakland International Airport (yes/no)

#	Actions
T&M 7.1	**Proactive Community Engagement on Airport Issues:** The Port of Oakland pursues grant funding to fund partnerships with community organizations and the Alameda County Public Health Department (ACPHD) to conduct proactive, culturally competent outreach and health education on airport impacts to airport workers, neighboring communities, and relevant community organizations. Education and engagement will include youth and East Oakland representatives. The Port of Oakland expands opportunities for the community to inform decision-making throughout major project developments and to receive feedback such as ideas, questions, and concerns through various means such as public forums, online surveys, community events, and working group meetings. Further, the Port of Oakland will expand equitable engagement with and reporting to all communities and local governments impacted by Oakland International Airport operations. **Lead**: Port of Oakland, Alameda County Public Health Department (ACPHD) **Timeframe**: Short Term (Less than 2 years)
T&M 7.2	**Airport Worker Air Pollution Mitigation:** The Port of Oakland to develop and implement on-going and regular environmental health awareness training, evaluate and implement protocol for reducing pollution impacts on workers. The Port of Oakland will distribute appropriate personal protective equipment (PPE) to its employees and collaborate with tenant companies to help ensure non-Port employees also have health awareness and access to employer-provided PPT. The Port of Oakland will consult airport workers, unions, environmental organizations, and relevant agencies with health expertise in developing protocols. Implementation will begin no later than 2026. **Lead**: Port of Oakland **Timeframe**: Short Term (Less than 2 years)
T&M 7.3	**Investigate Airport Impacts on Nearby Air Quality:** The East Oakland Air Monitoring Project (see **PH 3.1**) will include exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM) (including ultrafine particles (UFPs), a key aviation-related pollutant) around specific facilities and air quality concerns identified and prioritized by community members. Oakland San Francisco Bay Airport is one of the identified facilities. Using information collected from this project, the Air District will analyze and evaluate data and summarize and report findings with attention to occurrences of unusually high levels of different pollutants, including UFPs, that may be associated with airport-related emissions. Findings from the overall project are expected to inform efforts to reduce pollution emissions and exposure or need for additional information. **Lead**: Air District **Timeframe**: Medium Term (2-3 years)

#	Actions
T&M 7.4	**Airport Fence Line Air Quality Monitoring:** The Port of Oakland shall install fence line air quality monitor(s) no later than one year after the opening of the new terminal as described in the 2024 Oakland San Francisco Bay Airport Terminal Modernization and Development Project Final Environmental Impact Report and the monitor(s) shall be maintained for a period of five (5) years thereafter. The air quality monitoring program document and monitoring data shall be available to the public on the Port of Oakland website. CSC prefers The Port of Oakland to install and maintain permanent fence line air quality monitors regardless of terminal modernization project. **Lead:** Port of Oakland **Timeframe**: Short Term (Less than 2 years)

Urban Greening and Workforce Development

According to findings in Chapter 4, Oakland's tree canopy is not equitably distributed, leaving many low-income, vulnerable communities with significantly less tree cover than wealthier areas. Tree cover varies from 9% in certain neighborhoods to 43% in others, with East Oakland's Council District 5 having seen a canopy loss of more than 5% between 2014 and 2018 (see Chapter 4). Residents in East Oakland have spoken about the visible differences between the number of trees and the quality of green infrastructure in their neighborhoods as compared to more affluent parts of Oakland. They have a hard time using or accessing parks and public spaces, and find that most such spaces are not well-maintained. These community concerns are also reflected in Oakland's Urban Forest Master Plan, which mentions funding reductions that have resulted in deferred tree maintenance and a shortage of services available to the community. [225]

Engaging with issues around urban greening presents an opportunity to consider the development of green jobs in East Oakland, which is defined as jobs that benefit the environment or conserve natural resources. [226] According to findings in Chapter 4, East Oakland residents experience higher rates of poverty, unemployment, and lower educational attainment compared to Alameda County and the San Francisco Bay Area overall. Approximately 40% of East Oakland's population lives below 200% of the federal poverty level, more than double the rate in Alameda County. The unemployment rate in East Oakland is also higher at 4.3% as compared to 3.3% in Alameda County (see Chapter 4, page 39). These statistics indicate economic marginalization and unequal access to opportunities in the region, which is historically connected to structural disinvestment and economic segregation in the East Oakland community.

Community members would like to tackle urban greening (UG) issues through workforce development in East Oakland. They would like their neighborhoods to match the most tree-rich, well-maintained areas in Oakland, while creating local and sustainable jobs that stay in the

[225] City of Oakland. "Urban Forest Plan," December 16, 2024. https://www.oaklandca.gov/Community/Community-Development/Sustainability-Environment/Sustainability-Plans/Oakland-Urban-Forest-Plan.
[226] U.S. Department of Labor, Bureau of Labor Statistics webpage on green jobs: https://www.bls.gov/green/green_definition.htm.

community. To achieve these outcomes, this focus area identifies important ongoing planning efforts to lend support and momentum towards, for example, the Oakland General Plan OSCAR (Open Space, Conservation, and Recreation Element) Element and the East Oakland Neighborhood Initiative (EONI). The strategies aim to bolster existing programs rather than duplicate and dilute efforts, while honing in on the Community Steering Committee (CSC) as a critical knowledge source towards successful implementation.

Key collaborators include the City of Oakland Tree Division, City of Oakland Economic and Workforce Development Department (EWD), Oakland Public Works Department (OPW), and Alameda County given their ongoing efforts towards urban greening, workforce development (UGW), improvement of the local economy, and advancing career pathways.

Actions from this focus area may be referenced with the abbreviation UGW, followed by the strategy number and action number, for example, **UGW 1.1**.

Community Concern Statement: Lack of Trees, Limited Resources and a Need for More Green Jobs

East Oakland has some of the lowest tree canopy coverage in the city. The lack of trees contributes to a myriad of issues, including the urban heat island effect where temperatures are higher compared to other areas of the city with more greenery. Today, the lack of vegetative buffers and barriers near pollution sources, combined with poor maintenance of existing buffers, is a concern because it fails to protect sensitive receptors from harmful pollutants.

A shortage of parks and green spaces is a concern because East Oakland neighborhoods lack these essential areas that promote active lifestyles and improved physical and mental health. The Oakland flatlands have a much smaller share of the city's parkland, with most parks being small neighborhood spaces.

Additionally, limited resources for the City of Oakland to sustain and maintain urban forestry pose a challenge for the near future.

More local, sustainable jobs are needed in East Oakland. The East Oakland workforce lacks the skills to be competitive in sustainable jobs (e.g., contractors skilled in zero-emission appliance installation and maintenance such as those skilled in the HVAC and plumbing trades, etc.). Efforts to employ local residents in trash pick-up have promoted care for the community and viable employment avenues for local residents while supporting environmental improvements. However, these efforts need to be fortified to continue. Without dedicated resources and the necessary training to grow a skilled workforce to improve air quality and community health, the community will continue to face economic and environmental challenges.

Strategy 1. Sustainable Funding Options to Support Urban Greening and Sustainable Jobs

Strategy Objective: Local tree planting and stewardship programs are supported by a sustainable funding model that generates green jobs and fosters community partnerships. Carbon sequestration, reduced energy consumption, and improved air quality are key benefits and considerations in setting tree planting targets. Temperatures in East Oakland areas most impacted by the urban heat island effect are reduced, reaching levels comparable to other parts of Oakland with the highest tree canopy cover.

Strategy Metrics:

- List of funding sources identified

#	Actions
UGW 1.1	**Research Sustainable Funding Options to Support Urban Greening:** Research opportunities for sustainable funding to support installation, ongoing maintenance, and community stewardship of urban greening projects in AB617 communities negatively impacted by air pollution. Evaluate if funding options can support projects advancing the City of Oakland's green infrastructure objectives. Identify how partnerships with local and regional nonprofits in the green infrastructure and environmental justice space can be leveraged to ensure equitable investments. **Lead**: Bay Area Regional Collaborative, Air District **Timeframe**: Short Term (Less than 2 years)
UGW 1.2	**Research Sustainable Funding Options Related to Employment Pathways for Green Jobs:** Through the Air District's building electrification work, and the Bay Area Regional Climate Action Plan (BARCAP), the Air District will assemble information about funding sources for workforce development in sustainable sectors. **Lead:** Air District **Timeframe**: Short Term (Less than 2 years)

Strategy 2. Improving Air Quality Through Vegetative Buffers and other Green Infrastructure for Vulnerable Populations

Strategy Objective: Green infrastructure, including vegetative buffers and barriers, is implemented, effectively installed, and maintained at targeted locations such as schools, daycare centers, medical facilities, and residential communities near high pollution sources like freeways and industrial zones. Nature-based solutions are promoted and new co-beneficial green infrastructure is introduced to mitigate air quality impacts and reduce air pollution exposure for sensitive populations.

Strategy Metrics:

- Tool developed to help prioritize urban greening locations (yes/no)
- Number of meetings to discuss tool/locations for vegetative buffers
- Funds invested to support East Oakland urban greening
- % completion of prioritized urban greening projects

#	Actions
UGW 2.1	**Create a Resource to Help Prioritize Installation of Vegetative Buffers:** Starting with the locations identified in the East Oakland Neighborhood Initiative and adding locations as new information becomes available, the Air District consults with the CSC and the City of Oakland Tree Division to create a resource that identifies high priority areas in

	East Oakland that are in need of vegetative buffers or other forms of green infrastructure. These nature-based solutions can help mitigate local air quality impacts and reduce air pollution exposure for vulnerable populations such as children, elderly, and individuals with respiratory conditions. Some initial locations could include the following areas: ● E Street and (partial) Gould Streets ● Union Pacific Railroad Right of Way (select locations) ● I-880 freeway vegetative buffer project ● G Street, from 92nd Ave to 77th Ave ● AC Transit corporate yard between Seminary Ave and 63rd Ave ● Other locations identified for tree planting This action will help achieve the City's tree planting goal of increasing the tree canopy cover over Oakland to 22.5% by 2034.[227] **Lead**: Air District **Timeframe**: Medium Term (2-3 years)
UGW 2.2	**Urban Greening Funding.** With attention to the resource developed in action UGW 2.1, the Air District will design a funding strategy that can support urban greening. **Lead:** Air District **Timeframe:** Medium Term (2-3 years)

Strategy 3. Equitable Access to Green Spaces

Strategy Objective: East Oakland green spaces are safe, clean, high quality, and are equitably accessible to all residents. Investments are made in the infrastructure, services, and maintenance of existing parks in East Oakland. New green spaces are created, old parks are reopened, and vacant lots are repurposed, while promoting safe routes for pedestrians, cyclists, and transit users. East Oakland neighborhoods are connected with a citywide greenway network including trails, bikeways, and walking paths to recreational and green spaces. Access to healthy, local, and culturally relevant food, as well as traditional medicines, is expanded for community members through urban agriculture, including home gardens, community gardens, and urban farms.

Strategy Metrics:

- Number touch points (meetings, emails, etc.) with City of Oakland to inform and engage CSC members on the Open Space, Conservation, and Recreation (OSCAR) update

[227] Oakland Urban Forest Plan (p.72-74) https://cao-94612.s3.us-west-2.amazonaws.com/documents/Oakland-Urban-Forest-Plan-2024-v241124-pages.pdf

#	Actions
UGW 3.1	**City of Oakland Engages the CSC in the General Plan OSCAR Update:** The City of Oakland consults with the CSC in its park planning efforts to prioritize improvement of greenway networks between parks and neighborhoods in East Oakland, as part of the Open Space, Conservation, and Recreation (OSCAR) Element in Phase 2 of the General Plan Update. The CSC is also engaged in designing high-quality, inclusive programming, with a simplified process for permissions or approvals, that encourages diverse usage of park facilities throughout the day and into the evenings, catering to older adults, youth, and people with disabilities. See Appendix F-2 for a list of other strategies, policies and actions of interest to the CSC. **Lead**: City of Oakland **Timeframe**: Short Term (Less than 2 years)
UGW 3.2	**Proactive City Updates and CSC Engagement Related to Neighborhood Gardening:** The City of Oakland proactively updates and seeks input from the CSC during the implementation of Environmental Justice Element Policy EJ-5.3: Community and Home Gardening. This will support community and home gardening efforts, particularly in Environmental Justice communities underserved by healthy food retail. City of Oakland will work with CSC to improve community gardens, focusing on making them more accessible, inviting, safe, and secure. This will help improve air quality as home and community gardens, as well as farms can help reduce reliance on on-road mobile sources (such as delivery trucks and long-haul trucks) that can be diesel fueled or high polluting. See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe**: Short Term (Less than 2 years)

Strategy 4. Proactive Workforce Development

Strategy Objective: Sustain and expand local green workforce development in East Oakland by exploring resource opportunities, strengthening partnerships with local governments and nonprofits, and increasing access to training and employment pathways that address air quality concerns and further climate-resilience. Focus on opportunities such as zero-emission appliance installations, HVAC and plumbing trades, and community beautification efforts such urban greening efforts that promote environmental improvements, increase tree canopy coverage, promote economic vitality, and foster community well-being by ensuring a stable and compensated workforce, particularly for those who have been historically underrepresented in employment opportunities.

Strategy Metrics:

- Number of touch points (meetings, emails, etc.) with City and County to inform and engage CSC members on sustainable jobs-related initiatives

#	Actions
UGW 4.1	**Tracking Employment Pathways for Green Jobs**: Support local green jobs by strengthening partnerships, improving recruitment strategies targeting youth members, and conducting workforce demand analysis to align training opportunities with emerging green industries. The City of Oakland and Alameda County will regularly engage the CSC for input and updates during the development and implementation of proactive workforce development policies focused on East Oakland's priority sectors, including clean energy, vegetation installation and maintenance, building electrification, and waste management: ● City of Oakland 2030 Equitable Climate Action Plan (ECAP) - Just Transition ● City of Oakland Zero Emission Vehicle (ZEV) Action Plan ● Alameda County Climate Action Plan for Government Services and Operations through 2026 See Appendix F-2 for a list of the strategies, policies and actions of interest to the CSC. **Lead:** City of Oakland **Timeframe**: Short Term (Less than 2 years)
UGW 4.2	**Engage the Oakland Workforce Development Board with the CSC:** The City of Oakland engages the CSC in the Oakland Workforce Development Board activities to connect Oakland residents to green jobs opportunities in zero-emission appliance installations, HVAC and plumbing trades, clean energy, waste management, and urban greening, to support local air quality improvements. **Lead:** City of Oakland **Timeframe**: Short Term (Less than 2 years)

Chapter 8: Overview of California Air Resources Board's Statewide Actions

As explored in Chapter 5, community-scale air pollution exposure is caused by many factors, including the impacts of multiple pollution sources. Effective solutions require multiple strategies at both the statewide and local levels to deliver new emissions reductions directly within these communities. California Air Resources Board (CARB) has adopted several comprehensive air quality and climate plans over the last several years that lay out new emissions reduction strategies. These plans include the recent State Strategy for the State Implementation Plan (SIP), [228] California's 2022 Climate Change Scoping Plan, [229] the California Sustainable Freight Action Plan, [230] the Short-Lived Climate Pollutants Reduction Strategy, [231] and the 2020 Mobile Source Strategy, [232] along with a suite of incentive programs. CARB is continuing to develop air quality and climate plans that will further reduce emissions. The Community Air Protection (CAP) Blueprint 2.0 contains additional strategy implementation guidance to reduce emissions of toxic air contaminants and criteria air pollutants in communities affected by a high cumulative exposure burden, and reflects the experience and lessons learned from the first years of the program development and implementation. [233] Blueprint 2.0 further identifies additional actions to reduce the air pollution burden in heavily impacted communities throughout the State. Together, these plans provide a foundation for the new actions identified as part of this community emissions reduction program.

This section illustrates CARB's role in the community emissions reduction program by broadly describing the regulatory and incentive-based statewide actions CARB has taken to reduce emissions statewide. It also highlights specific actions that address areas of concern identified by the East Oakland Community Steering Committee.

Incentive Programs

CARB operates incentive programs that reduce the costs of developing, purchasing, or operating cleaner technologies. The programs help ensure cleaner cars, trucks, equipment, and facilities are operating in our neighborhoods by driving the development of new, cleaner technologies and by accelerating their sale and adoption. Specifically, these programs accelerate the introduction of advanced technology vehicles and equipment, advance the turnover of older and higher-emitting vehicles and equipment, and increase access to clean vehicles and transportation in disadvantaged communities and lower-income households.

While CARB is responsible for program oversight, some programs are implemented in

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[228] California Air Resources Board, 2022 State Strategy for the State Implementation Plan, September 12, 2022, available at: https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy.

[229] California Air Resources Board, California's 2017 Climate Change Scoping Plan, September 2022, available at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents.

[230] California Department of Transportation, California Sustainable Freight Action Plan, July 2016, available at: https://dot.ca.gov/programs/transportation-planning/freight-planning/california-sustainable-freight-action-plan.

[231] California Air Resources Board, Short-Lived Climate Pollutant Reduction Strategy, March 2017, available at: https://ww2.arb.ca.gov/resources/documents/slcp-strategy-final.

[232] California Air Resources Board, 2020 Mobile Source Strategy, October 2021, available at: https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy.

[233] California Air Resources Board, Community Air Protection Program Statewide Strategy and Implementation Guidance Blueprint 2.0, October 2023, available at: https://ww2.arb.ca.gov/capp/mdc/bp2/community-air-protection-program-blueprint-20.

partnership with local air districts. Examples of CARB incentive programs include:

- Carl Moyer Memorial Air Quality Standards Attainment Program, [234]
- Community Air Protection (CAP) Incentives Program, [235]
    - The Community Air Protection Incentives are implemented by the air district through this program,
- Proposition 1B: Goods Movement Emission Reduction Program, [236]
- Funding Agricultural Replacement Measures for Emission Reductions Program, [237] and
- Low Carbon Transportation Investments and Air Quality Improvement Program (which includes the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project). [238]

Community Air Protection (CAP) Incentives

Since 2017, the California Legislature has appropriated money annually from the Greenhouse Gas Reduction Fund (GGRF) for incentives to support AB617. In advance of initial community selection in 2018, the Legislature directed that Community Air Protection (CAP) Incentives appropriated in Fiscal Year (FY) 2017-18 be focused on disadvantaged and low-income communities through the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) and the Proposition 1B Goods Movement Emission Reduction Program (Proposition 1B Program) to provide immediate air quality benefits in heavily impacted communities.

Between Fiscal Years 2017-18 and 2022-23, the Legislature appropriated $1,204 million in CAP Incentives. The Legislature initially appropriated incentives to generate immediate air quality benefits in communities most likely to participate in AB617 – primarily disadvantaged communities – as the program began to develop. Additionally, the Board set specific priority population investment targets for the funds: 70 percent in and benefiting disadvantaged communities and 80 percent in and benefiting disadvantaged or low-income communities. Through November of 2024, air districts have expended over $632 million dollars with $245 million in Assembly Bill 617 (AB617) communities. Air districts have expended over $452 million or roughly 71 percent in disadvantaged communities and over $537 million or roughly 85 percent in disadvantaged and low-income communities. [239]

To expand on initial funding options in the CAP Incentives Guidelines, CARB developed a process for the air districts to fund new projects responsive to community priorities and to expand stationary source incentives. CARB staff worked with the air districts and California Air Pollution Control Officers Association (CAPCOA) through late 2019 and early 2020 to ensure the process maximized flexibility to support projects requested by community members while

[234] For more information on the Carl Moyer Memorial Air Quality Standards Attainment Program, visit: https://ww2.arb.ca.gov/our-work/programs/carl-moyer-memorial-air-quality-standards-attainment-program.
[235] For more information on the Community Air Protection Incentives, visit: https://ww3.arb.ca.gov/msprog/cap/capfunds.htm.
[236] For more information on the Proposition 1B: Goods Movement Emission Reduction Program, visit: https://ww2.arb.ca.gov/our-work/programs/proposition-1b-goods-movement-emission-reduction-program.
[237] For more information on the Funding Agricultural Replacement Measures for Emission Reductions Program, visit: https://ww2.arb.ca.gov/our-work/programs/farmer-program.
[238] For more information on the Low Carbon Transportation Investments and Air Quality Improvement Program, visit: https://ww2.arb.ca.gov/our-work/programs/low-carbon-transportation-investments-and-air-quality-improvement-program.
[239] Disadvantaged and low-income communities as defined by Assembly Bill 1550 (Gomez, Chapter 369, Statutes of 2016), read more here: https://calepa.ca.gov/envjustice/ghginvest/.

simultaneously meeting the need to assess emissions reductions and other benefits. Staff published this expanded version of the CAP Incentives Guidelines in October 2020.

The revised guidelines allow air districts to expeditiously develop and fund projects to reduce emissions from stationary sources and to address those concerns identified and prioritized in each CERP through Community-Identified Projects. As a criterion for CARB's approval of a CERP, air districts must describe the level of support it received from the CSC. Subsequent proposed project plans to implement incentives-based- strategies and Community Identified Projects must also document strong, widespread, and clear community support and include descriptions of community benefits, both those benefits that are quantifiable and those more qualitative in nature. Figure 8-1 illustrates the process by which a Project Plan is developed and approved. This iterative process allows districts and CARB to account for complicated, unique, or unusual projects and ensure that they will be responsive to community needs.



Figure 8-1: CARB’s Community Air Protection Project Plan Review Process.

Several innovative incentive projects were initiated in 2022 and funded by CAP Incentives. San Joaquin Valley Air Pollution Control District (SJVAPCD) has numerous Community-Identified Projects totaling over $5 million, including wood stove replacements, EV charging infrastructure, low-dust nut harvesters, lawn and garden, and alternatives to agricultural burning. With support from Portside Environmental Justice Neighborhoods' CSC, San Diego Air Pollution Control District (SDAPCD) proposed, and CARB approved, an electric truck pilot project for Portside to incentivize e-truck purchases without requiring scrapping old trucks as a Community-Identified Project. On behalf of their AB617 communities, South Coast Air Quality Management District (SCAQMD) has submitted a Draft AB617 Truck Incentives Workplan to CARB for review that will provide opportunities for fleet owners to assess the suitability of zero-emission or near-zero-emission medium- or heavy-duty trucks and supporting infrastructure by allowing them to test drive the cleaner trucks for some time.

In 2023, staff recognized that other communities, particularly those that have been consistently nominated but not yet selected for participation in AB617, could likewise benefit from their air districts implementing these kinds of innovative new projects, and began to work with the air

districts through a public process to revise the CAP Incentives Guidelines to expand eligibility to such projects statewide. Staff published *revised CAP Incentives Guidelines* [240] in May 2025, incorporating many of the approved community-identified projects as new chapters eligible for any air district to implement in their most heavily impacted communities. New chapters include incentives for agency partnerships, vegetative barriers and urban greening, emergency diesel generator replacement, paving and bike path projects, dial-a-ride vehicle replacements, alternatives to agricultural burning, and low-dust nut harvester replacements.

Following the April 2024 update to the CAP Incentives Guidelines, staff began phase II updates to the Guidelines. After extensive collaboration with the air districts and CAPCOA [241] and following a public workshop at the end of April, staff published the newly updated Guidelines in May 2025. The phase II update aligns the Guidelines' administrative requirements with those of the Carl Moyer Memorial Air Quality Standards Attainment Program and includes a new chapter on woodsmoke reduction projects patterned off the existing CAPCOA Woodsmoke Reduction Program.

Regulatory Programs

Federal, State, and local air quality agencies all work together to reduce emissions. At the federal level, the U.S. Environmental Protection Agency (U.S. EPA) has primary authority to control emissions from certain mobile sources, including sources that are all or partly under federal jurisdiction (e.g., some farm and construction equipment, aircraft, marine vessels, locomotives), which it shares in some cases with air districts and the California Air Resources Board (CARB). The U.S. EPA also establishes National Ambient Air Quality Standards (NAAQS) for some air pollutants. At the State level, CARB is 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.

Regionally, air districts are primarily responsible for controlling emissions from stationary and indirect sources through rules and permitting programs within their regions (except for consumer products in most cases).

CARB regulatory programs are designed to reduce emissions to protect public health, achieve air quality standards, reduce greenhouse gas (GHG) emissions, and reduce exposure to toxic air contaminants (TACs). 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 stationary sources, 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 important and relevant regulatory authority of CARB is to adopt measures to reduce emissions of toxic air contaminants from mobile and non-mobile sources, known as Airborne Toxic Control Measures (ATCM). [242] These regulatory measures include process requirements,

[240] California Air Resources Board, "Community Air Protection Incentives Guidelines," 2025 (May). https://ww2.arb.ca.gov/capp/resources/community-air-protection-incentives-guidelines.
[241] CAPCOA is a non-profit association the represents the 35 local air quality agencies in California.
[242] California Health and Safety Code § 39650 et seq.

emissions limits, or technology requirements. Additionally, CARB implements the Statewide Air Toxics "Hot Spots" Program [243] to address the health risk from toxic air contaminants at individual facilities across the State. The Air Toxics "Hot Spots" Program includes several components to collect emissions data, identify facilities having localized impacts, ascertain health risks, notify nearby residents of significant risks, and reduce those significant risks to acceptable levels.

Under the Air Toxics "Hot Spots" Program, air districts are required to set a threshold for facilities that pose a significant health risk and prioritize facilities for health risk assessments. Air districts also establish a risk value above which facilities must conduct a risk reduction audit and emissions reduction plan. Facilities must develop these health risk assessments, risk reduction audits, and emission reduction plans. CARB provides technical guidance to support smaller businesses in conducting health risk assessments and developing emissions reduction plans.

Additionally, CARB has pursued enforceable agreements with industry that result in voluntary but enforceable 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 the introduction of cleaner locomotives in the South Coast Air Basin (SCAB) is an example of an enforceable agreement.

The recent actions regarding California's Clean Air Act waiver actions taken under the guise of the Congressional Review Act were illegal. As Governor Newsom and CARB Chair Liane Randolph said, California will defend its rights to protect public health. To address the need for immediate guidance, CARB issued this advisory to auto manufacturers: Manufacturers Advisory Correspondence (MAC) ECCD-2025-03. [244]

On June 12, 2025, Governor Newsom announced California is suing the Trump administration over the President's approval of illegal resolutions aiming to undo key parts of the state's clean vehicles program. Below are links to statements from the Governor, Attorney General Rob Bonta, and CARB Chair Liane Randolph.

- 'Assault on California continues': Governor Newsom sues Trump over illegal attempt to revoke state's clean air policies. [245]
- California Will Not Waver in Defending Itself from Federal Overreach: Attorney General Bonta Sues Trump Administration for Attack on California's Clean Vehicles Program. [246]

[243] Assembly Bill 2588, Air Toxics "Hot Spots" Information and Assessment Act, Connelly, Statutes of 1987, California Health and Safety Code § 44300 et seq.

[244] California Air Resources Board, "Manufacturers Advisory Correspondence (MAC) ECCD-2025-03." 2025 (May 2023). https://www.rvia.org/system/files/media/file/CARB%20Manufacturers%20Advisory%20Correspondence%205%2023%2025.pdf

[245] State of California. 2025. "'Assault on California Continues': Governor Newsom Sues Trump over Illegal Attempt to Revoke State's Clean Air Policies." *Governor of California*, June 12. https://www.gov.ca.gov/2025/06/12/assault-on-california-continues-governor-newsom-sues-trump-over-illegal-attempt-to-revoke-states-clean-air-policies/.

[246] Office of the Attorney General Rob Bonta. 2025. *California Will Not Waver in Defending Itself from Federal Overreach: Attorney General Bonta Sues Trump Administration for Attack on California's Clean Vehicles Program*. June 11. https://oag.ca.gov/news/press-releases/california-will-not-waver-defending-itself-federal-overreach-attorney-general.

- CARB Chair Liane Randolph responds to President Trump's approval of illegal resolutions to revoke California's Clean Air Act waivers. [247]

CARB Actions Related to the East Oakland Community

This section highlights California Air Resources Board (CARB) actions that specifically relate to the East Oakland Community actions identified by the CSC. This list should not be interpreted as exhaustive but rather illustrative of some of the major statewide strategies driving emissions reductions in conjunction with those local-level strategies identified in this community emissions reduction program. More information on CARB's regulatory process can be found in the Online Resource Center. [248] The list of CARB actions and their anticipated benefits in current AB617 communities is also available on the Program Community Hub. [249] Some of these waivers have been subject to unlawful Congressional Review Act revocation actions and may be the subject of pending litigation.

Recently Adopted CARB Regulations

In September 2017, CARB approved Incentive Funding to Support Immediate Emissions Reductions [250] to fund advanced technologies that cut pollution in heavily impacted communities. Updated in April 2024, the program expanded eligibility and added new project categories based on five years of community-driven efforts.

In December 2017, CARB approved Short-Lived Climate Pollutant (SLCP) Reduction Strategy - Organic Waste in Landfills [251] The SLCP Reduction Strategy seeks to reduce methane emissions by cutting the disposal of organic waste in landfills by 75% by 2025, promoting the diversion of organic materials into compost, renewable natural gas, and energy.

In December 2019, CARB approved Advanced Clean Truck. [252] Its goals are 100% zero-emission pickup and delivery by 2040, zero-emission drayage trucks by 2035, and a self-sustaining zero emission vehicle (ZEV) market that benefits disadvantaged communities.

In August 2020, CARB approved Heavy-Duty "Omnibus" Low NOx Rulemaking, [253] setting stricter nitrogen oxides (NO_x) and particulate matter (PM) standards, extending vehicle warranty and useful life, introducing new compliance programs and zero emission vehicles (ZEV) incentives, and aligning regulations with federal standards to support emissions reduction goals.

In August 2020, CARB approved Heavy-Duty On-Road and Off-Road Engine In-Use Testing [254]

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[247] California Air Resources Board. n.d. "CARB Chair Liane Randolph Responds to President Trump's Approval of Illegal Resolutions to Revoke California's Clean Air Act Waivers." Accessed September 25, 2025. https://ww2.arb.ca.gov/news/carb-chair-liane-randolph-responds-president-trumps-approval-illegal-resolutions-revoke.

[248] Community Air Protection Program Resource Center: https://ww2.arb.ca.gov/ocap_resource_center.

[249] Community Air Protection Program Communities: https://ww2.arb.ca.gov/capp-communities.

[250] For more information on Incentive Funding to Support Immediate Emissions Reductions, visit: https://ww2.arb.ca.gov/our-work/programs/resource-center/strategy-development/incentive-funding.

[251] For more information on Short-Lived Climate Pollutant Reduction Strategy - Organic Waste in Landfills, visit: https://ww2.arb.ca.gov/our-work/programs/slcp.

[252] For more information on Advanced Clean Truck, visit: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks.

[253] For more information on Heavy-Duty "Omnibus" Low NOx Rulemaking, visit: https://ww2.arb.ca.gov/our-work/programs/heavy-duty-low-nox.

[254] For more information on Heavy-Duty On-Road and Off-Road Engine In-Use Testing, visit: https://ww2.arb.ca.gov/heavy-duty-in-use-compliance-program.

This strategy will involve real world screening of heavy-duty trucks and off-road engines operating in selected communities to target heavy-duty in-use compliance testing.

In February 2021, CARB approved Consumer Products Standards,[255] that lower volatile organic compound (VOC) limits, expand bans on toxic and high-GWP compounds, remove most fragrance exemptions, promote innovative propellants, and strengthen emissions controls and transparency.

In March 2021, CARB approved Clean Miles Standard[256] to cut emissions from Transportation Network Companies (TNCs) like Uber and Lyft, addressing increased travel, congestion, and pollution. The rule supports Advanced Clean Cars II and SB 375 goals for regional Greenhouse Gases (GHG) reductions.

In July 2021, CARB approved On-Board Diagnostic System Requirements (OBD II & HD OBD)[257] to enhance emissions and performance monitoring with stricter standards, revised phase-in timelines, and new reporting rules, balancing manufacturer concerns with air quality goals.

In September 2021, CARB approved Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate[258] to require diesel truck TRUs to transition to zero-emission by 2029, adopt stricter particulate matter (PM) standards, use low-GWP refrigerants, and meet new reporting, labeling, and fleet turnover rules.

In December 2021, CARB approved Heavy-Duty Inspection and Maintenance.[259] Dubbed the Clean Truck Check, a program combining periodic testing, emissions monitoring, and enhanced enforcement to ensure heavy-duty vehicles are properly repaired, cutting smog and toxic pollution to meet air quality standards.

In December 2021, CARB approved Small Off-Road Engine Amendment[260] CARB amended regulations for small off-road engines (SORE) to transition toward zero-emission equipment by 2035, setting stricter standards by 2024 and achieving zero emissions for generators by 2028. This initiative aims to reduce pollution from SORE and improve public health, while aligning with California's climate and air quality goals.

In June 2022, CARB approved Advanced Clean Cars 2.[261] The Advanced Clean Cars 2 regulations will cut emissions from light-duty vehicles between 2026 and 2035 by boosting zero-emission vehicle sales and tightening gasoline car standards. In October 2023, CARB began

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[255] For more information on Consumer Products Standards, visit: https://ww2.arb.ca.gov/our-work/programs/consumer-products-program

[256] For more information on Clean Miles Standard, visit: https://ww2.arb.ca.gov/our-work/programs/clean-miles-standard.

[257] For more information on On-Board Diagnostic System Requirements (OBD II & HD OBD), visit: https://ww2.arb.ca.gov/our-work/programs/obd

[258] For more information on Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate, visit: https://ww2.arb.ca.gov/resources/fact-sheets/2022-amendments-tru-atcm

[259] For more information on Heavy-Duty Inspection and Maintenance, visit: https://ww2.arb.ca.gov/our-work/programs/CTC

[260] For more information on Small Off-Road Engine Amendment, visit: https://ww2.arb.ca.gov/our-work/programs/small-off-road-engines-sore

[261] For more information on Advanced Clean Car 2, visit: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii

considering updates to GHG tailpipe limits and revisions to low-emission vehicles (LEV) and zero emission vehicles (ZEV) rules, supporting the state's goal for all new cars to be zero-emission by 2035.

In October 2022, CARB approved Advanced Clean Fleets [262], requiring targeted fleets to adopt ZEVs and mandating only ZEV truck sales by 2036. The regulation is projected to deploy 1.69 million ZEVs by 2050, improve air quality, and deliver $26.5 billion in health benefits and $48 billion in fleet savings.

In November 2022, CARB approved In-Use Off-Road Diesel Fueled Fleets Amendment [263], effective January 2024, to speed up the phase-out of older diesel vehicles, tighten emissions controls, and improve air quality with funding support for cleaner technology.

In November 2022, CARB approved National Locomotives Standards Petition [264] to review and strengthen national locomotive emission standards, aiming to phase out older engines, promote zero-emission technology, and cut pollution in disadvantaged communities.

In November 2022, CARB approved Off-Road Diesel Engine Emission Standards [265] to phase out older engines, adopt cleaner technology, and meet reporting deadlines by fleet size to reduce emissions and improve air quality in impacted communities.

In September 2024, CARB approved Zero Emission Off-Road Forklift Regulation [266] to phase out gas and propane forklifts by 2026, replacing them with battery-electric and fuel-cell models to cut nitrogen oxides (NO_x) and fine particulate matter ($PM_{2.5}$), supporting climate goals and delivering health and economic benefits through 2043.

Future and Upcoming CARB Rulemakings

The California Air Resources Board (CARB) is advancing a comprehensive suite of future and upcoming rulemakings aimed at accelerating California's transition to zero-emission (ZE) technologies across multiple sectors. These efforts support the state's ambitious air quality, climate, and public health goals, with a strong emphasis on protecting communities most impacted by pollution. From mobile source strategies and off-road equipment regulations to building standards and industrial controls, each initiative reflects CARB's commitment to environmental justice and technological innovation.

Cargo Handling Equipment Regulation to Transition to Zero-Emissions - CARB plans to amend the Cargo Handling Equipment regulation to require ZE technology at seaports and railyards, replacing diesel and other combustion-powered equipment like yard trucks and forklifts. The amendments may include an implementation schedule for new equipment and infrastructure, prioritizing early adoption in communities most impacted by air pollution. For

[262] For more information on Advanced Clean Fleets, visit: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets.
[263] For more information on In-Use Off-Road Diesel Fueled Fleets Amendment, visit: https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation
[264] For more information on National Locomotives Standards Petition, visit: https://ww2.arb.ca.gov/resources/documents/us-epa-responds-carbs-petition-strengthen-locomotive-emission-standards
[265] For more information on Off-Road Diesel Engine Emission Standards, visit: https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation
[266] For more information on Zero Emission Off-Road Forklift Regulation, visit: https://ww2.arb.ca.gov/our-work/programs/zero-emission-forklifts

more information, visit: https://ww2.arb.ca.gov/our-work/programs/cargo-handling-equipment [267]

California Clean Construction Program - CARB's voluntary program encourages fleets to adopt advanced and zero-emission vehicles beyond requirements, using a rating system and offering incentives like job access, recognition, and marketing to promote early adoption of clean technologies.

Composite Wood Products Control Measure Amendments - This strategy updates CARB's 2007 Composite Wood Products ATCM, which set formaldehyde limits for hardwood plywood, particleboard, and medium density fiberboard (MDF), and requires all products containing these materials—like flooring, cabinets, and furniture—sold in California to comply. For more information, visit: https://ww2.arb.ca.gov/our-work/programs/composite-wood-products-program/about [268]

Phased Advanced Clean Equipment (PACE) Rule- CARB plans to propose a regulation requiring off-road equipment manufacturers to sell a percentage of zero emission (ZE) equipment annually. This measure aims to increase ZE options in the off-road sector and support initiatives that encourage or mandate the adoption of cleaner technologies.

Tier 5 Off-Road New Compression-Ignition Engine Standard - CARB's proposed Tier 5 amendments would cut off-road diesel engine emissions by 90% for NO_x and 75% for PM, introduce carbon dioxide (CO_2) standards, and strengthen compliance, with implementation starting in 2029 to improve air quality. For more information, visit: https://ww2.arb.ca.gov/our-work/programs/tier5 [269]

Transport Refrigeration Unit Regulation Part 2 - CARB's new Transport Refrigeration Units (TRU) regulation phases in ZE technology to replace diesel units, aiming to cut emissions, protect public health near distribution centers, and support California's climate goals. For more information, visit: https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/new-transport-refrigeration-unit-regulation [270]

Zero-Emission Standard for Space and Water Heaters - CARB's Zero-Emission Space and Water Heater Standards target GHG and NO_x reductions from buildings by promoting ZE technologies, with a focus on affordability, equity, and statewide health benefits. Air District modeling conducted to support amendments to Rules 9-4 and 9-6 shows that the health of East Oaklanders is disproportionately impacted by appliance NOx emissions. [271] For more information, visit: https://ww2.arb.ca.gov/our-work/programs/zero-emission-space-and-water-heater-standards [272]

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[267] CARB. "Cargo Handling Equipment." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/cargo-handling-equipment
[268] CARB. "Composite Wood Products Airborne Toxic Control Measure." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/composite-wood-products-program/about
[269] CARB. "Potential Amendments to the Off-Road New Diesel Engine Emission Standards: Tier 5 Criteria Pollutants and CO2 Standards." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/tier5
[270] CARB. "New Transport Refrigeration Unit Regulation in Development." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/new-transport-refrigeration-unit-regulation
[271] Bay Area Air District. "Exposure and Equity Assessment of Natural Gas Appliances in the San Francisco Bay Area." Accessed May 29, 2025. https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-9-rule-4-nitrogen-oxides-from-fan-type-residential-central-furnaces/2021-amendments/documents/20221220_sr_appf_rg09040906-pdf.pdf?rev=5bc72160fb8e43fcbd26ba854a909218&sc_lang=en
[272] CARB. "Zero-Emission Space and Water Heater Standards." Accessed October 2, 2025. https://ww2.arb.ca.gov/our-work/programs/zero-emission-space-and-water-heater-standards

Chapter 9: Implementation and Reporting

Achieving the goals outlined in the East Oakland Plan will require a strong commitment to both sustained implementation and consistent reporting on progress, including successes and challenges. This chapter outlines the strategy for implementing the Plan and providing annual updates to the CSC, Air District Board of Directors, and the California Air Resources Board (CARB).

The Plan has been designed to be implemented within a five-year horizon, starting from its adoption by the Air District Board of Directors. It also includes a 10-year horizon for continued tracking to ensure sustained progress toward the Plan-level Goals that will be achieved through the strategies and actions described in Chapter 7 in alignment with the Plan's Vision and Principles.

Government Collaboration & Agency Roles

Successful implementation will require coordination among multiple government agencies. The Air District will facilitate the inter-agency collaboration necessary to advance the Plan. Key government implementation partners include CARB and local agencies such as the City of Oakland, the Alameda County Public Health Department (ACPHD), and the Port of Oakland. This section details the authority and responsibilities of each agency designated as a lead in implementing the Plan's actions.

As implementation progresses and actions are developed and refined, new government partners may be identified and engaged.

Air District

The California Legislature created the Air District in 1955 as the first regional air pollution control agency in the country. The Air District is responsible for regulating stationary sources of air pollution in in the nine counties that surround the San Francisco Bay Area: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties.

The Air District passes and enforces a wide variety of regulations on industries, businesses, and activities, from wood burning in fireplaces to refining fossil fuels, to ensure air pollution is minimized. We also distribute over $150 million in state and federal incentive funding every year to reduce air pollution from mobile sources, such as cars, trucks, school buses, port and construction equipment, lawn and garden equipment, and wood-burning stoves and fireplaces. This core work of the Air District is foundational to our efforts to reduce air pollution, protect people's health and mitigate climate change. [273]

The Air District will play a central role implementing the Plan alongside the East Oakland CSC, CARB, local agencies, and other partners in East Oakland. The Air District is uniquely positioned to bring together those responsible for carrying out the Plan. It is committed to providing the necessary resources for successful implementation, which includes efforts such as strengthening regulations and improving enforcement. Actions implemented by the Air District include, for example:

[273] Bay Area Air District. "2024-2029 Strategic Plan," 2024. https://strategicplan.baaqmd.gov/.

- **C&I 2.1.** Implement Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities.
- **C&I 8.1.** Promote the Complaint Program Through a Public Information Campaign.

City of Oakland

Implementing the Plan requires collaboration between the Oakland City Council and multiple City of Oakland departments. The City of Oakland holds authority over land use—through its Planning & Building Department—and over local roads, sidewalks, and bike lanes via the City of Oakland Department of Transportation (OakDOT).

The City Council exercises this authority by adopting general and specific plans, zoning ordinances, and bike, pedestrian, and corridor plans. It also approves conditional use permits and certifies environmental reports for projects such as housing, commercial, and industrial developments.

The Oakland Public Works Department (OPW) is responsible for maintaining and enhancing public infrastructure and environmental quality, including efforts like urban greening and addressing illegal dumping.

The Sustainability Office leads efforts focused on environmental improvement, energy efficiency, support for green businesses, and initiatives to mitigate and adapt to climate change.

Lastly, the Economic & Workforce Development Department (EWD) and the Workforce Development Board work to build a strong local economy by providing job training and employment opportunities for Oakland residents. Actions implemented by the City of Oakland include, for example:

- **ID 1.2.** Illegal Dumping Prevention Community Outreach.
- **BE 3.2.** Air Quality Protection Information for Communities Located Near Sources of Harmful Pollutants.

Alameda County Public Health Department (ACPHD)

The Alameda County Public Health Department (ACPHD) is responsible for a broad range of public health services aimed at improving community well-being. These services include assessing residents' health status, preventing and controlling disease, mobilizing and engaging the community, developing policies, providing education, and ensuring access to quality medical and health care services.

The Department strives to reduce health inequities and improve community health through various efforts, such as providing health and social data, conducting disease surveillance, offering immunization services, and coordinating public health emergency preparedness. Actions implemented by ACPHD include, for example:

- **PH 3.4.** Health Dashboard.
- **T&M 7.1** Proactive Community Engagement on Airport Issues.

California Air Resources Board (CARB)

The California Air Resources Board (CARB) is the state agency responsible for regulating

emissions from mobile sources (such as vehicles) and consumer products. While the U.S. EPA sets nationwide air quality and emissions standards, CARB addresses California's unique air quality challenges by establishing stricter emissions standards for a variety of pollution sources, including vehicles, fuels, and consumer products.

CARB's mission is to protect public health, welfare, and the environment by reducing air pollutants, while balancing the economic impact of these efforts. The agency also works to safeguard the public from the harmful effects of air pollution and develop programs to combat climate change. Initiatives include requirements for clean cars and fuels, as well as other innovative solutions to reduce greenhouse gas emissions. Actions implemented by CARB include, for example:

- **T&M 1.5.** Idling Prevention and Outreach.
- **T&M 1.7.** Heavy-Duty Diesel Trucks inspections.

Port of Oakland (Port)

The Port of Oakland is a local agency that manages the Oakland Seaport, Oakland San Francisco Bay Airport, and approximately 20 miles of waterfront including Jack London Square. It operates as an independent department of the City of Oakland. The Port is governed by the Board of Port Commissioners, which is made up of seven members nominated by the Mayor and appointed by the City Council. Plan Actions implemented by the Port of Oakland include, for example:

- **T&M 6.2.** Electric Ground Support Equipment.
- **T&M 7.4.** Airport Fence Line Air Quality Monitoring.

Community Partnerships

Successful implementation will require close collaboration between the Air District, CSC, Co-Leads, and others. These community partners will play a vital role in ensuring accountability and transparency while helping to prioritize and advance implementation of the Plan.

Community Steering Committee (CSC)

The CSC will play a vital role in implementing the Plan by guiding efforts to achieve Plan-level Goals and priorities.

Throughout the implementation process, the CSC will be responsible for reviewing progress and providing input on the implementation of strategies and actions. Clear and effective communication between the CSC and Air District will be critical to ensure priorities are established early, and that the selected actions are in line with the community's goals.

The current Charter will conclude upon adoption of the Plan. To support implementation, a revised charter aligned with implementation objectives will be developed. A process to reconstitute the CSC will be established. Once reconstituted, the CSC will operate under the revised charter. The current CSC will be invited to help shape the implementation phase, and an application process will be used to fill any open seats. Meeting frequency and structure will be designed to support meaningful participation and align with the Annual Implementation Schedule. Full CSC meetings are expected to occur quarterly to share updates, celebrate progress, and reassess priorities for the coming year.

As implementation of the Plan progresses and actions are refined, new Co-Lead and CSC ad-hoc working groups or subcommittees may be formed as needed, depending on available resources. The formation of these groups will depend on the strategy and action priorities, availability of stipend funding, the capacity of staff and partner organizations, as well as community interest and availability.

Co-Leads

During the implementation phase of the Plan, and contingent on continued funding from the State of California, Communities for a Better Environment (CBE) and the Air District will serve as Co-Leads, supporting the CSC as they engage with implementing strategies and actions outlined in the plan. As Co-Leads, CBE and the Air District will be responsible for providing background materials to support CSC-member participation and preparation for meetings. The Air District and CBE will also manage committee membership, including filling vacancies, and coordinate the development of meeting agendas in collaboration with the meeting facilitator. CBE will also support outreach, education and action implementation. The Air District will provide administrative support to the CSC.

Strategic Plan Working Groups

As part of implementing its 2024–2029 Strategic Plan, the Air District will convene community-centered working groups on a range of topics that align with Plan-level Goals. These working groups will bring together diverse stakeholders to help shape policies, programs, and initiatives that reflect community needs and lived experience.

Opportunities to join specific working groups will arise over time as different components of the Strategic Plan move forward. The Air District is committed to early and ongoing engagement with East Oakland and other Assembly Bill 617 (AB617) communities throughout this process.

Community Engagement During Implementation

Throughout implementation, the CSC will continue its ongoing role of overseeing and guiding efforts to achieve Plan-level Goals, as previously described. In addition, community engagement efforts will continue, strengthening the relationships and partnerships with community members, business owners, and other stakeholders established during the planning phase to support implementation of the strategies and actions. The Air District, in collaboration with other partners, may also include periodic listening sessions and community workshops to build community awareness, share progress, and connect community to resources and services that address immediate needs. This will provide an opportunity to address community concerns, gather feedback, and make necessary adjustments to improve progress towards strategy and action implementation.

Certain actions in the Plan call for engagement and outreach in East Oakland to address a range of issues of importance to the CSC. For example, **Illegal Dumping Action 1.3** calls for the Oakland Public Works Department (OPW) to collaborate with the CSC in developing outreach and education materials that raise awareness about illegal dumping prevention. **Action 1.4** supports this effort by positioning the CSC as a key driver in distributing these materials to East Oakland community members, ensuring that the messaging reaches and resonates with the broader community.

To the extent possible, outreach and other materials developed for the implementation of actions will be accessible and translated, including using clear, plain language and be provided

in multiple formats—for example, printed flyers for people without internet access—and through a variety of channels, such as social media and library bulletin boards.

Policy Alignment

This section explains how the implementation of the Plan will align with the Air District's Strategic Plan and with the policies of existing, locally adopted plans from various government agencies. By ensuring alignment, the implementation process will build on established frameworks, promote consistency, and avoid duplication of efforts, ultimately strengthening the impact of the Plan.

Air District Strategic Plan

In fall 2023, the Air District began developing its 2024–2029 Strategic Plan ("Strategic Plan") through collaboration among community leaders, staff, the Board of Directors, and partners. After identifying key strengths and areas for improvement, the Board of Directors approved the Strategic Plan on September 4, 2024.

Over the next five years, the Air District will transform its workforce, operations, programs, and community engagement efforts to improve air quality, build trust, and lead with equity-centered environmental stewardship.

Adoption of the Strategic Plan coincided with strategy development for this Plan. Therefore, one of the key considerations for developing strategies and actions was ensuring alignment with the Air District's Strategic Plan. This alignment offers several benefits, with two key advantages being:

1. **Efficient Use of Resources**: Aligning with the Air District's broader organizational priorities allows for more targeted and effective allocation of resources, including funding, staff capacity, and technical expertise. This approach minimizes duplication across initiatives and ensures focus on areas with the greatest potential for impact.

2. **Greater Coordination**: Aligning with the Strategic Plan ensures implementation of East Oakland strategies and actions is part of a larger, unified effort. This fosters collaboration across the Air District and with community partners, leading to a more coordinated approach in addressing the air quality and environmental justice issues identified in the Plan.

Locally Adopted Plans

Strategy development also involved aligning with existing plans adopted by multiple government agencies. Rather than duplicating efforts, several strategies in the Plan focus on proactively tracking the implementation of adopted policies that address issues important to the CSC (Appendix F-2: Proactive City Updates and CSC Engagement). The following local plans include policies for which government agencies will seek input from the CSC:

- Alameda County Climate Action Plan for Government Services and Operations through 2026 (Adopted: 2023)
- City of Oakland 2023-2031 Housing Element (Adopted: 2023)
- City of Oakland 2030 Equitable Climate Action Plan (ECAP) (Adopted: 2020)
- City of Oakland Environmental Justice (EJ) Element (Adopted: 2023)

- City of Oakland Safety Element (Adopted: 2023)
- City of Oakland Transit Action Strategy (Adopted: 2020)
- City of Oakland Urban Forest Plan (Adopted: 2024)
- City of Oakland Zero Emission Vehicle Action Plan (Adopted: 2023)
- City of Oakland Safe Oakland Streets Initiative (Adopted: 2021)
- East Oakland Neighborhoods Initiative (EONI) (Completed: 2019)

Additionally, the City of Oakland is currently in Phase 2 of its General Plan update, which involves major revisions to land use, transportation, parks, and other policies relevant to the Plan. Engaging with and aligning efforts in this process offers an additional opportunity to address issues important to the CSC.

Implementation Mechanisms

This section outlines a range of actions included in the Plan, categorized by the specific mechanisms they use to reduce emissions and exposure in East Oakland.

Incentives

The Air District's Community Air Protection (CAP) Incentives Program reduces pollution in Bay Area communities most affected by air quality issues. This program funds projects that replace older, high-emission heavy-duty vehicles and equipment with cleaner alternatives. Priority is given to projects in communities heavily impacted by air pollution, including AB617 communities such as West Oakland, Richmond-North Richmond-San Pablo, East Oakland, Bayview Hunters Point/Southeast San Francisco, and other disadvantaged and low-income areas identified by California Climate Investments. Examples of incentive-based actions include:

- **BE 1.3.** Woodsmoke Reduction.
- **T&M 3.1.** Lawn and Garden Equipment.

Rule Development

California law outlines the process for creating air quality regulations. CARB and local air districts develop and implement rules to improve air quality and public health. Examples of rule-based actions include:

- **C&I 1.1.** Rule Amendments to Address Fugitive Dust.
- **C&I 2.2.** Rule Amendments to Improve Implementation of Rule 11-18 and the Facility Risk Reduction Program.

Enforcement

Several agencies oversee enforcement in East Oakland. CARB enforces statewide rules and regulations related to mobile sources such as those ensuring heavy-duty truck engines meet the latest clean-air standards. The Air District enforces rules and regulations related to stationary sources, for example industrial facilities or wood burning devices. Cities and counties enforce local zoning, planning and traffic regulations, for example, helping keep transport trucks on designated routes. Under an environmental justice framework, communities are essential partners to enforcement agencies in ensuring that rules and regulations are enforced effectively,

promptly, and equitably. Examples of enforcement-based actions include:

- **C&I 7.1.** Targeted Inspections to Address Repeat Violators.
- **C&I 7.4.** Regular Enforcement Updates.

Engineering & Permitting

In California, stationary sources such as factories may be required to obtain permits that specify allowable air pollution emission limits. The Air District has the authority to issue these permits. Additionally, land use and building permits are managed by the City's planning department and the County's health department oversee hazardous materials permits. Various state agencies, including the Department of Toxic Substances Control (DTSC) and California Environmental Protection Agency (CalEPA), permit industrial activities involving hazardous materials. Examples of permitting-based actions include:

- **C&I 3.1.** Improve Permitting Processes to be More Efficient and Timely.
- **C&I 2.1.** Implement Rule 11-18: Reduction of Risk from Air Toxic Emissions at Existing Facilities.

Zoning and Land Use

Zoning and land use policies are mechanisms used by local governments (*e.g.,* the City of Oakland) to regulate how land can be developed and used in different areas of a city or county. Zoning typically divides land into districts—such as residential, commercial, industrial, or mixed-use—with rules about what types of buildings and activities are allowed in each zone. These policy mechanisms help shape the built environment and can be used to protect public health and the environment. When applied thoughtfully, zoning and land use policies can improve air quality by creating buffer zones between pollution sources and sensitive land uses like homes, schools, and parks; restricting the expansion of polluting industries in overburdened neighborhoods; and encouraging development patterns that reduce vehicle use and emissions. Examples of zoning-based actions include:

- **BE 3.1.** Tracking Nonconforming Truck-Attracting Businesses.
- **BE 3.3.** Community-Informed Amortization.

Air Monitoring

Air monitoring provides information on levels of different pollutants in the outdoor air we breathe in our communities. Air monitoring can identify air quality issues and inform efforts to reduce emissions and limit exposure. There are several methods for monitoring air quality, each with different purposes, strengths, and limitations. For example, stationary monitors (fixed in one location) can provide continuous data useful for comparison with air quality standards and for evaluating changes in air quality over time. In contrast, shorter-term monitoring projects using other types of approaches, such as mobile monitors (mounted on vehicles), can offer more targeted information, such as data on the air quality impacts of a specific facility or other community air quality concerns. Examples of monitoring-based actions include:

- **PH 3.1.** East Oakland Air Monitoring Project.
- **PH 3.3.** Support Local Air Monitoring or Air Quality Data Projects.

Education

Ongoing education efforts will focus on two key areas: equipping community with technical knowledge related to Plan implementation and informing agencies about on-the-ground conditions in the East Oakland community. Examples of education-based actions include:

- **PH 6.1.** Improve Air Pollution Awareness.
- **ID 1.3.** CSC Dissemination of Illegal Dumping Prevention Materials.

Research and Further Study

Further research, data analysis, and additional studies will be necessary to deepen understanding of critical topics and guide strategic decision-making. Examples of research-based actions include:

- **UGW 1.1.** Research Sustainable Funding Options to Support Urban Greening.
- **UGW 1.2.** Research Sustainable Funding Options Related to Employment Pathways for Green Jobs.

Tracking Plan Implementation Progress

This section outlines the processes for creating the Annual Implementation Schedule and Annual Progress Reports, key tools for tracking and reporting on Plan progress. The Implementation Schedule will serve as an annual work plan, while the Progress Report will document progress, refine strategies, assess needs, and highlight successes. Together, these tools will support the continuous improvement and successful implementation of the Plan.

Annual Implementation Schedule

Each year, the Air District and the CSC will collaborate to create an Implementation Schedule that outlines priority topics for the upcoming year. For each of these topics, the schedule will identify related strategies and actions. This schedule will be developed in coordination with relevant Air District, government agency, and partner implementors. The process will begin with an annual call to gather information on priorities for the upcoming year. This will help ensure that the implementation of Plan strategies and actions align with planned initiatives.

The Implementation Schedule will serve as an annual work plan. CSC meetings will be agendized to align with the CSC priorities in the Implementation Schedule. The Implementation Schedule is a coordination tool; it is not expected to require significant additional resources beyond those already allocated for Plan implementation.

As needed, the CSC may identify community-level implementation opportunities—such as education, resource development, and engagement activities—to be included in the schedule. [274]

Starting in the second year of implementation, the development of each annual schedule will begin with an evaluation of the previous year's activities. This evaluation will help identify and

[274] These activities may not involve lobbying or any other form of political advocacy.

address any challenges that may be hindering progress toward achieving Plan-level Goals.

Annual Progress Reports

The Plan is a dynamic document that will be updated as needed to reflect progress and evolving priorities. The annual progress reports serve as the primary tool for evaluating the implementation of the Plan.

The Annual Progress Report will document the implementation of the Plan and provide an opportunity to refine strategies and actions, assess the need for additional measures, and highlight key successes and lessons learned, in alignment with CARB's guidance (Blueprint 2.0). [275] Refining strategies and actions may involve revising the language based on an evaluation of implementation progress - including successes, challenges, emerging opportunities, and updates to the community description. These reports provide a formal mechanism for the Air District and CSC to communicate agreed-upon changes to the public and CARB.

Monitoring progress toward achieving Plan-level Goals is crucial. Therefore, every strategy in the Plan includes metrics that are specific, measurable, community-focused, and directly tied to the actions. When these metrics are combined, they will provide a clear overview of progress on the Plan.

Further, the Annual Report will be evaluated by CSC. During its evaluation, the CSC will help determine which actions may need adjustment based on their implementation status. This will also help determine alignment with the next Annual Implementation Schedule and whether any adjustments are needed.

Five-Year Report

The fifth annual report marks a significant milestone, as it represents the final year of the five-year implementation horizon for the Plan. This report provides an opportunity for the Air District and the CSC to evaluate overall progress and develop an approach for completing any remaining actions.

The fifth annual report will also evaluate the effectiveness of the CSC process. This review will highlight strengths, challenges, and areas for improvement, particularly in governance and community engagement. Publication of this report is currently expected to occur during the 2030–2031 calendar years.

For the 5-year implementation milestone, the Air District will conduct a comprehensive emissions inventory update that includes all emissions sources, such as stationary and mobile sources. The 5-year update will be included in the fifth annual report. This information will be made publicly available to the CSC and other stakeholders. The Air District will also continue exploring new methods to compare emissions inventory data with exposure data to help advance Plan-level Goals and reflect progress made.

[275] California Air Resources Board. "Community Air Protection Program Blueprint 2.0." 2025. Community Air Protection Program Blueprint 2.0 | California Air Resources Board.

Plan Acronyms and Glossary

Acronyms

The East Oakland Plan uses the following acronyms.

Acronym	Phrase/Term
AB617	Assembly Bill 617
ACPHD	Alameda County Public Health Department
Air District	Bay Area Air District
BAAD	Bay Area Air District or Air District
BIPOC	Black, Indigenous, and People of Color
BMP	Best Management Practices
BTEX	Benzene, toluene, ethylbenzene, and xylene
BUGs	Backup diesel generators
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CAP	Criteria Air Pollutant
CAP	Community Air Protection
CAPCOA	California Air Pollution Control Officers Association
CAPP	CARB's Community Air Protection Program
CARB	California Air Resources Board
CBE	Communities for a Better Environment
CBO	Community-based organization
CCCTA	Contra Costa County Transportation Authority
CEQA	California Environmental Quality Act
CHC	Commercial Harbor Craft
CHE	Cargo Handling Equipment
CO	Carbon Monoxide
COPD	Chronic Obstructive Pulmonary Disease
DPM	Diesel Particulate Matter
DTSC	State of California Department of Toxic Substances Control
GHG	Greenhouse Gases

HDDTs	Heavy Duty Diesel Trucks
HEPA	High Efficiency Particulate Air Filter
HRA	Health Risk Assessment
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NO_2	Nitrogen Dioxide
NOV	Notice of Violation
NO_x	Nitrogen Oxides
NTC	Notice to Comply
O_3	Ozone
OEHHA	California Office of Environmental Health and Hazard Assessment
OGV	Ocean Going Vessel
PAH	Polycyclic Aromatic Hydrocarbon
Pb	Lead
PTCA	Path to Clean Air
PM	Particulate Matter
PM_{10}	Inhalable Particulate Matter (with diameter of 10 micrometers or less)
$PM_{2.5}$	Fine Inhalable Particulate Matter (with diameter of 2.5 micrometers or less)
PPB	Parts Per Billion
PPM	Parts Per Million
RELs	Reference Exposure Levels, can be acute or chronic
ROG	Reactive Organic Gases
RRP	Risk Reduction Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
TAC	Toxic Air Contaminant
TOG	Total Organic Gases
TMP	Truck Management Plan
TWE	Toxicity-Weighted Emissions, can be for cancer potency or chronic or acute health effects

UFP	Ultrafine particle
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle miles traveled
VOC	Volatile Organic Compound
WHO	World Health Organization
ZE	Zero emission
ZEV	Zero emission vehicle

Glossary

The East Oakland Plan uses the following terms.

AB617 – Assembly Bill (AB) 617 (C. Garcia, Chapter 136, Statutes of 2017) directs the state, in consultation with local air districts, to select communities in California that are exposed to high levels of air pollution. Selected communities will work with local air districts on action plans to reduce people's exposure to particulate matter and toxic air contaminants, and/or to develop community air monitoring plans.

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.

Air District or Bay Area Air District – The regional air pollution control agency with jurisdiction over the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, Santa Clara, San Mateo, and the southern portions of Solano and Sonoma counties. The Air District oversees policies and adopts regulations for the control of air pollution from stationary sources, adopts clean air plans, offers incentives for emission reductions from mobile sources, enforces air quality rules, and collects, monitors, and models air quality data.

Area Sources – Stationary 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.

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 may 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.

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.

Black Carbon – Black carbon (BC) 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.

California Air Resources Board (CARB) – The state agency that oversees policies and adopts regulations for the control of air pollution from mobile sources and some stationary sources. CARB's mission is to promote and protect public health, welfare, and ecological resources through the reduction of air pollutants.

California Environmental Quality Act (CEQA) – State environmental legislation designed to protect the environment and to inform and engage the public about projects considered by California public agencies. Applies to many projects proposed to be conducted or approved by a California public agency, including private projects requiring government approval. The public is engaged through scoping meetings, public notice, public review, hearings, and the judicial process. Documents to inform the public include an initial study (IS), to determine if a negative declaration or environmental impact report is needed; a negative declaration (ND), if no environmental impacts are identified in the initial study; and an environmental impact report (EIR), if the initial study does identify environmental impacts that need to be mitigated. On the whole, CEQA and these documents help prevent or minimize environmental impacts through development of project alternatives, mitigation measures, and mitigation monitoring.

Cancer Risk – The likelihood that a person will develop cancer during their lifetime due to their level of exposure to toxic air contaminants.

Carbon Monoxide – CO is a colorless, odorless gas that can be harmful when inhaled in large amounts. CO is released when something is burned.

Cargo Handling Equipment (CHE) – Includes a variety of equipment at ports, warehouses, and rail yards including yard tractors, cranes, forklifts, and container handlers such as top picks and side picks, and bulk handling equipment, such as tractors, loaders, dozers, excavators, and backhoes.

Commercial Land Use – Commercial land use is a land use designated by the local governing body for retail, service, or office use, such as shopping malls, restaurants, office buildings, grocery stores, pharmacies, banks, hotels, or movie theatres.

Community-scale Modeling – Community scale modeling is air quality modeling at the local level, to determine air pollution concentrations within a community. See also regional-scale modeling.

Construction Equipment: Heavy equipment such as excavators, bulldozers, and loaders that are used in construction projects. This equipment are usually diesel powered.

Criteria Air Pollutants (CAPs) – Criteria air pollutants are defined by the U.S. EPA and include six air pollutants that the Clean Air Act directs the U.S. EPA to set standards for: particulate matter, photochemical oxidants (including ozone), carbon monoxide, sulfur oxides, nitrogen oxides and lead. These pollutants are found all over the U.S. They can harm human health and the environment, and cause property damage. See also National Ambient Air Quality Standards (NAAQS).

Cumulative Air Quality Impact – A cumulative air quality impact is an environmental impact which results from the incremental impacts of an action or project when added to other past, present, and reasonably foreseeable future actions. For example, a manufacturing facility, a high-traffic freeway, and a construction site may each have an air quality impact that is not substantial when considered by itself but may have a substantial cumulative air quality impact when all three are considered together.

Diesel Engine – A diesel engine is an internal combustion engine powered by diesel fuel that creates incomplete combustion that results in the release of particulate matter and other pollutants. Also called a compression-ignition engine. Diesel engines can power mobile, portable, and stationary equipment.

Diesel particulate matter (DPM) – Diesel particulate matter is the solid material in diesel exhaust. Diesel particulate matter is typically composed of carbon particles ("soot", also called black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. DPM is a toxic air contaminant.

Environmental Justice (EJ) – Scholar Robert Bullard, the father of Environmental Justice, defines environmental racism as "any policy, practice, or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups, or communities based on race. [276]

Environmental Protection Agency (U.S. EPA) – The environmental protection agency is the federal agency responsible for control of air and water pollution, toxic substances, solid waste, and cleanup of contaminated sites. The U.S. EPA sets national ambient air quality standards for criteria air pollutants, such as ozone, particulate matter, and lead.

Discriminatory Zoning - Involves local governments enacting ordinances to designate separate living areas for Black and white families. [277]

Discriminatory Real Estate Lending Practices – Government policies to create and maintain housing segregation, primarily through lending practices like the Federal Housing Association's (FHA's) redlining (denying credit to predominantly Black neighborhoods). [278]

Fine Particulate Matter ($PM_{2.5}$) – See particulate matter.

Gasoline Dispensing Facilities (GDF) – Gasoline dispensing facilities are gas stations.

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[276] Bullard, Robert D. "Environment and Morality: Confronting Environmental Racism in the United States." United Nations Research Institute for Social Development, 2004. https://www.csu.edu/cerc/documents/EnvironmentandMorality-ConfrontingEnvironmentalRacismInTheUnitedStates-Bullard2004.pdf.

[277] Rothstein, Richard. The Color of Law: A Forgotten History of How Our Government Segregated America, page 40.

[278] Rothstein, Richard. The Color of Law: A Forgotten History of How Our Government Segregated America, page 60.

Green Workforce – A broad group of careers that contribute directly to moving society and the built environment towards sustainability.

Greenhouse Gases (GHG) – Greenhouse gases are gases in the atmosphere that have a warming effect on the climate, including but not limited to: carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, perfluorocarbons and hydrofluorocarbons.

Ground-level Ozone (O_3) – Ozone is a gas composed of three atoms of oxygen. Ozone occurs both in the Earth's upper atmosphere and at ground level. Ozone can be good or bad, depending on where it is found. Ozone at ground level is a harmful air pollutant, because of its effects on people and the environment, and it is the main ingredient in “smog."

Health Risk Assessment (HRA) – A health risk assessment is the calculation of probable health impacts based on exposure to pollution. See also toxic air contaminants.

High Efficiency Particulate Air Filters (HEPA filters) – High efficiency particulate air filters are a type of mechanical air filter that work by forcing air through a fine mesh filter that traps small harmful particles such as pollen, pet dander, dust mites, and tobacco smoke. HEPA filters can also remove between 50% and 98% of particles in air, depending on the particle size and the filter minimum efficiency reporting value (MERV) rating. See also minimum efficiency reporting value.

Hot Spot – A hot spot is an area where air toxic contaminant concentration levels are higher than in the overall region. See also toxic air contaminants.

Indirect Sources – Indirect sources are 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 – Industrial land use is land designated by the local governing body for manufacturing, assembly, and distribution of goods; may include land uses such as ports, factories, warehouses, and repair and equipment maintenance shops.

Lead (Pb) – Lead is a naturally occurring element found in small amounts in the earth’s crust. While it has some beneficial uses, it can be toxic to humans and animals, causing health effects.

Micrograms per meter cubed (µg/m^3) – Micrograms per meter cubed is a unit of measurement used to specify the concentration of a pollutant. Concentrations of particulate matter (PM) are typically reported in µg/m^3, and µg/m^3 is the unit of measure for the National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$ and PM_{10}. See also PM and NAAQS.

Mixed-use Land Use – Mixed-used land use is land designated by the local governing body for two or more land uses, such as residential, commercial, cultural, institutional, and/or industrial uses. For example, mixing housing with office and retail uses (both considered commercial land use). Often designed to be a pedestrian-friendly development. See also transit-oriented development and complete streets.

Mobile Sources of Air Pollution – Mobile sources of air pollution are sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, trains, and airplanes.

National Ambient Air Quality Standards (NAAQS) – National Ambient Air Quality Standards are standards for the allowable ambient air concentrations of harmful pollutants, established by the U.S. EPA under authority of the Clean Air Act. See also criteria air pollutants. See also ppm and ppb.

Nitrogen Dioxide (NO_X) – Nitrogen Dioxide (NO_2) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NO_x). Other nitrogen oxides include nitrous acid and nitric acid. NO_2 is used as the indicator for the larger group of nitrogen oxides.

Off-road Vehicles – Off-road vehicles are vehicles designed for use on steep or uneven ground or roads, for example, in construction, freight, and agricultural uses. Types include scrapers, backhoes, loaders, and forklifts. Quad bikes and ATVs (all-terrain vehicles) are also off-road vehicles.

On-road Vehicles – On-road vehicles are vehicles designed for use on paved roads, for example passenger cars, buses, motor homes, vans, motorcycles, and various sizes of trucks.

Particulate Matter (PM) – Particulate matter 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, or ultrafine particles (UFPs), 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).

Parts Per Billion (ppb) – Parts per billion is a unit of measurement used to specify the concentration of a pollutant. For reference, ppb is the equivalent of one drop in one billion drops of water or about one drop of water in a swimming pool. The NAAQS for sulfur dioxide (SO_2) and primary NAAQS for nitrogen dioxide (NO_2) are expressed in ppb. See also ppm and NAAQS.

Parts Per Million (ppm) – Parts per million is a unit of measurement used to specify the concentration of a pollutant. For reference, one ppm is the equivalent of about one cup of water in a swimming pool, and one ppm is equivalent to 1,000 ppb. The NAAQS for carbon monoxide (CO) and Ozone (O_3) and secondary NAAQS for nitrogen dioxide (NO_2) are expressed in ppm. See also ppb and NAAQS.

Particulate Matter (PM) – A mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye.

Regional-scale Modeling – Regional-scale modeling is air quality modeling at a regional level, to determine air pollution concentrations within the region. See also community-scale modeling.

Residential Land Use – Residential land use is 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.

Rule Development – Rule Development is the process the Air District uses to write regulations that govern stationary sources of air pollution in the Bay Area, including technical research, engagement with affected stakeholders, public meetings to allow input by affected parties such as industries and communities, and the preparation of CEQA and socio economic analyses (for a list of current rules and regulations see: https://www.baaqmd.gov/rules-and-compliance/current-rules.

Safe Routes to School (SRTS) – Safe Routes to School is an international movement and a federal program to make it safe, convenient, and fun for children, including those with disabilities, to bicycle and walk to school.

Sensitive Land Uses – Sensitive land uses are places where sensitive populations are most likely to spend their time, such as schools, playgrounds, daycare centers, nursing homes, medical facilities, and residential communities. See also sensitive populations or sensitive receptors.

Sensitive Populations or Sensitive Receptors – Sensitive populations or sensitive receptors are people, including infants, children, the elderly, those with pre-existing conditions (such as asthma), pregnant women, and athletes (due to higher breathing rates) that are at greater risk than the general population to the adverse health effects of air pollutants. See also sensitive land uses.

Stationary Sources of Air Pollution – Stationary sources of air pollution are non-mobile sources of air pollution such as boilers, gas turbines, petroleum refining and processing units, and manufacturing equipment that emit air pollutants. A facility, such as a power plant or refinery, houses multiple sources within its property.

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.

Sulfur Dioxide (SO_2) – U.S. EPA's national ambient air quality standards for SO_2 are designed to protect against exposure to the entire group of sulfur oxides (SO_x). SO_2 is the component of greatest concern and is used as the indicator for the larger group of gaseous sulfur oxides (SO_x).

Transloading – The operation of transferring cargo from one transportation mode to another. May also refer to the operation of transferring cargo from one container to another for any of several reasons, such as for consolidation, weight restrictions, palletizing, leasing contract requirements, or supply chain management (e.g., to synchronize delivery of goods to meet real time demands).

Transit-oriented Development (TOD) – A type of land use that includes a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half mile of quality public transportation. See also mixed-use land use and complete streets.

Toxic Air Contaminants (TACs) – Toxic air contaminants (also toxic air pollutants or air toxics) are those pollutants that cause, or may cause, cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects. Includes

formaldehyde, methanol, ammonia, diesel particulate matter, and many others. See also diesel particulate matter.

Toxic Air Contaminants

According to section 39655 of the California Health and Safety Code, a TAC is "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." Below are the 10 important toxic air contaminants in the East Oakland emissions inventory. These compounds were identified by weighting emissions of individual TACs by health values compiled by the Office of Environmental Health Hazard Assessment (OEHHA): cancer potency factors and chronic and acute reference exposure levels (RELs). These 10 TACs account for at least 91% of the cancer, chronic, and acute toxicity-weighted emissions (TWE) in the East Oakland emissions inventory.

1,3-butadiene Produced through the processing of petroleum and is mainly used in the production of synthetic rubber but is also found in smaller amounts in plastics and fuel.

Acrolein Primarily used as an intermediate in the synthesis of acrylic acid and as a biocide. It may be formed from the breakdown of certain pollutants in outdoor air or from the burning of organic matter including tobacco, or fuels such as gasoline or oil. It is toxic to humans following inhalation, oral or dermal exposures.

Ammonia (NH_3) is a common toxicant derived from wastes, fertilizers and natural processes. Ammonia nitrogen includes both the ionized form (ammonium, NH_4^+) and the unionized form (ammonia, NH_3). Ammonia occurs naturally in air, soil, and water. Ammonia is used as an agricultural fertilizer and in many cleaning products.

Benzene Also known as benzol, a colorless liquid with a sweet odor. Benzene is used as a constituent in motor fuels; as a solvent for fats, waxes, resins, oils, inks, paints, plastics, and rubber; in the extraction of oils from seeds and nuts; and in photogravure printing. It is also used as a chemical intermediate. Benzene is also used in the manufacturing of detergents, explosives, pharmaceuticals, and dyestuffs.

Cobalt (chemical symbol Co) is a hard, gray-blue metal that is solid under normal conditions. Cobalt is like iron and nickel in its properties and can be magnetized like iron. The most common radioactive isotope of cobalt is cobalt-60 (Co-60). Cobalt-60 is a byproduct of nuclear reactor operations. It is formed when metal structures, such as steel rods, are exposed to neutron radiation.

Diesel Particulate Matter (DPM) A component of diesel exhaust that includes soot particles made up primarily of carbon, ash, metallic abrasion particles, sulfates, and silicates. Diesel soot particles have a solid core consisting of elemental carbon, with other substances attached to the surface, including organic carbon compounds known as aromatic hydrocarbons.

Formaldehyde A colorless flammable gas with a pungent odor that is highly reactive with many substances.

Manganese Metallic manganese is used primarily in steel production to improve hardness, stiffness, and strength. It is also used in carbon steel, stainless steel, and high-temperature steel, along with cast iron and superalloys.

Nickel Occurs naturally in the environment at low levels. Nickel is an essential element in some animal species, and it has been suggested it may be essential for human nutrition.

Styrene A colorless oily liquid that is used in the production of plastics, synthetic rubber, resins, and solvents.

Vehicle Miles Traveled (VMT) – Vehicle miles traveled is the number of miles a vehicle is driven and can be used to measure the number of miles traveled for all vehicles in a geographic region over a given time period. Annual VMT denotes the miles driven over a one-year period.

Vulnerable Populations—including infants, children, the elderly, individuals with pre-existing conditions (e.g., asthma), pregnant women, and athletes (due to higher breathing rates)—are especially at risk for adverse health effects from air pollution.

Zero-emission Vehicle (ZEV) – A zero-emission vehicle is a battery electric, hydrogen fuel cell electric, or other alternatively fueled vehicle that has no direct emissions (evaporative or tailpipe) of pollution. See also PZEV.

Appendix A: Community Steering Committee, Public Process, and Community Outreach

Public Process

Air District Public Hearing on Final East Oakland Community Emissions Reduction Plan

The CSC will consider approving the Community Emissions Reduction Plan (Plan) and then send it to the Air District Board of Directors for consideration of approval. The Community Equity, Health and Justice (CEHJ) Board Committee will hold a public meeting in advance of the Board public hearing to determine a recommendation on adoption and submission to the California Air Resources Board (CARB) of the Plan. Details about these two meetings will be provided herein after they are held.

East Oakland Plan Webpage

The Air District has a webpage dedicated to the East Oakland Plan with information about the East Oakland Community Steering Committee (CSC) and the Plan development process including:[1]

- All CSC monthly meeting materials and archived meeting recordings
- Materials are posted in English, Spanish, and Chinese
- Outreach materials
- East Oakland Air Pollution and Community Asset Mapping results[2]
- The contact information for the appropriate staff

All CSC meeting materials are posted on the Bay Area Air District (Air District) webpage and sent via email to the CSC members 48 to 72 hours before the meeting. CSC meeting materials and recordings are also posted on the Air District website on the Calendar.[3]

Community Outreach

To encourage public participation in the development of the Plan, Communities for a Better Environment (CBE), and Air District staff hosted public CSC meetings, launched two grant phases for community engagement, provided updates to the Air District Board of Directors, and participated in various outreach events distributing flyers, participating in discussions about the plan, and engaging with community members to gather feedback and raise awareness. CSC members also participated in tabling events. These efforts aimed to ensure that the plan reflects the community's priorities and concerns, fostering a more collaborative decision-making process. Summary tables of these events are listed below.

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[1] Bay Area Air District. “East Oakland Community Emissions Reduction Plan.” Accessed March 18, 2025. https://www.baaqmd.gov/en/community-health/community-health-protection-program/east-oakland-community-emissions-reduction-plan.
[2] Bay Area Air District “East Oakland Air Pollution and Community Asset Mapping.” Accessed March 18, 2025.
[3] Bay Area Air District “Calendar.” Accessed March 18, 2025. https://www.baaqmd.gov/news-and-events/calendar

Community Engagement Grants

Social Pinpoint Community Mapping

Co-Leads launched a small grant to local community-based organizations to support education and outreach to East Oakland community members at key points in the CERP development process. The first grant phase was launched in July 2023 to publicize, educate, and increase community participation in a community mapping project that would inform the air quality areas of concern of the Plan. A total of $30,000 was available, with the maximum amount for an individual grant being $7,500. Four local non-profit organizations were selected through an application process: East Oakland Collective, Higher Ground Neighborhood Development Corporation, Lifers Leaving a Legacy, and Recess Fun, Inc. The grantees used their grant funds to conduct outreach and engage local community members in gathering community input that identified pollution concerns, community assets, and sources of pollution in their neighborhoods. Social Pinpoint, a web-based interactive mapping tool, was used to collect this information from the public in the form of pins, comments and pictures on an online map and was available in both English and Spanish.

The pins were categorized into the following areas:

1. Locations Where People Gather
2. Community Strengths and Resources
3. Air Pollution Concerns

Over five weeks in the fall of 2023, 488 pins and comments were gathered from East Oakland community members through outreach efforts conducted by the Co-Leads, CSC, and the four community-based partner organizations funded through the Community Mapping Project grants. Co-Leads and Just Cities reviewed the data and information. The findings on themes were presented to the CSC during the November 2023 CSC meeting. The presentation[4] also provided additional summary data from the mapping project, and the results of this analysis are displayed on an interactive map.[5]

This study helped shape the creation of the Focus Areas and Community Concern Statements, which guided the development of strategies and actions for the East Oakland Community Emissions Reduction Plan.

Community Outreach: Draft Strategies and Actions

The second grant phase was launched in February 2025 to support community-based organizations and nonprofits in East Oakland to increase participation and feedback in the strategies and actions of the Plan. A total of $50,000 was available, with the maximum amount for an individual grant being $12,500 to expand outreach and increase inclusion and accessibility of the process to East Oakland community members to gather East Oaklanders' feedback on strategy development and implementation of the East Oakland Plan. In coordination with the Co-Leads, grantees carried out specific community outreach and

[4] November 2023 CSC Meeting #14 Presentation. https://www.baaqmd.gov/~/media/files/ab617-community-health/east-oakland/2023-meetings/110923-eo-mtg/east-oak-cerp-csc-14-slides_11092023-pdf.
[5] Interactive Map for East Oakland AB 617 CERP. https://experience.arcgis.com/experience/981998a3ba3142bea8c2ee262af6b9a9/.

engagement activities to gather feedback from East Oakland residents, particularly those previously involved in the East Oakland Community Mapping Project, on Plan strategies. These activities included:

- **Flyer Distribution**: Distribute informational flyers to residents about the Plan, CSC meetings, and participation opportunities.
- **Community Presentations**: Conduct presentations or informational sessions to educate residents on CERP goals and how they can provide feedback and encourage them to sign up to receive information and updates on the CERP through email.
- **Surveys and Feedback Collection**: Distribute surveys and gather input from community members to assess their concerns and priorities regarding environmental issues in East Oakland.
- **CSC Meetings**: Support East Oakland community members with attending meetings related to the CERP, as needed.

The following are the four organization partners: Higher Ground Neighborhood Development Corporation, Lifers Leaving a Legacy, Recess Fun, Inc., and Sequoia Foundation.

Survey results summary: 406 total survey responses were collected between February and June of 2025 by the four organization partners above. Surveys were provided in English and Spanish at various locations in the CERP area.

- 86% of those surveyed had not heard of AB 617 or the Plan before taking the survey.
- The survey presented 10 example strategies from the five focus areas of the Plan and asked respondents to rate each one on a five-point scale from “Not at All Important” to “Extremely Important.” All 10 strategies received strong support, with at least 80% of respondents saying each strategy was “very important” or “extremely important.”
- 90% of respondents said that the strategies presented in the survey “do a good job of addressing air pollution issues in East Oakland.”

Community Steering Committee (CSC) Meeting Summary Table

The CSC met monthly from September 2022 to October 2025, with a few exceptions. All meetings were announced on the East Oakland webpage prior to the meeting and all meetings had a quorum of CSC members in attendance (50% of members plus one voting member). Table 1 below showcases the CSC meetings for the entirety of the Plan development.

Table A-1: Community Steering Committee (CSC) Meeting Summary Table

Date	Subject of Meeting	City (Location)	Remote (Yes/No/ Hybrid)	Agendas/ Meeting Summaries	Outreach Mechanism
9/15/2022	Community Steering Committee #1	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website

Date	Subject of Meeting	City (Location)	Remote (Yes/No/ Hybrid)	Agendas/ Meeting Summaries	Outreach Mechanism
10/13/2022	Community Steering Committee #2	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
11/10/2022	Community Steering Committee #3	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
12/8/2022	Community Steering Committee #4	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
2/9/2023	Community Steering Committee #5	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
3/9/2023	Community Steering Committee #6	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
4/13/2023	Community Steering Committee #7: Timeline, Vision and Principles	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
5/11/2023	Community Steering Committee #8: Timeline, Vision and Principles, Charter, Community Boundary	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website

Date	Subject of Meeting	City (Location)	Remote (Yes/No/ Hybrid)	Agendas/ Meeting Summaries	Outreach Mechanism
6/8/2023	Community Steering Committee #9	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
7/13/2023	Community Steering Committee #10	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
8/10/2023	Community Steering Committee #11	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
9/14/2023	Community Steering Committee #12	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
10/12/2023	Community Steering Committee #13	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
11/9/2023	Community Steering Committee #14	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
12/14/2023	Community Steering Committee #15	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
2/8/2024	Community Steering Committee #16	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website

Date	Subject of Meeting	City (Location)	Remote (Yes/No/ Hybrid)	Agendas/ Meeting Summaries	Outreach Mechanism
3/14/2024	Community Steering Committee #17	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website
4/11/2024	Community Steering Committee #18	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website
5/9/2024	Community Steering Committee #19	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website
6/13/2024	Community Steering Committee #20	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website
7/11/2024	Community Steering Committee #21	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website
9/12/2024	Community Steering Committee #22	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website
10/10/2024	Community Steering Committee #23	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website
11/14/2024	Community Steering Committee #24	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website

Date	Subject of Meeting	City (Location)	Remote (Yes/No/ Hybrid)	Agendas/ Meeting Summaries	Outreach Mechanism
12/12/2024	Community Steering Committee #25	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website
2/13/2025	Community Steering Committee #26	East Oakland	Yes	Agendas Meeting Summaries	Email Communications Air District Website
2/27/2025	Illegal Dumping Special Meeting	East Oakland	No	Agendas Meeting Summaries	Email Communications Air District Website
3/13/2025	Community Steering Committee #27	East Oakland	Hybrid	Agendas Meeting Summaries	Email Communications Air District Website

Community Outreach and Engagement Summary Table

The table below is a summary of additional community outreach and engagement.

Table A-2: Community Outreach and Engagement Summary Table

Date	Name of Event	City (Location)	# of Attendees
9/28/2024	40x40 Neighborhood Empowerment Day	East Oakland	100
10/19/2024	2nd Annual East Oakland Environmental Awareness & Empowerment Block Party	East Oakland	30
10/19/2024	Lotus Bloom Fall Resource & Craft Fair	East Oakland	30
11/9/2024	San Leandro/Lisjan Creek Groundbreaking	East Oakland	20
11/23/2024	Youth & Family Resource + Care Fair	East Oakland	80
1/20/2025	Higher Ground Neighborhood Development Corporation: MLK Day of Service	East Oakland	50-100

Date	Name of Event	City (Location)	# of Attendees
2/15/2025	Eco-Afro Futures Event	Downtown Oakland	200
2/22/2025	Mini Grants-Lifers Living a Legacy Community Meeting	East Oakland	80
3/8/2025	40x40 Neighborhood Empowerment Day	East Oakland	70-100

Board Meetings Summary Table

The table below covers board meetings and Community Equity and Health Justice (CEHJ) Committee meetings where Air District staff presented on the East Oakland Plan development process and provided updates. Meetings were available to the public either virtually or hybrid.

Table A-3: Board Meetings Summary Table

Event Name	Date and Time	Location	Agendas/Meeting Summaries	Outreach Mechanism
Board of Directors Meeting	11/3/2021 9:00 AM - 5:00 PM	Virtual: Web Stream	Agendas Meeting Summaries	Air District Website
Community Equity Health and Justice (CEHJ) Committee Meeting	11/13/2024 9:00 AM - 5:00 PM	In Person: 375 Beale Street, San Francisco, CA 94105 Virtual: Web Stream	Agendas Meeting Summaries	Air District Website
Community Equity Health and Justice (CEHJ) Committee Meeting	5/14/2025 10:00 AM - 5:00 PM	In Person: 375 Beale Street, San Francisco, CA 94105 Virtual: Web Stream	Agendas Meeting Summaries	Air District Website

Further Engagement

East Oakland residents are encouraged to actively participate in monitoring local air quality. If you suspect a facility is operating without a proper permit, report it to the Air District's Compliance and Enforcement Division (C&E). For example, emergency backup generators (BUGs) are typically permitted to operate only during emergencies and for non-emergency routine maintenance (limited to 50 hours/year). If you observe a generator running for extended periods without an apparent emergency, you can report this to C&E for investigation. To file a complaint, call 1.800.334.ODOR (1-800-334-6367) or submit the form on our website.[6]

East Oakland residents are also encouraged to engage in the Air District's air permitting process.

- Public Participation Period: Every permit application that the Air District receives is posted on our website.[7] The Air District accepts public comments on any permit during the review process. The public can submit questions and comments to the Permit Ombudsman at PermitOmbudsman@baaqmd.gov.
- Public Notice & Comment Period: The Air District informs the public about certain projects, facilities, and permits that are under review by issuing a public notice. These are posted on our website.[8] A public notice is required for the following Applications:
    a. A new or modified source located within 1000 ft of the boundary of a K-12 school, or
    b. A new or modified source located within an Overburdened Community (defined by Regulation 2-1-243), and which triggers a health risk assessment (based on Regulation 2-5-401).

The Public may submit questions and comments to the assigned permit engineer.

By actively engaging in these regulatory processes, residents can help ensure industrial facilities comply with air quality regulations and reduce neighborhood air pollution exposure. Answers to frequently asked questions on Air District permitting are available on our website.[9]

[6] Bay Area Air District. "Report an Air Pollution Complaint." Accessed April 21, 2025. www.baaqmd.gov/complaints.
[7] Bay Area Air District. "Permit Applications Received." Accessed April 22, 2025. https://www.baaqmd.gov/permits/public-notices/permit-applications-received.
[8] Bay Area Air District. "Public Notices." Accessed April 22, 2025. https://www.baaqmd.gov/permits/public-notices
[9] Bay Area Air District. "Frequently Asked Questions: Bay Area Air Quality Management District Permitting Process. Accessed April 22, 2025. https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210421_01_faq_reg0200-pdf

Appendix B: Community Steering Committee Charter

Below is the East Oakland Community Steering Committee (CSC) charter, which was voted and approved on May 11, 2023, and amended on October 10, 2024. The charter covers the statement of purpose, membership, roles and responsibilities, meeting procedures, and participation principles.

Statement of Purpose and Committee Objectives

Assembly Bill 617 (C. Garcia, Chapter 136, Statutes of 2017) requires the development of a Community Emissions Reduction Plan (CERP) to reduce the emissions of toxic air contaminants and criteria pollutants in the most heavily burdened communities throughout the State of California. In February 2022, East Oakland was selected amongst other high priority communities in the Bay Area due to long-standing air quality challenges, health inequities, and a history of environmental justice issues.

The community-led East Oakland AB 617 Community Emissions Reduction Plan (Plan) will be developed by the East Oakland Community Steering Committee (CSC) with the support of the Plan Co-Leads, Communities for a Better Environment (CBE) and the Bay Area Air District (Air District). The Plan is a five-year plan that will include strategies to address long-standing air quality challenges in East Oakland.

The CSC will work with the Co-Leads to disseminate information to the community and seek input from the broader community. The CSC will discuss a variety of topics including, but not limited to:

- Input and recommendations to define community boundaries;
- Community air quality and public health data to identify sources of air pollution to build a technical foundation and inform mitigation measures, public health initiatives, and emission reduction strategies;
- Community concerns about emission sources to develop a shared understanding of the community's air pollution challenges;
- History of redlining and inequitable planning practices in East Oakland;
- Setting quantifiable emissions reduction targets for a five-year plan period;
- Identifying applicable regulatory, enforcement, incentive, land use, transportation, and permitting strategies;
- Approaches for additional ongoing community engagement and outreach;
- Developing an enforcement plan to ensure implementation and responsiveness to community member compliance issues; and
- Metrics to track progress of the implementation of the plan and its strategies.

Membership

A. Criteria for Community Steering Committee Membership

CSC members will represent people who live, work, and play in the East Oakland area and other interested stakeholders affiliated with various sectors who regularly breathe the air. These sectors can include community-based organizations (CBOs), youth organizations, non-profits, faith communities, education, government, health, and

business representatives from the East Oakland area. The size of the CSC will range from 19-26 members (including 5 non-voting members).

B. Term

The term of membership for CSC members will last until the completion of the draft Plan. (Communities are given up to 2 years from the date of the California Air Resources Board (CARB)'s approval to complete a CERP).

C. Selection and Vacancies

1. Recruitment: CSC applications will be accepted and reviewed on a rolling basis. The CSC application will remain live on the Air District's website. Air District staff, Co-Chairs, and Communities for a Better Environment (CBE) will review new and existing applications to fill vacancies as needed.
2. Co-Chairs Criteria for position
    - Experience working effectively with racially/culturally/linguistically/generationally diverse people
    - Experience resolving conflicts in healthy and productive ways
    - Active listener
    - Experience managing large group dynamics
    - Demonstrated commitment and service to the East Oakland community
    - Complete understanding of what the job is and the vision
    - Not easily persuaded
    - Able to work with others if conflict arises
    - Must be a voting member

Roles and Responsibilities

A. Co-Leads

Communities for a Better Environment (CBE) and the Air District will serve as partnering Co-Leads for the development of the CSC.

As Co-Leads, CBE and the Air District will be responsible for:

1. Creating the CSC structure;
2. Providing the necessary background materials for CSC members;
3. Meeting with the Co-Chairs to prepare for the CSC meetings with the Co-Chairs;
4. Managing the Steering Committee seats and vacancies;
5. Developing meeting agendas, and coordinating with the meeting Facilitator;
6. Air District is responsible for maintaining a website[1] for Steering Committee meeting materials, updates, and activities and is accountable to the California Air Resources Board (CARB).

[1] Bay Area Air District. "East Oakland Community Emissions Reduction Plan." Accessed September 30, 2025. https://www.baaqmd.gov/en/community-health/community-health-protection-program/east-oakland-community-emissions-reduction-plan.

B. Moderator(s)

A Moderator/Contractor will be used for CSC meetings and is responsible for:

1. Assisting with moderating the CSC meetings;
2. Administration and logistics of the CSC meetings;
3. Working with the Air District to ensure accessibility of the meetings;
4. Assisting in the agenda planning and meeting packet language translation and distribution;
5. Administering stipends for CSC members, tracking CSC member meeting attendance, and obtaining language interpretation as needed.

C. Steering Committee Members

CSC members will be responsible for advising the Co-Leads in developing the East Oakland Plan, in accordance with CARB's Community Air Protection Blueprint. CSC members will be responsible for:

1. Informing the scope of issues to be considered;
2. Reviewing and informing technical analyses and relevant data to understand air quality issues and propose other community data and information;
3. Conducting outreach to their network and community members and share information they gather from representative sectors, as appropriate;
4. Reviewing and informing strategies to solve the identified air quality issues.

Number of CSC Members: 19-26 (21 voting & 5 non-voting) and the following seats (in order of size of group):

- 9 East Oakland Residents (housed and unhoused)
- 4 Local Community-based Organization Representatives
- 5 Youth Representatives (age 24 years or younger when selected as a Youth Steering Committee Member)
- 2 Senior Representatives
- 2 Government Representatives (non-voting)
    - 1 City of Oakland Planning Representative
    - 1 Alameda County Public Health Department (ACPHD) Representative (1 alternate)
- 1 Industry Representative (non-voting)
- 1 Local Business Representative
- 1 Faith-Based Representative (who resides in East Oakland)
- 1 Port of Oakland Representative (non-voting)

If a CSC member steps down from their position on the Steering Committee, the Co-Leads will begin a recruitment process to fill the vacant seat or use existing applications on file to replace the CSC member with a new member who represents the same sector as the departing member. This process ensures that the CSC maintains a consistent level of representation from each of the sectors listed above.

CSC members are required to attend a minimum of 70% of scheduled CSC meetings within a 12-month period. If a CSC member cannot attend a meeting, they should inform Air District staff 24 hours in advance.

Air District staff and Communities for a Better Environment (CBE) will approach a committee member that misses more than four CSC meetings. Air District staff and CBE will meet with the specific member to assess their continuation as a member of the CSC on a case-by-case basis.

CSC members who participate in this process are expected to sign the East Oakland CSC Participation Agreement which outlines the expected conduct of all CSC members. CSC members will receive a stipend ($75/ hour or $150 per 2-hr meeting) for CSC meetings, other required meetings, and business-related events approved by Co-Chairs and Co-Leads. Stipends will be issued by the Facilitator/Just Cities on a monthly basis.

A member may resign by giving written notice to the Air District and Communities for a Better Environment (CBE) staff and Co-Chairs. The effective date of the resignation must be specified in the resignation letter. Air District staff shall ensure notice in the next CSC meeting.

D. Co-Chairs

The voting members of the CSC shall select three

Co-Chairs from among the CSC members, two adult Co-Chairs, and one youth Co-Chair. The Co-Chair team is responsible for:

1. Providing leadership and guidance to the Co-Leads and CSC;
2. Attending orientation meetings;
3. Meeting regularly with the Co-Leads; Assisting in the development of CSC meeting agendas;
4. Facilitating breakout sessions and discussions; and
5. Co-leading the monthly CSC meetings.

If Co-Chairs miss 2 consecutive Co-Chair meetings without notice or reason, the Co-Leads will meet with the Co-Chair to assess their continuation as a Co-Chair of the steering committee on a case-by-case basis. Co-Chairs will receive a stipend of $75/hour for attending Co-Chair meetings (up to 5 hours per month).

Standard Committee Meeting Procedures

1. Deliberation and Consensus

The CSC will use voting by simple majority for decision-making. Decision-making will not proceed without a quorum (quorum = 50% CSC plus 1 voting member) of voting members present at a meeting. CSC members may choose to recuse themselves from decisions at any time. Members must recuse themselves from decisions where there is a conflict of interest. The Political Reform Act requires that, “No public official at any level of state or local government shall make, participate in making or in any way attempt to use his official position to influence a governmental decision in which he knows or has reason to know he has a financial interest” (Government Code Section 87100 et seq).

In the event a conflict arises during an Agenda item, the CSC Members can suggest to postpone the Action or Agenda item of discussion and agree to table it for a future meeting by way of vote, to allow for the Co-Chairs, Co-Leads, and Facilitator to help resolve the issue. If an action does not receive an affirmative vote, discussion and deliberation will continue until actions have reached consensus or an affirmative vote is reached.

2. Open Meetings
    1. Public Outreach

    The CSC meetings must be open to the public and materials will be shared online and accessible for the general public in advance of every meeting. Public input is welcome and encouraged.

    2. Website

    Air District staff will update the website with CSC meeting materials on a monthly basis in preparation for the next CSC meeting. After each CSC meeting, Air District staff will upload meeting summaries and meeting recordings.

    3. Meeting Schedule, Agenda, and Materials

    CBE, Air District staff, and the Co-Chairs will develop meeting agendas. Individual CSC members can submit requests for future agenda items to the Co-Leads and Co-Chairs for consideration.

    Steering Committee agendas and meeting materials (including Spanish and Chinese translation) will be posted on the Air District's website at least 72 calendar hours prior to the meeting. Meeting minutes will also be posted on the Air District's website after the CSC meetings.

3. Dissemination of Materials

All documents, materials, and correspondences produced by or submitted to the Plan, CSC, CBE, Air District staff, or facilitators will be considered public information records and subject to the California Public Records Act regulations and procedures for disclosure and transparency.

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-Chairs and Co-Leads prior to release.

4. Subcommittees and Ad Hoc Groups

Steering Committee Members may volunteer to participate in ad hoc working groups and subcommittees, such as technical assessment, community surveys and outreach or other relevant topics. CSC members will vote to approve the creation of an ad hoc or subcommittee, pending budget for stipends. A subcommittee is defined as an ongoing committee needed for the Plan development. An ad hoc is defined as a working group charged with a specific task and timeline needed for the Plan development.

5. Accessibility and Safety

The Air District will adhere to all state or local guidelines and requirements regarding public health and safety.

    1. ADA Compliance

    CSC meetings and other outreach events associated with the Committee must be held at transit-accessible facilities for in-person meetings and must accommodate members covered by the Americans with Disabilities Act (ADA).

2. Childcare

The Air District will work to remove barriers to CSC members who need childcare. Upon request, the Air District shall provide Childcare services at all in-person meetings or stipends for CSC members to procure childcare services during virtual CSC meetings and other business-related events associated with the CSC. Additionally, the Air District will work to ensure those members who need at-home childcare have access to a childcare reimbursement. Members who need at-home childcare can submit a reimbursement form and documentation for childcare costs up to $160 ($40 per hour for up to 4 hours per CSC meeting. If in-person, it can include 30 min prior and after meetings) to pay for your own personal at-home childcare expenses (capped at $160 per month).

3. Transportation Reimbursements

Air District will work to ensure that in-person meeting locations for CSC meetings are held at transit-accessible facilities in the East Oakland project area and that a hybrid option is available, so CSC members have the option to meet in-person and remotely. Additionally, the Air District will work to ensure that members who have a need can access a transportation reimbursement for CSC meetings, other required meetings, and business-related events approved by Co-Leads (capped at $50 per month).

4. Language Access

Language interpretation services will be provided as requested with a minimum of (five) 5 business days in advance of the meeting or event. Requests must be sent to the following Just Cities and Air District Staff:

Just Cities Contact: Diana Benitez, diana@justcities.work and Air District Contact: Aneesh Rana, Senior Staff Specialist, arana@baaqmd.gov or ab617@baaqmd.gov

Amendments

Amendments to this Charter of the East Oakland CSC will require approval by a majority of voting members present at a CSC Meeting.

Participation Principles

The following sections detail the principles, goals, and expectations of conduct for every Steering Committee Member.

CSC Members will strive to include cultural competence and work collectively and cooperatively, maintaining impartiality, fairness, and respect for all CSC members and the communities we represent, including people who live in the East Oakland AB617 plan area, 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.

By signing below, I agree to abide by all conditions of the East Oakland Community Steering Committee Charter.

A. Providing strategic guidance, vision, and oversight, such as:
    1. Informing the development of the East Oakland Community Steering Committee's Community Emissions Reduction Plan
    2. Tracking progress of the work using agreed-upon indicators at Steering Committee and subcommittee levels
    3. Improving data collection and reporting for community education to inform development of emission and exposure reduction strategies
    4. Identifying measurable and ambitious goals to reduce health risk in East Oakland

B. Providing leadership and accountability by:
    1. Identifying obstacles and building consensus to achieve the Plan's goals
    2. Assessing my individual impact and considering how my own organization or those in my network can align to the common goals and principles of the CSC
    3. Showing up in partnership as a vocal champion of the program's collective impact and effort in the communities

C. Play an active role by:
    1. Attending a minimum of 70% of scheduled CSC meetings (in their entirety) within 12-months of a member's appointment
    2. Special Meeting Attendance - Attending community summits and town hall meetings as they are scheduled through the development of the plan to encourage and facilitate community engagement (Co-Chair attendance is required. CSC member attendance is encouraged but optional.)
    3. Reviewing materials prior to meetings and coming prepared for engaged discussion, active listening, and respectful dialogue

D. Listening and engaging in respectful dialogue:

In the event of a conflict (or behavior which violates the Council's commitment to respect and civility) between CSC Members and/or between CSC Members and Air District staff regarding CSC matters arises:

    1. CSC members strive for consensus among themselves. If consensus cannot be reached, CSC members can engage the Co-Leads. Should there be disputes or conflicts that cannot be settled, Co-Leads will seek out resources for a third-party mediator, if needed.

Appendix C: CalEnviroScreen 4.0 Percentile Scores for East Oakland Census Tracts

Table C-1: CalEnviroScreen 4.0 Percentile Scores for East Oakland Census Tracts[1]

Census Tract	Approximate Neighborhood Names *(Based on Largest Overlapping Area)*	ZIP Code	CES 4.0 Percentile
6001407300	Melrose	94601	97.84
6001409000	Columbia Gardens	94621	97.18
6001408800	Lockwood-Tevis	94621	96.24
6001409100	Brookfield Village	94603	94.00
6001406100	North Kennedy Tract	94601	93.85
6001409500	Highland	94621	91.41
6001408900	Fitchburg	94621	90.27
6001409400	Coliseum Industrial Complex	94603	88.29
6001407200	Saint Elizabeth	94601	86.11
6001409200	Sobrante Park	94603	83.48
6001406201	Meadow Brook	94601	82.68
6001407500	Seminary	94621	82.50
6001407400	Fremont	94601	82.36
6001406202	Hawthorne	94601	78.09
6001405902	Rancho San Antonio	94606	77.00
6001405901	Rancho San Antonio	94606	74.46
6001409300	North Stonehurst	94603	70.01
6001406500	Patten	94601	69.70
6001407102	Jefferson	94601	68.27
6001408600	Hegenberger	94605	66.94
6001408700	Havenscourt	94605	64.38
6001408500	Arroyo Viejo	94621	63.57
6001409600	Webster	94621	62.92
6001408300	Eastmont Hills	94605	61.31
6001410100	Foothill Square	94605	60.99
6001406300	Meadow Brook	94601	60.87
6001407600	Fairfax	94601	60.83
6001409800	Oak Knoll-Golf Links	94605	59.51
6001406400	Reservoir Hill	94602	59.18
6001407101	Harrington	94601	59.17
6001405700	Tuxedo	94606	58.99

[1] State of California Office of Environmental Health Hazard Assessment. “CalEnviroScreen 4.0”. 1 May 2023. https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40.

Census Tract	Approximate Neighborhood Names *(Based on Largest Overlapping Area)*	ZIP Code	CES 4.0 Percentile
6001407000	Allendale	94619	58.14
6001405800	Highland Terrace	94606	56.56
6001410300	Cox	94603	56.16
6001410400	Iveywood	94603	55.13
6001408400	Eastmont	94605	54.16
6001406601	Upper Peralta Creek	94602	53.09
6001410200	Las Palmas	94603	52.92
6001406602	School	94602	51.07
6001408200	Millsmont	94605	45.12
6001409700	Castlemont	94605	41.68
6001407800	Mills College	94613	32.59
6001407700	Maxwell Park	94619	27.22

Appendix D: Supplemental Technical Information

This appendix contains additional information on technical datasets and analyses that were described in Chapter 5: Air Quality Overview and covers the topics below:

- **Air Monitoring Data**, including background on the air monitoring datasets and analyses that were used to develop air quality overview and connect air monitoring information to community concerns, and links to additional resources
- **Meteorological Summary**, including a description of wind patterns in the Oakland area using data from the Oakland Airport
- **Emissions Inventory Development**, including a description of the methods and datasets used to develop the emissions inventory
- **Dispersion Modeling**, including a description of the methods and datasets used to conduct dispersion modeling for key local sources
- **Emissions Forecasts**, including a summary of "business as usual" emissions inventories for 5- and 10-year milestones (2031 and 2036) after CERP adoption

Air Monitoring Data

Air monitoring data used for analyses that were included in the Plan came from several different air monitoring programs and projects. Data from the Air District's long-term air monitoring network were retrieved largely from the U.S. Environmental Protection Agency (U.S. EPA)'s Air Quality System (AQS), which is U.S. EPA's official repository for ambient air quality data.[1] These data are also available for download via the U.S. EPA's Air Data website, which has tools for visualizing and summarizing air quality data.[2] Each year U.S. EPA also develops an interactive, national report on the status and trends in key air pollutants using data from air monitoring stations operated by state, local, and tribal air quality agencies nationwide.[3] Data for some pollutants measured at Air District monitoring sites, such as black carbon and ultrafine particles, were retrieved from Air District database systems. More information on the Air District's fixed-site air monitoring network, including the locations of air quality monitoring sites and the specific pollutants measured at different sites, is available in the latest version of the Annual Air Monitoring Network Plan.[4] The Air District's air monitoring network is designed for compliance with U.S. EPA network design and data quality requirements, including acceptable instrumentation, monitor siting and operation, and laboratory analysis methods. More information about the requirements of U.S. EPA's national air monitoring programs as implemented by the Air District is available through U.S. EPA's Ambient Monitoring Technology Information Center (AMTIC).[5]

Aggregated air monitoring data from different projects or programs were shown in several plots, such as daily or annual average concentrations of different pollutants. In general, to calculate average pollutant concentrations, valid data must be available for at least 75% of the averaging period. For example, to calculate a valid 24-hour average pollutant concentration from hourly data, at least 18 hours of valid data must be available. For criteria pollutants, there are specific

[1] EPA's Air Quality System (AQS), the official repository for ambient air quality data: https://www.epa.gov/aqs
[2] EPA's Air Data webpage: https://www.epa.gov/outdoor-air-quality-data
[3] EPA's Air Quality Trends Report webpage: https://www.epa.gov/air-trends
[4] Air District webpage for the Annual Air Monitoring Network Plan: https://www.baaqmd.gov/about-air-quality/air-quality-measurement/ambient-air-monitoring-network
[5] EPA's Ambient Monitoring Technology Information Center (AMTIC) website: https://www.epa.gov/amtic

data completeness and data handling requirements for calculating design values for comparisons with the National Ambient Air Quality Standards (NAAQS).[6]

Meteorological Summary

Air quality is highly influenced by meteorological (weather) conditions. Wind patterns, for example, determine the downwind transport and dispersion of pollutants from their sources. Variations in temperature with elevation above the ground determine whether pollutants will be trapped near ground level (which occurs when temperatures increase with elevation, known as a temperature inversion) or will be ventilated and mixed through the lower atmosphere. Sunlight and temperature also affect reactions that form other pollutants, such as ozone.

Weather conditions, including wind patterns, in East Oakland are highly influenced by its proximity to San Francisco Bay and the Pacific Ocean. Winds in East Oakland prevail from the west to west-northwest, referred to as onshore winds since these winds blow from the ocean and bay onto land, as shown in the wind rose in Figure D-1. A wind rose is a graphical representation of how often different wind speeds and directions occur at a specific location over a certain time. These onshore winds are driven by strong temperature differences between the ocean and land and are most prevalent during the spring and summer months and during the afternoon and evening hours (see Figure D-2 and Figure D-3). Winds during the fall and winter are typically more variable in direction and speed from day to day and are closely tied to passing storm systems (see Figure D-4 and Figure D-5). Winds also tend to be stronger during the daytime hours and lighter and more variable in direction during the nighttime hours (see Figure D-6 and Figure D-7).

While prevailing winds may transport emissions from a pollution source generally away from a given community, non-prevalent wind patterns also occur that can transport those pollutants into the community and contribute to air quality impacts that are not readily apparent in annualized air quality datasets and tools. Periods of calm or light winds regularly occur, which reduce pollutant dispersion and allow pollutant concentrations to increase, especially if a temperature inversion is also present. In urban areas such as East Oakland, winds may vary considerably over short distances due to channeling of winds through roadway corridors/canyons and due to microcirculations around buildings or other obstructions. While periods of strong and gusty winds are generally associated with improved air quality for most pollutants, these winds can also loft dust and other substances into the air from certain facilities, construction lots, and unpaved surfaces, resulting in local-scale air quality issues near such sources.

The wind speed and direction data summarized in this section were downloaded through the Synoptic Data API service, though the data can also be retrieved through multiple other sources.[7] Year-round, seasonal, and daytime vs. nighttime wind roses were generated using the R-based OpenAir package.[8]

[6] EPA's Air Quality Design Values website: https://www.epa.gov/air-trends/air-quality-design-values
[7] Website for the Synoptic API service for downloading meteorological data: https://synopticdata.com/weatherapi/
[8] GitHub page for the R-based OpenAir package: https://github.com/openair-project/openair

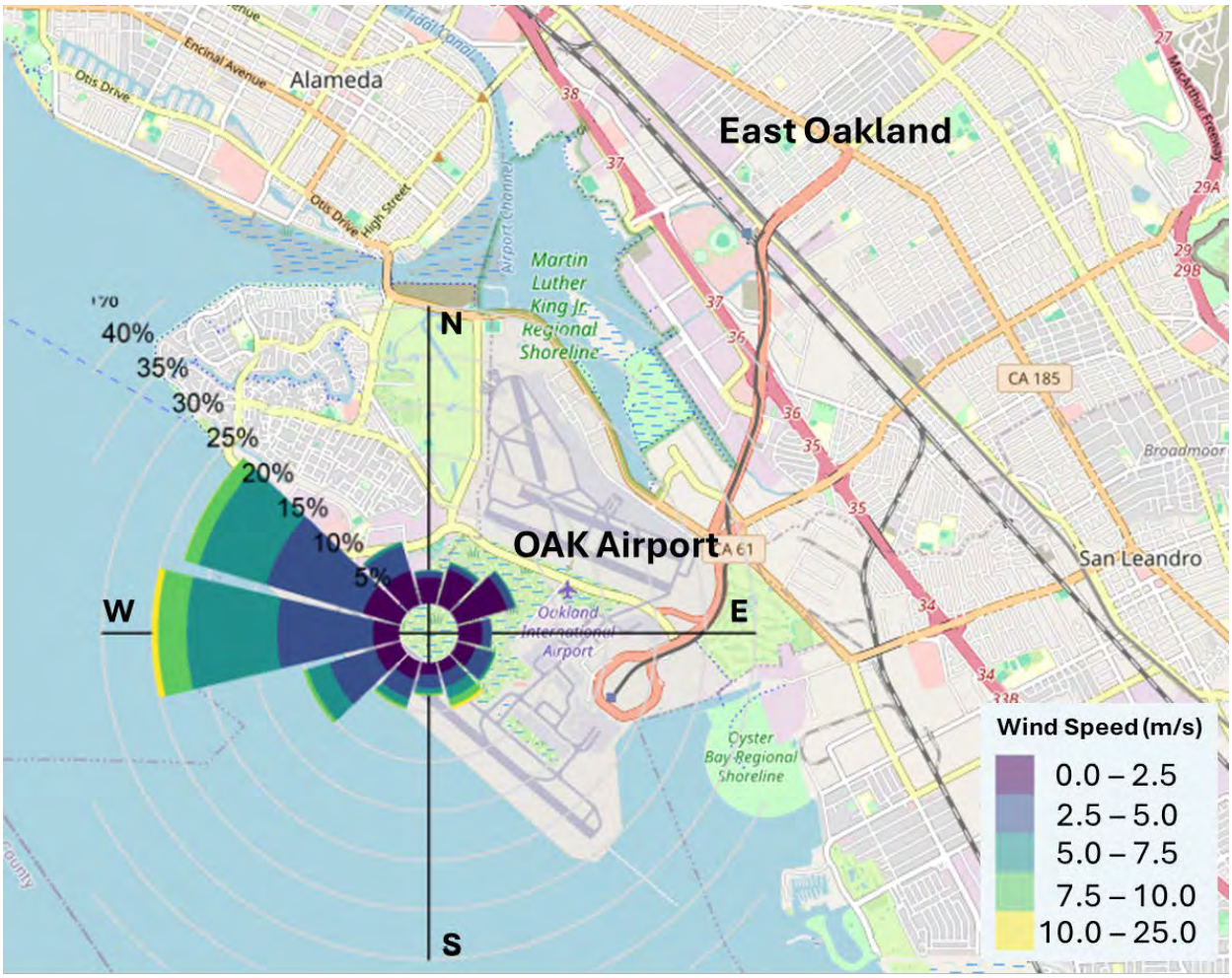


Figure D-1: Wind rose showing hourly wind speed and direction data from Oakland Airport for the period 2016-2020. Winds prevail from the west to west-northwest but can occur from any direction and vary by season, by time of day, and from day to day.

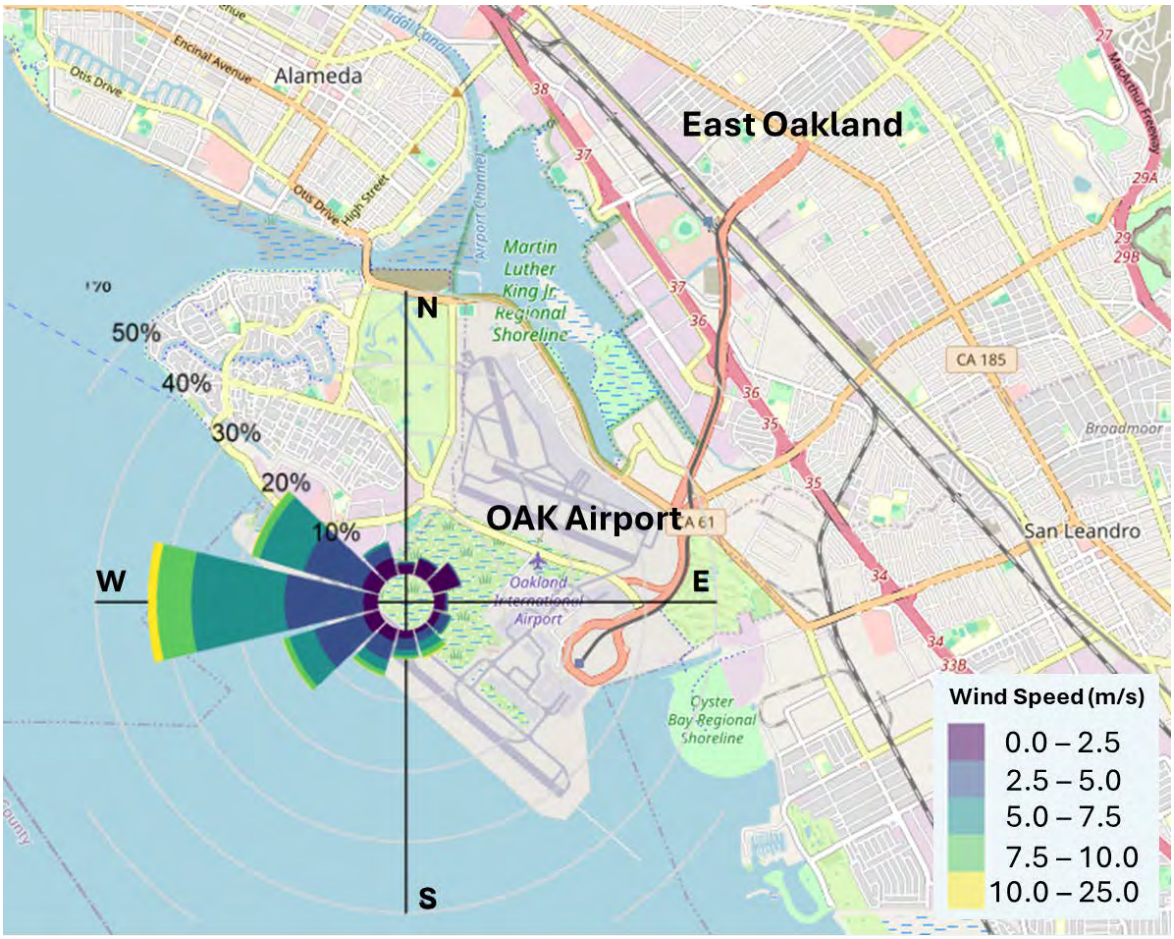


Figure D-2: Wind rose showing hourly wind speed and direction data from Oakland Airport during March, April, and May (meteorological spring) for the period 2016-2020. Winds prevail from the west and are typically stronger during meteorological spring compared to fall and winter.

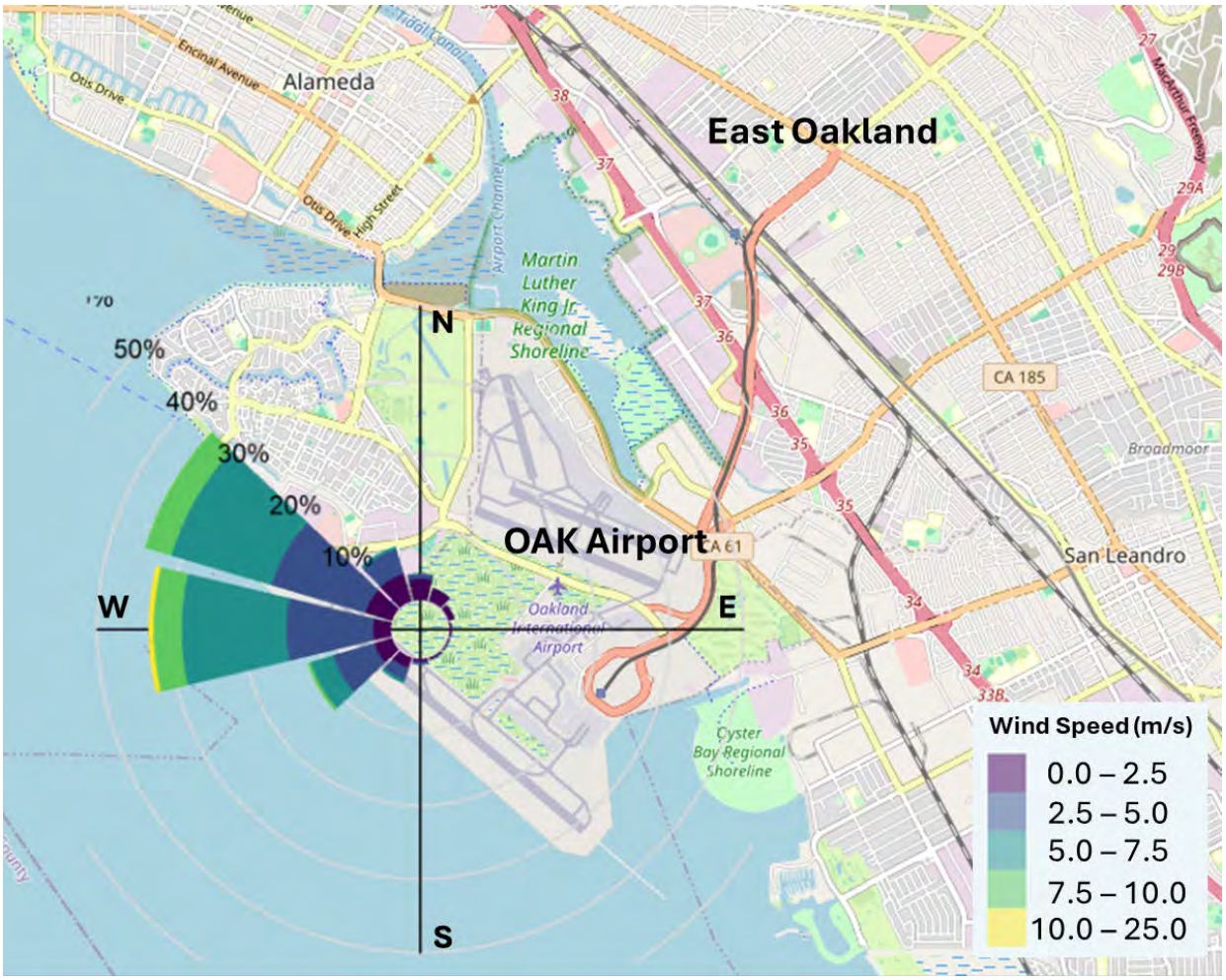


Figure D-3: Wind rose showing hourly wind speed and direction data from Oakland Airport during June, July, and August (meteorological summer) for the period 2016-2020. Winds prevail from the west to west-northwest and are typically stronger than during other times of the year and are strongest during the afternoon hours.

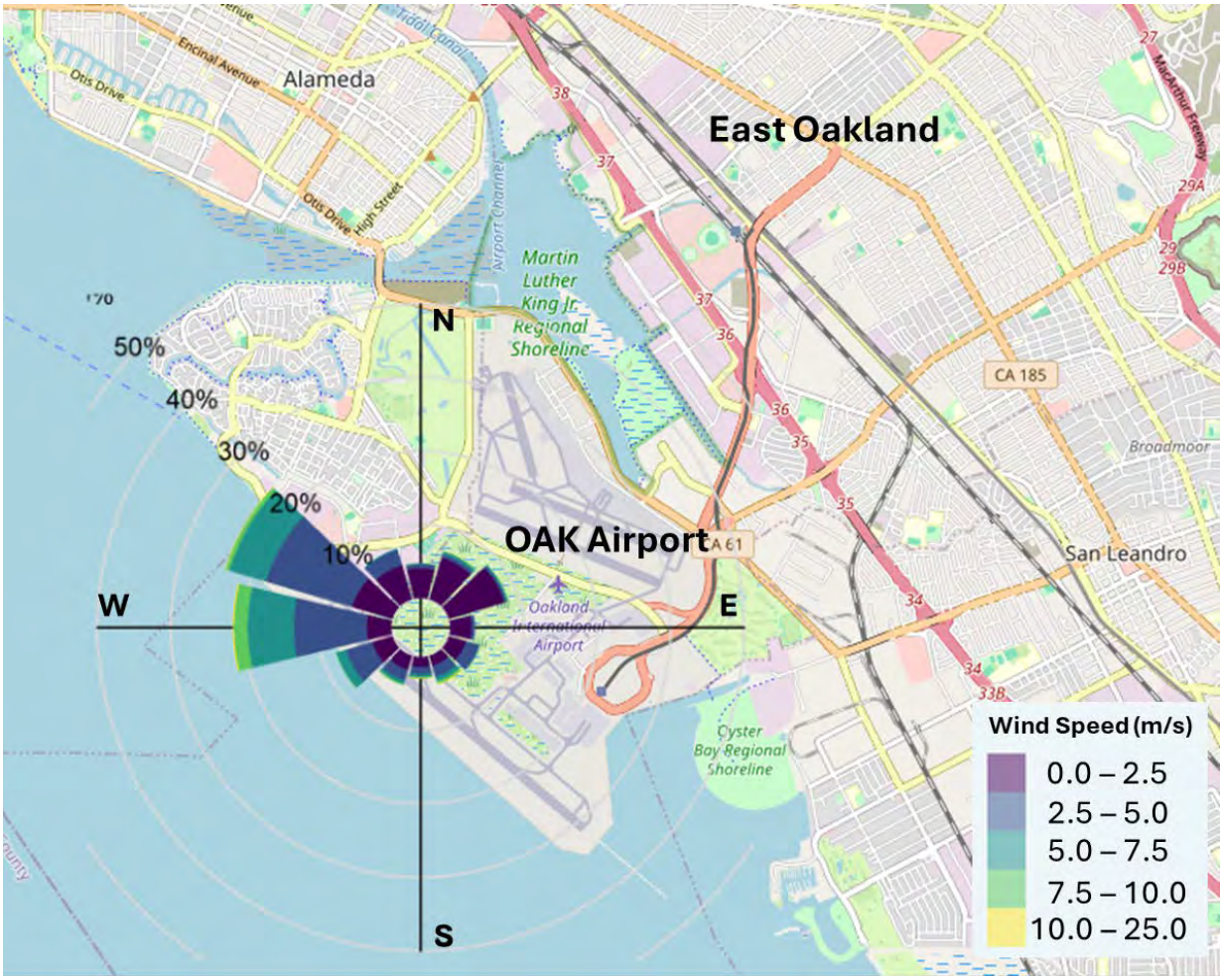


Figure D-4: Wind rose showing hourly wind speed and direction data from Oakland Airport during September, October, and November (meteorological fall) for the period 2016-2020. Winds prevail from the west to west-northwest but are typically not as strong and are more variable in direction compared to during the spring and summer seasons.

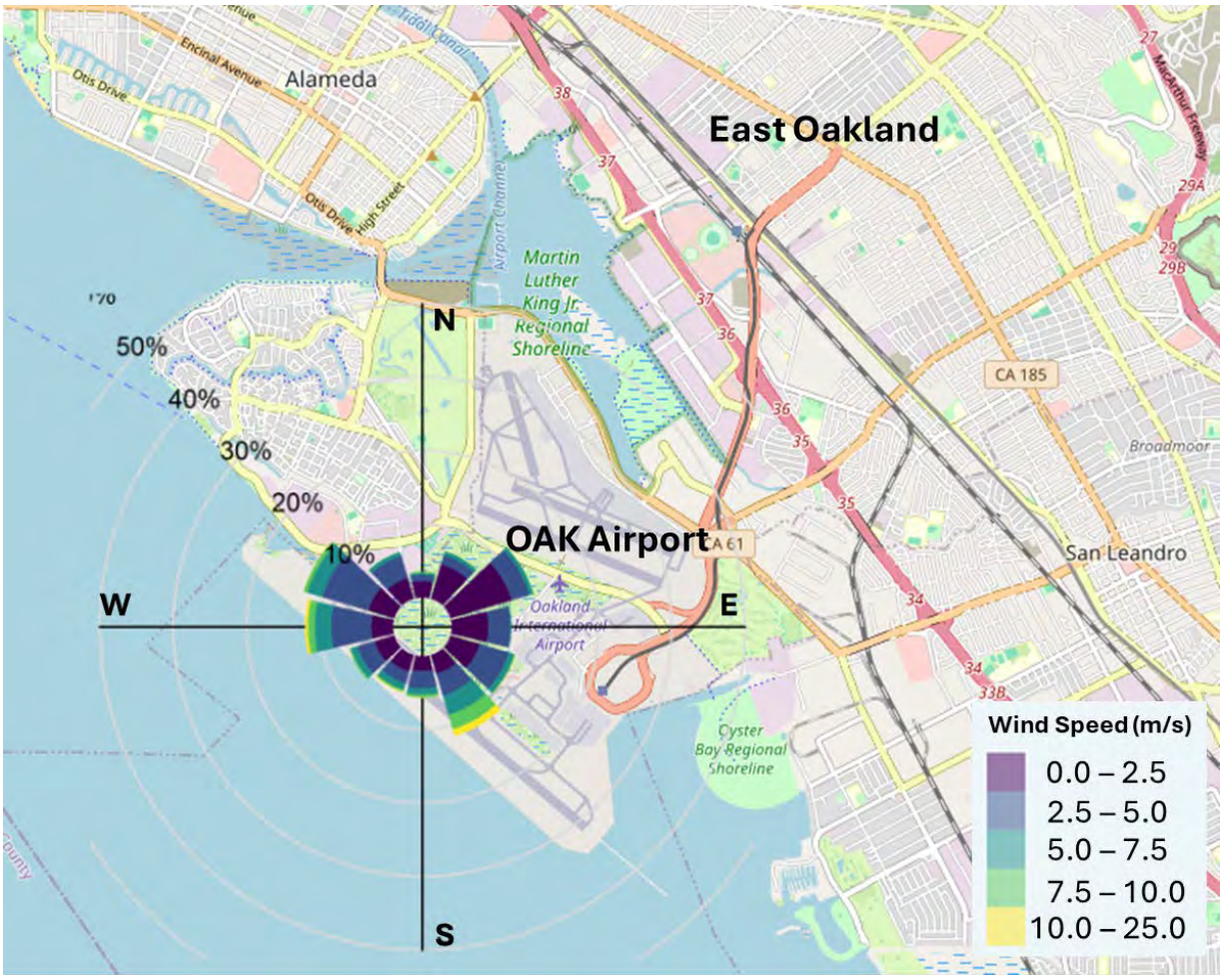


Figure D-5: Wind rose showing hourly wind speed and direction data from Oakland Airport during December, January, and February (meteorological winter) for the period 2016-2020. Compared to other times of the year, winds during meteorological winter are typically more variable in direction and are closely tied to passing storm systems.

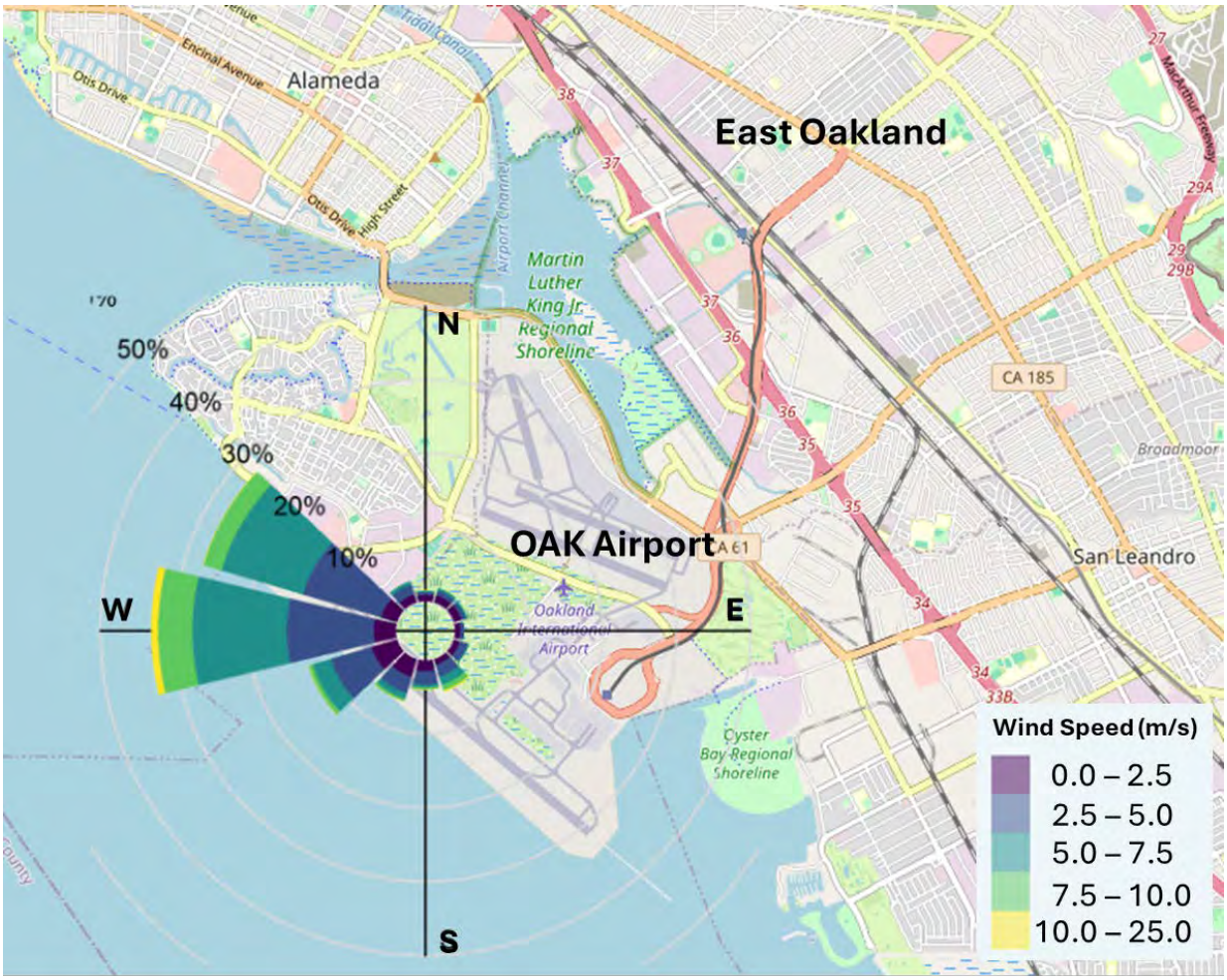


Figure D-6: Wind rose showing hourly wind speed and direction data from Oakland Airport during daytime hours for the period 2016-2020. Winds prevail from the west to west-northwest and are typically stronger during the daytime compared to nighttime.

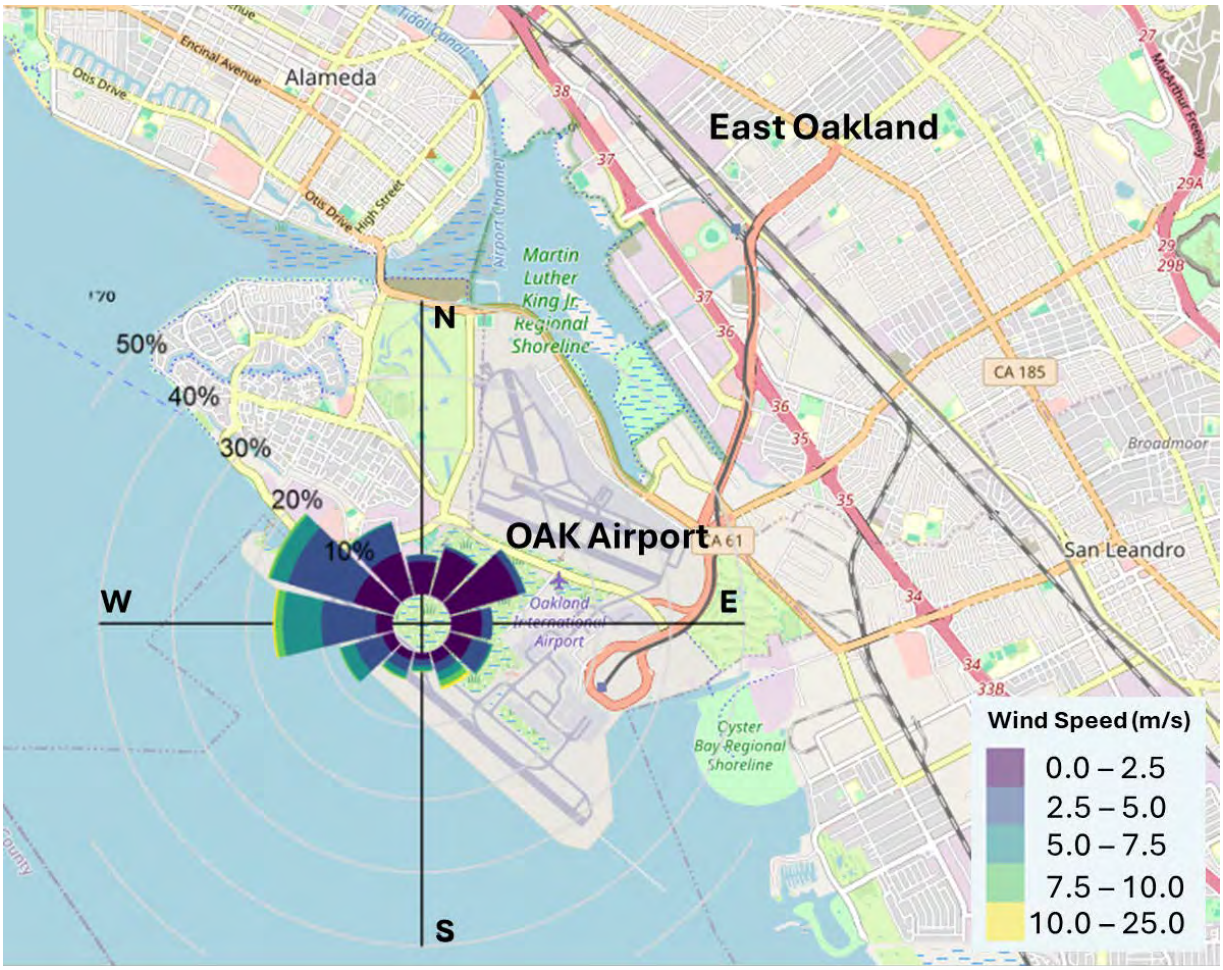


Figure D-7: Wind rose showing hourly wind speed and direction data from Oakland Airport during nighttime hours for the period 2016-2020. Compared to daytime hours, winds at night are typically lighter in speed and more variable in direction.

Emissions Inventory Development

As part of the technical assessment process, the California Air Resources Board (CARB) prescribes the development of a planning emissions inventory for all AB617 communities. This inventory must include criteria pollutants[9] and toxic air contaminants (TACs)[10] for all sources within the community boundary for a selected base year.[11] The Air District worked with CARB to establish a base year (2021) and planning inventory domain for the East Oakland community. The inventory domain was defined as a rectangular area that aligns with a network of 1-km x 1-

[9] Criteria pollutants include carbon monoxide (CO), nitrogen oxides (NOx), total organic gases (TOG), reactive organic gases (ROG), ammonia (NH_3), sulfur oxides (1), particulate matter 10 microns or smaller (PM_{10}), and particulate matter 2.5 microns or smaller ($PM_{2.5}$).
[10] TACs, or "air toxics," have been identified by CARB or the U.S. Environmental Protection Agency (EPA) as pollutants that may cause cancer or other serious health effects (e.g., birth defects).
[11] California Air Resources Board (2019). AB 617 Community Planning Emissions Inventory: Key Elements. Available at: https://ww2.arb.ca.gov/resources/documents/ab-617-community-planning-emission-inventory-key-elements.

km grid cells from CARB's statewide modeling domain.[12] As shown in Figure D-8, this rectangular emissions inventory boundary covers the East Oakland area, as well as surrounding areas with emission sources that are likely to impact the community.

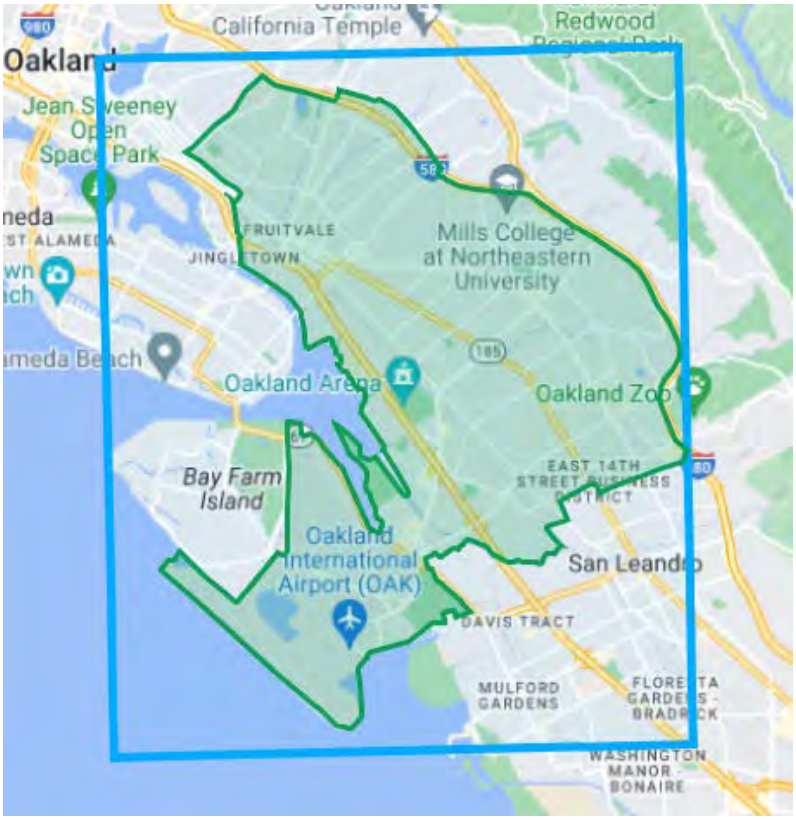


Figure D-8: Map showing the emissions inventory boundary (blue rectangle) in relation to the East Oakland community (green area).

As described in the Plan Chapter 5, the East Oakland emissions inventory is organized into four broad source sectors: stationary permitted sources, stationary non-permitted sources, on-road mobile sources, and off-road mobile sources. Table D-1 provides a definition of these source sectors and summarizes the general methods used to estimate their emissions in the East Oakland area. Note that the baseline inventory represents a combination of information from the Air District and CARB, and that detailed local data were used where available.

[12] California Air Resources Board (2020). 2020 Community Recommendations Staff Report – DRAFT Preliminary Emission Inventory. Prepared by the Community Inventory Section, October.

Table D-1: Emissions inventory methods by source sector.

Source Sector	Definition	Methodology
Stationary – permitted	Individual facilities with sources that have been issued a permit or registered by the Air District, or that have been found exempt through an engineering evaluation	Emissions based on data reported to the Air District annually by each permitted facility and reviewed by District engineers. Emissions estimated at the process/device level using a variety of methods and datasets, including source tests and emission factors.
Stationary – non-permitted	Stationary sources that are too small or dispersed to be treated individually (e.g., restaurants, fireplaces, and water heaters)	Emissions estimated by CARB or the District at the county level and down-scaled using spatial surrogates such as land use or population data. For commercial cooking, the Air District developed restaurant-specific estimates that were based on generalized assumptions about the type and quantities of meat cooked at various types of restaurants.
On-road mobile	Vehicles that operate on roadways (e.g., cars, trucks, and buses)	Roadway emissions based on detailed traffic data from Bentley System's Streetlytics dataset and emission factors from CARB's EMFAC2021 model. Emissions also estimated for operations at truck-based businesses using results of a truck activity survey conducted by District staff.
Off-road mobile	Mobile sources such as aircraft, locomotives, and construction equipment that do not operate on roadways	Emissions for Oakland Airport, locomotives, and marine sources prepared by the Air District based on local data. Emissions for remaining off-road sources (e.g., construction equipment) were prepared by CARB using a variety of approaches.

Note that the emissions for sources at Oakland Airport were estimated using the Federal Aviation Administration (FAA) Aviation Environmental Design Tool (AEDT), Version 3e.[13] AEDT is a software system that models airport-related emissions in space and time and performs dispersion modeling using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD). AEDT estimates emissions for the following sources:

[13] AEDT: Product Information. https://aedt.faa.gov/3e_information.aspx

- **Aircraft engines:** Airplane exhaust emissions are associated with takeoff, landing, taxiing, and idling on taxiways and aircraft apron areas.
- **Auxiliary power units (APUs)**: APUs are small aircraft engines, fueled by jet fuel, which are built into the airplane's airframe and provide power while the aircraft is on the ground.
- **Ground support equipment (GSE)**: GSEs are off-road equipment such as baggage tractors and belt loaders used to service aircraft during ground operations.

The AEDT input file containing the number of landings and takeoffs for each aircraft model in Oakland Airport's fleet mix was provided to the District by the Port of Oakland (Port).[14] The data imported into AEDT is based on the Port Airport Noise and Operations Monitoring System (ANOMS) database. This data contains a record of arrivals and departures by aircraft model and engine type. The Port also provided an emissions summary, which District staff validated using AEDT.[15]

More generally, the California Air Resources Board (CARB) has established a methodology for developing community-scale toxic air contaminant (TAC) emissions inventories and for comparing the relative toxicity of different compounds through the calculation of toxicity weighted emissions (TWE). In this methodology, point source emissions are based on toxics inventories reported to the Air District by individual permitted facilities. For stationary non-permitted sources and all mobile sources, TAC emissions are calculated by applying chemical speciation profiles to Particulate Matter (PM) and Total Organic Gases (TOG) emissions. These speciation profiles, which are maintained by CARB, break down PM and TOG emissions for a given source category into individual chemical species. Then all the species that are listed in Appendix A-I of AB 2588 Air Toxics "Hot Spots" Emission Inventory Criteria and Guidelines Regulation are filtered out as toxics.[16] TWE are then calculated by multiplying the mass emissions for each TAC by corresponding health values from the Office of Environmental Health Hazard Assessment (OEHHA). These health values include cancer potency factors and non-cancer chronic and acute reference exposure levels (RELs), and the TWE calculations also include molecular weight adjustment factors to account for the molecular weight fraction of a compound associated with the specific health effects.[17] As noted above, the resulting TWE provide a useful means of comparing the relative toxicity of TACs in an inventory; however, TWE do not quantify specific health risks, which are based on exposures to concentrations of specific TACs rather than emission levels only.

Once the emissions inventory was complete, emissions estimates for fine particulate matter ($PM_{2.5}$) and TACs were configured for use in dispersion modeling efforts. Modeling inventories were developed for all sources for which sufficient information (e.g., emissions rate, physical characteristics, spatiotemporal resolution) was available at the time of analysis.

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[14] Data provided by the Port of Oakland was in support of the Oakland International Airport Terminal Modernization and Development Project. Draft Environmental Impact Report dated July 2023. Available at: https://www.iflyoak.com/wp-content/uploads/2024/03/230717_Public-Draft-EIR_Web_v1.0.pdf.

[15] Activity and emissions estimates for the year 2019 were used in this analysis. The Port also provided data for 2021 and 2022, but activity was diminished during these years due to the COVID-19 pandemic. Therefore, the year 2019 was selected to represent "business as usual" operations at the airport.

[16] California Air Resources Board (2021). Draft Community Emission Inventory Methodology for Toxic Air Contaminants Emissions. Prepared by the Area Source Improvement and Community Inventory Development Sections, June.

[17] Ibid., 16

Dispersion Modeling

Once emitted to the atmosphere, pollutants are subject to processes such as dispersion and deposition. Air quality models use emissions inventories, meteorological data, and other inputs to simulate these processes and provide estimates of pollutant concentrations in specified locations of interest. To quantify concentrations of $PM_{2.5}$ and other pollutants in the East Oakland community, the Air District used the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD). AERMOD is U.S. EPA's preferred model for near-field dispersion modeling and is required for all health risk assessment (HRA) modeling performed by or for the Air District.[18] In addition, AERMOD is the only model currently approved by U.S. EPA for mobile source applications such as PM hot-spot analyses.[19] Because of its ability to handle multiple source types, AERMOD was used to model dispersion from all local sources assessed in the East Oakland emissions domain.

In general, AERMOD was applied using approaches consistent with those previously developed during the technical assessment for the West Oakland AB617 community.[20] One key difference from the West Oakland approach involves the meteorological data used for dispersion modeling. In West Oakland, the District operates a meteorological monitoring station at the Oakland Sewage Treatment Plant (OST) that measures wind speed, wind direction and temperature, parameters required by the AERMOD model. Because this station is centrally located within the relatively small and flat West Oakland study area, meteorological data from the OST station was used for all AERMOD runs. However, the East Oakland area is larger and has a more complex topography than West Oakland and also lacks a central monitoring station that would be representative of the entire study area. Therefore, the Air District relied on modeled meteorological data from the Weather Research and Forecasting (WRF) model to run AERMOD. WRF provided gridded meteorological data at a 1-km resolution, and a U.S. EPA utility program called the Mesoscale Model Interface Program (MMIF) was used to convert WRF outputs into AERMOD-ready meteorological inputs. All sources in East Oakland were modeled using WRF outputs from the 1-km grid cell in which the source was located.

AERMOD also requires a receptor file defining locations for which the model will estimate pollutant concentrations. A master receptor grid was generated with receptors spaced every 50 m in the x and y directions within the receptor domain, resulting in 52,800 discrete receptor locations. For East Oakland, AERMOD was used to estimate $PM_{2.5}$ concentrations, DPM concentrations, cancer risk, and chronic hazard index (HI) at each of these receptors. Because separate AERMOD runs were performed for individual sources (e.g., road segments, industrial processes), this modeling approach provided hyper-local, source-specific information.

Emissions Forecasts

In addition to the 2021 baseline emissions inventory presented in the Plan Chapter 5, the Air District worked with the California Air Resources Board (CARB) to develop preliminary forecast

[18] Bay Area Air Quality Management District (2020). BAAQMD Health Risk Assessment Modeling Protocol, December. https://www.baaqmd.gov/~/media/files/ab617-community-health/facility-risk-reduction/documents/baaqmd_hra_modeling_protocol-pdf.pdf?la=en.
[19] U.S. Environmental Protection Agency (2021). Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas. EPA-420-B-21-037, October.
[20] Bay Area Air Quality Management District (2019). Owning Our Air: The West Oakland Community Action Plan – Volume 2: Appendices, October. Available at: https://www.baaqmd.gov/en/community-health/community-health-protection-program/west-oakland-community-action-plan.

emissions estimates for the years 2031 and 2036. The years represent 5- and 10-year milestones from 2026, the year of Plan adoption. Forecasted emissions were estimated by combining the baseline 2021 data with ancillary datasets that provide growth factors and control factors based on "business as usual" (BAU) conditions. Here, "growth" refers to anticipated changes in activity (e.g., increases in vehicle miles traveled for the on-road fleet), while "control" refers to changes in emissions characteristics (e.g., lower motor vehicle emission rates due to new technology introduced into the fleet). The BAU scenarios only consider controls resulting from existing ("on the books") regulations and can be viewed as conditions that are projected to occur in the East Oakland area without the implementation of the Plan. These BAU conditions could also be called "without Plan" or "no Plan" scenarios. Note that the emission forecasts presented in this section account for the impact of the 2025 disapproval of EPA waivers that allowed CARB to set stricter vehicle emissions standards. This action affected adopted CARB regulations like the Advanced Clean Trucks and Advanced Clean Cars II rules, and CARB supported the Air District in estimating the projected emissions reductions that will be lost in future years.

The BAU forecasts described above were prepared using a variety of datasets:

- Growth profiles and control factors developed by the Air District as part of a recent trends analysis for criteria air pollutants.[21]
- Forecasting scalars provided by CARB that combine growth and control factors for future years out to 2036. These scalars were based on data from CARB's California Emissions Projection Analysis Model (CEPAM) and reflect forecasts from the 2022 ozone state implementation plan (SIP) emissions inventory.
- Emissions reduction factors from CARB that reflect impacts of recently adopted statewide regulations that were not considered in the CEPAM data referenced above. These statewide regulations largely address NO_x and PM emissions from mobile sources, and descriptions of these regulations are provided in Table D-2.

Table D-2: Descriptions of recently adopted statewide regulations.

Regulation	Description	Adoption Date
Heavy-Duty Inspection and Maintenance (HDIM)	Expands existing I&M programs to ensure all vehicle control systems (e.g., diesel particulate filters) are adequately maintained	December 2021
Small Off-Road Engine (SORE) Amendment	Accelerates the transition of SORE equipment (e.g., leaf blowers, portable generators) to zero-emission equipment starting in 2024	December 2021

[21] Bay Area Air Quality Management District (2023). Bay Area Emissions Inventory: Summary Report for Criteria Air Pollutants, April.

Regulation	Description	Adoption Date
Transport Refrigeration Unit (TRU) Regulation	Requires diesel-powered TRU to transition to zero-emission technology in two phases	February 2022
Commercial Harbor Craft (CHC) Regulation	Requires zero-emission options where feasible and Tier 3 and 4 engines on all other vessels	March 2022
In-Use Locomotive Regulation	Reduces harmful emissions from locomotives, in part to address long-standing environmental justice concerns for communities near railyards	April 2023

Note that for permitted sources in East Oakland, emissions were generally held constant for the 5- and 10-year BAU forecasts. For Oakland Airport, forecasts were based on a recent statewide inventory prepared by CARB for California airports.[22] For consistency, these forecasts were compared to future year emissions estimates recently published in a final environmental impact report for the airport's proposed expansion (Port of Oakland, 2024). The sub-sections that follow contain summary information about the forecasted inventories for 2031 and 2036 and how they compare to the 2021 baseline emissions.

Criteria Air Pollutants (CAPs)

This section provides a comparison between CAP emission levels for the 2021 baseline (Table D-3) and forecasted years 2031 (Table D-4) and 2036 (Table D-5). As shown in the last row of Table D-4, 2031 emissions are generally lower for most pollutants, with reductions ranging from 5.1% for TOG to 29.3% for carbon monoxide (CO). For $PM_{2.5}$, which is of special concern due to its health effects, emissions are forecast to decrease by 11.3% between 2021 and 2031, in part due to anticipated reductions in residential combustion of wood and natural gas. Note that PM_{10} emissions show a slight increase (1.0%) between 2021 and 2031, with anticipated increases in road dust emissions offsetting reductions in emissions from other source categories. Sulfur oxides (SO_x) emissions are forecasted to increase by 7.8% between 2021 and 2031 due to increased aircraft activity at Oakland Airport.

Emissions for 2036 in Table D-5 show a similar pattern, with forecasted reductions relative to 2021 ranging from 5.5% (TOG) to 36.4% (CO). PM_{10} emissions again show a slight increase (1.1%) between 2021 and 2036, and SOx emissions are forecasted to increase by 14.8% between 2031 and 2036, which is again due to increased aircraft activity.

Table D-3: East Oakland 2021 CAP emissions by source sector in tons per year (tpy).

[22] California Air Resources Board (2024). California Aircraft Emissions Inventory (CAI2024) Technical Documentation, December. Available at: https://ww2.arb.ca.gov/sites/default/files/2024-12/CAI2024_main_document_1211_ada.pdf.

Source Type	Source Sector	$PM_{2.5}$	PM_{10}	NO_x	SO_x	CO	TOG	ROG
Stationary	Permitted	76.3	114.2	60.8	0.7	53.1	783.0	196.4
	Non-permitted	122.7	310.2	227.2	4.6	461.0	2,335.0	1,650.8
Mobile	On-Road	54.1	269.5	794.5	9.4	4,167.2	594.5	517.6
	Off-road	28.3	29.5	1,147.6	67.6	6,527.3	636.9	591.6
TOTAL		281.5	723.4	2,230.2	82.3	11,208.6	4,349.4	2,956.4

Table D-4: East Oakland 2031 CAP emissions by source sector in tons per year (tpy).

Source Type	Source Sector	$PM_{2.5}$	PM_{10}	NO_x	SO_x	CO	TOG	ROG
Stationary	Permitted	76.3	114.2	60.8	0.7	53.1	783.0	196.4
	Non-permitted	95.9	307.6	176.3	3.7	327.9	2,515.7	1,802.7
Mobile	On-Road	54.4	283.9	303.2	7.8	3,063.4	399.9	351.3
	Off-road	23.0	25.0	1,049.0	76.5	4,477.6	428.0	403.3
TOTAL		249.6	730.7	1,589.3	88.7	7,921.9	4,126.6	2,753.6
Percent change from 2021		-11.3%	+1.0%	-28.7%	+7.8%	-29.3%	-5.1%	-6.9%

Table D-5: East Oakland 2036 CAP emissions by source sector in tons per year (tpy).

Source Type	Source Sector	$PM_{2.5}$	PM_{10}	NO_x	SO_x	CO	TOG	ROG
Stationary	Permitted	76.3	114.2	60.8	0.7	53.1	783.0	196.4
	Non-permitted	85.6	297.2	134.0	3.0	261.6	2,571.1	1,855.9
Mobile	On-Road	56.1	294.8	270.9	7.5	2,920.8	354.8	311.8
	Off-road	22.9	24.9	1,105.8	83.3	3,889.9	399.3	376.8
TOTAL		240.9	731.2	1,571.6	94.5	7,125.4	4,108.2	2,740.9
Percent change from 2021		-14.4%	+1.1%	-29.5%	+14.8 %	-36.4%	-5.5%	-7.3%

Toxic Air Contaminants (TACs)

This section provides a comparison between toxic air contaminants (TAC) emission levels for the 2021 baseline (Table D-6) and forecasted years 2031 (Table D-7) and 2036 (Table D-8). Comparisons are provided for all TACs combined and for toxicity-weight emissions (TWE). As explained in the Plan Chapter 5, toxicity weighting provides a way of accounting for the relative toxicities of carcinogens (cancer TWE) and TACs that cause other kinds of chronic health effects (chronic TWE). As shown in the last row of Table 7, total TAC emissions are forecast to decrease by 3.9% between 2021 and 2031, and a similar reduction of 5.4% is anticipated for chronic TWE. These changes are associated with reductions in mobile source emissions due to regulatory impacts and fleet turnover. For cancer TWE, which are dominated by diesel particulate matter (DPM) emissions, anticipated reductions are much larger (42.8%) due to statewide regulations targeting diesel-fueled vehicles and equipment.

Emissions for 2036 in Table D-8 show a similar pattern, with forecasted reductions relative to 2021 of 2.9% for total TACs and 5.2% for chronic TWE. Cancer TWE emissions are forecast to decrease much more sharply (47.5%) between 2031 and 2036, which is again due to regulations targeting diesel-fueled vehicles and equipment.

Table D-6: East Oakland 2021 TAC emissions by source sector.

Source Type	Source Sector	Total TAC mass (lbs)	Cancer TWE	Chronic TWE
Stationary	Permitted	38,107	1,569	28
	Non-permitted	1,216,726	11,543	374
Mobile	On-Road	458,238	70,971	738
	Off-road	568,864	26,872	420
TOTAL		2,281,935	110,955	1,560

Table D-7: East Oakland 2031 TAC emissions by source sector.

Source Type	Source Sector	Total TAC mass (lbs)	Cancer TWE	Chronic TWE
Stationary	Permitted	38,107	1,569	28
	Non-permitted	1,329,021	12,975	405
Mobile	On-Road	502,305	13,232	327
	Off-road	324,213	35,694	715
TOTAL		2,193,646	63,470	1,475

Source Type	Source Sector	Total TAC mass (lbs)	Cancer TWE	Chronic TWE
Percent change from 2021		-3.9%	-42.8%	-5.4%

Table D-8: East Oakland 2036 TAC emissions by source sector.

Source Type	Source Sector	Total TAC mass (lbs)	Cancer TWE	Chronic TWE
Stationary	Permitted	38,107	1,569	28
	Non-permitted	1,362,151	13,513	399
Mobile	On-Road	502,140	12,251	318
	Off-road	313,868	30,909	734
TOTAL		2,216,265	58,243	1,479
Percent change from 2021		-2.9%	-47.5%	-5.2%

Emissions Tracking

Though it is difficult to do an up-front estimate of the impact of Plan actions, it is anticipated that implementation of the Plan will bring about additional emissions reductions, resulting in even lower future year emissions than the ones presented in this appendix. When implementation has been underway for 5 years, a new 2031 emissions inventory will be developed to track progress in achieving emissions reductions. That updated 2031 inventory will then be compared to the forecasts presented here.

Appendix E-1: Air Quality Complaints in East Oakland (2021-2024)

Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
245412	P2412	NONE	Oakland	94606	Odor	1/11/2021
245598	A0062	AB&I Foundry	Oakland	94621	Odor	1/11/2021
245400	Z8489	Building	Oakland	94619	Asbestos	1/11/2021
245423	A0062	AB&I Foundry	Oakland	94621	Odor	1/12/2021
245429	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245430	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245435	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245433	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245431	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245436	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245432	P3270	NONE	Oakland	94601	Odor	1/13/2021
245452	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245455	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245466	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245439	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245438	A0062	AB&I Foundry	Oakland	94621	Odor	1/13/2021
245468	A0062	AB&I Foundry	Oakland	94621	Odor	1/14/2021
245458	A0062	AB&I Foundry	Oakland	94621	Odor	1/14/2021
245459	A0062	AB&I Foundry	Oakland	94621	Odor	1/14/2021
245504	Z8509	SFD	Oakland	94605	Illegal Fire	1/15/2021
245580	A0062	AB&I Foundry	Oakland	94621	Odor	1/21/2021
245570	V0820	NONE	Oakland	94619	Odor	1/21/2021
245576	A0062	AB&I Foundry	Oakland	94621	Odor	1/21/2021
245571	Z8360	NONE	Oakland	94619	Odor	1/21/2021
245573	A0062	AB&I Foundry	Oakland	94621	Odor	1/21/2021
245586	A0062	AB&I Foundry	Oakland	94621	Odor	1/21/2021
245579	A0062	AB&I Foundry	Oakland	94621	Odor	1/21/2021

Abbreviations: MFD- Multi-family Dwelling, NONE- No Site Name, NULL- No Alleged Site Number, SFD- Single Family Dwelling

Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
245581	A0062	AB&I Foundry	Oakland	94621	Odor	1/21/2021
245577	A0062	AB&I Foundry	Oakland	94621	Odor	1/21/2021
245575	Z8184	NONE	Oakland	94619	Odor	1/21/2021
245589	A0062	AB&I Foundry	Oakland	94621	Odor	1/21/2021
245600	A0062	AB&I Foundry	Oakland	94621	Odor	1/22/2021
245612	P3270	NONE	Oakland	94601	Odor	1/26/2021
245613	Z8543	NONE	Oakland	94619	Odor	1/26/2021
245627	Z8122	Scargo Labs	Oakland	94606	Odor	1/29/2021
245637	Z8562	James E Robert Obayashi Corp	Oakland	94606	Odor	1/30/2021
245649	A0062	AB&I Foundry	Oakland	94621	Odor	1/31/2021
245640	A0062	AB&I Foundry	Oakland	94621	Odor	2/1/2021
245641	Z8564	SFD	Oakland	94606	Dust/Particulates	2/1/2021
245650	A0062	AB&I Foundry	Oakland	94621	Odor	2/1/2021
245651	A0062	AB&I Foundry	Oakland	94621	Odor	2/1/2021
245648	Z8122	Scargo Labs	Oakland	94606	Odor	2/1/2021
245695	Z8607	SFD	Oakland	94619	Illegal Fire	2/4/2021
245703	V0820	NONE	Oakland	94619	Odor	2/5/2021
245708	A0062	AB&I Foundry	Oakland	94621	Odor	2/5/2021
245707	Z8184	NONE	Oakland	94619	Odor	2/5/2021
245738	A0062	AB&I Foundry	Oakland	94621	Odor	2/8/2021
245740	A0062	AB&I Foundry	Oakland	94621	Odor	2/8/2021
245746	A0062	AB&I Foundry	Oakland	94621	Odor	2/8/2021
245769	Z8635	MFD	Oakland	94605	Asbestos	2/10/2021
245776	Z8637	NONE	Oakland	94621	Odor	2/10/2021
245767	A0062	AB&I Foundry	Oakland	94621	Odor	2/10/2021
245807	A0062	AB&I Foundry	Oakland	94621	Odor	2/16/2021
245814	A0062	AB&I Foundry	Oakland	94621	Odor	2/17/2021
245816	A0062	AB&I Foundry	Oakland	94621	Odor	2/17/2021
245813	A0062	AB&I Foundry	Oakland	94621	Odor	2/17/2021

Abbreviations: MFD- Multi-family Dwelling, NONE- No Site Name, NULL- No Alleged Site Number, SFD- Single Family Dwelling

Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
245815	A0062	AB&I Foundry	Oakland	94621	Odor	2/17/2021
245861	A0062	AB&I Foundry	Oakland	94621	Odor	2/23/2021
245936	Z8713	Brooklyn Basin Parcel C	Oakland	94606	Odor	2/25/2021
245945	A0062	AB&I Foundry	Oakland	94621	Odor	3/1/2021
245987	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245980	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245984	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245998	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245991	V0820	NONE	Oakland	94619	Odor	3/3/2021
245981	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245982	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245989	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245985	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245986	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245990	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245995	V8138	NONE	Oakland	94602	Odor	3/3/2021
245993	P8267	NONE	Oakland	94605	Odor	3/3/2021
245992	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
245994	V0820	NONE	Oakland	94619	Odor	3/3/2021
246011	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
246002	Z7960	NONE	Oakland	94621	Odor	3/3/2021
246004	A0062	AB&I Foundry	Oakland	94621	Odor	3/3/2021
246007	A0062	AB&I Foundry	Oakland	94621	Odor	3/4/2021
246010	V0820	NONE	Oakland	94619	Odor	3/4/2021
246025	A0062	AB&I Foundry	Oakland	94621	Odor	3/8/2021
246031	A0062	AB&I Foundry	Oakland	94621	Odor	3/8/2021
246036	A0062	AB&I Foundry	Oakland	94621	Odor	3/9/2021
246043	A0062	AB&I Foundry	Oakland	94621	Odor	3/9/2021
246037	Z8360	NONE	Oakland	94619	Odor	3/9/2021

Abbreviations: MFD- Multi-family Dwelling, NONE- No Site Name, NULL- No Alleged Site Number, SFD- Single Family Dwelling

Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
246039	V0820	NONE	Oakland	94619	Odor	3/9/2021
246038	A0062	AB&I Foundry	Oakland	94621	Odor	3/9/2021
246041	V0820	NONE	Oakland	94619	Odor	3/9/2021
246045	A0062	AB&I Foundry	Oakland	94621	Odor	3/9/2021
246046	A0062	AB&I Foundry	Oakland	94621	Odor	3/9/2021
246047	A0062	AB&I Foundry	Oakland	94621	Odor	3/9/2021
246051	Z8777	MFD	Oakland	94602	Asbestos	3/10/2021
246053	A0062	AB&I Foundry	Oakland	94621	Odor	3/10/2021
246057	Z8779	NONE	Oakland	94619	Odor	3/10/2021
246054	A0062	AB&I Foundry	Oakland	94621	Odor	3/10/2021
246055	A0062	AB&I Foundry	Oakland	94621	Odor	3/10/2021
246056	A0062	AB&I Foundry	Oakland	94621	Odor	3/10/2021
246063	Z8781	Two Star Market	Oakland	94602	Illegal Fire	3/10/2021
246079	Z8777	MFD	Oakland	94602	Asbestos	3/12/2021
246077	N2807	Maxwell Park Neighborhood	Oakland	94619	Odor	3/12/2021
246089	A0062	AB&I Foundry	Oakland	94621	Odor	3/16/2021
246095	Z8801	None	Oakland	94621	Illegal Fire	3/17/2021
246099	A0062	AB&I Foundry	Oakland	94621	Odor	3/17/2021
246119	Z8819	SFD	Oakland	94601	Dust/Particulates	3/23/2021
246129	Z8824	NONE	Oakland	94601	Odor	3/24/2021
246122	A0073	Gallagher & Burk, Inc	Oakland	94601	Odor	3/24/2021
246126	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2021
246123	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2021
246134	Z8827	NONE	Oakland	94605	Odor	3/24/2021
246125	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2021
246130	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2021
246127	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2021
246140	A0073	Gallagher & Burk, Inc	Oakland	94601	Odor	3/25/2021
246151	A0062	AB&I Foundry	Oakland	94621	Odor	3/29/2021

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
246155	A0062	AB&I Foundry	Oakland	94621	Odor	3/29/2021
246170	B8172	Gallagher & Burk	Oakland	94601	Odor	3/31/2021
246172	P8267	NONE	Oakland	94605	Odor	3/31/2021
246184	Z8858	SFD	Oakland	94602	Illegal Fire	4/1/2021
246190	K2551	SFD	Oakland	94601	Odor	4/1/2021
246224	A0062	AB&I Foundry	Oakland	94621	Odor	4/7/2021
246226	A2743	CEMEX Construction Materials Pacific, LLC	Oakland	94606	Dust/Particulates	4/7/2021
246229	Z8819	SFD	Oakland	94601	Dust/Particulates	4/7/2021
246243	A0062	AB&I Foundry	Oakland	94621	Odor	4/8/2021
246236	A0062	AB&I Foundry	Oakland	94621	Odor	4/8/2021
246232	Z8895	NONE	Oakland	94601	Odor	4/8/2021
246231	Z8894	NONE	Oakland	94619	Odor	4/8/2021
246233	A0062	AB&I Foundry	Oakland	94621	Odor	4/8/2021
246234	A0062	AB&I Foundry	Oakland	94621	Odor	4/8/2021
246237	A0062	AB&I Foundry	Oakland	94621	Odor	4/8/2021
246240	A0062	AB&I Foundry	Oakland	94621	Odor	4/8/2021
246241	A0062	AB&I Foundry	Oakland	94621	Odor	4/8/2021
246259	Z8905	NONE	Oakland	94601	Odor	4/12/2021
246262	A0062	AB&I Foundry	Oakland	94621	Odor	4/12/2021
246272	A0062	AB&I Foundry	Oakland	94621	Odor	4/13/2021
246273	Z8910	NONE	Oakland	94603	Odor	4/13/2021
246274	A0062	AB&I Foundry	Oakland	94621	Odor	4/13/2021
246278	A0062	AB&I Foundry	Oakland	94621	Odor	4/13/2021
246292	A0062	AB&I Foundry	Oakland	94621	Odor	4/14/2021
246283	A0062	AB&I Foundry	Oakland	94621	Odor	4/14/2021
246284	A0062	AB&I Foundry	Oakland	94621	Odor	4/14/2021
246299	Z8931	Auto Shop	Oakland	94603	Odor	4/15/2021
246302	Z8933	NONE	Oakland	94601	Excessive Idling	4/16/2021
246308	A0062	AB&I Foundry	Oakland	94621	Odor	4/19/2021

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
246310	A0062	AB&I Foundry	Oakland	94621	Odor	4/19/2021
246311	Z8938	None	Oakland	94605	Odor	4/19/2021
246321	Z8944	NONE	Oakland	94619	Odor	4/20/2021
246326	A0062	AB&I Foundry	Oakland	94621	Odor	4/21/2021
246328	A0062	AB&I Foundry	Oakland	94621	Odor	4/21/2021
246332	A0062	AB&I Foundry	Oakland	94621	Odor	4/22/2021
246354	Z9093	Auto Body Custom Shop	Oakland	94621	Other	4/27/2021
246358	A0062	AB&I Foundry	Oakland	94621	Odor	4/27/2021
246362	Z8824	NONE	Oakland	94601	Odor	4/28/2021
246363	A0062	AB&I Foundry	Oakland	94621	Odor	4/28/2021
246389	Z8995	Restaurants	Oakland	94621	Illegal Fire	4/30/2021
246388	Z8994	NYC Buffet	Oakland	94601	Odor	5/1/2021
246396	Z7270	SFD	Oakland	94603	Odor	5/3/2021
246398	A0062	AB&I Foundry	Oakland	94621	Odor	5/3/2021
246399	Z9008	NONE	Oakland	94603	Odor	5/3/2021
246416	A0062	AB&I Foundry	Oakland	94621	Odor	5/5/2021
246420	Z9018	NONE	Oakland	94621	Odor	5/5/2021
246413	A0062	AB&I Foundry	Oakland	94621	Odor	5/5/2021
246414	A0062	AB&I Foundry	Oakland	94621	Odor	5/5/2021
246426	A0062	AB&I Foundry	Oakland	94621	Odor	5/6/2021
246519	A0062	AB&I Foundry	Oakland	94621	Odor	5/14/2021
246524	A0062	AB&I Foundry	Oakland	94621	Odor	5/14/2021
246529	A0062	AB&I Foundry	Oakland	94621	Odor	5/17/2021
246532	A0062	AB&I Foundry	Oakland	94621	Odor	5/18/2021
246535	A0062	AB&I Foundry	Oakland	94621	Odor	5/18/2021
246542	A0062	AB&I Foundry	Oakland	94621	Odor	5/19/2021
246561	Z9105	NONE	Oakland	94602	Odor	5/24/2021
246563	A0062	AB&I Foundry	Oakland	94621	Odor	5/24/2021
246564	A0062	AB&I Foundry	Oakland	94621	Odor	5/24/2021

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
246584	A0062	AB&I Foundry	Oakland	94621	Odor	5/25/2021
246574	A0062	AB&I Foundry	Oakland	94621	Odor	5/25/2021
246576	A0062	AB&I Foundry	Oakland	94621	Odor	5/25/2021
246578	Z9121	NONE	Oakland	94601	Odor	5/25/2021
246616	Z9147	NONE	Oakland	94601	Dust/Particulates	5/26/2021
246619	Z7960	None	Oakland	94621	Odor	5/27/2021
246651	A0062	AB&I Foundry	Oakland	94621	Odor	6/1/2021
246664	A0062	AB&I Foundry	Oakland	94621	Odor	6/2/2021
246676	Z9180	None	Oakland	94606	Odor	6/3/2021
246678	Z6758	SFD	Oakland	94603	Illegal Fire	6/3/2021
246681	Z9183	Bombera Restaurant	Oakland	94602	Illegal Fire	6/4/2021
246692	Z9190	SFD	Oakland	94601	Asbestos	6/7/2021
246695	A0062	AB&I Foundry	Oakland	94621	Odor	6/7/2021
246706	A0062	AB&I Foundry	Oakland	94621	Odor	6/9/2021
246709	A0062	AB&I Foundry	Oakland	94621	Odor	6/9/2021
246712	Z9201	C.P. Bannon Mortuary	Oakland	94621	Odor	6/9/2021
246717	A0062	AB&I Foundry	Oakland	94621	Odor	6/10/2021
246735	A0062	AB&I Foundry	Oakland	94621	Odor	6/15/2021
246736	A0062	AB&I Foundry	Oakland	94621	Odor	6/15/2021
246742	A0062	AB&I Foundry	Oakland	94621	Odor	6/16/2021
246743	A0062	AB&I Foundry	Oakland	94621	Odor	6/16/2021
246771	A6104	ARCO Petroleum Products	Oakland	94605	Gasoline Dispensing Facility	6/17/2021
246764	P3270	NONE	Oakland	94601	Odor	6/17/2021
246765	Z9226	NONE	Oakland	94601	Odor	6/17/2021
246773	A0062	AB&I Foundry	Oakland	94621	Odor	6/17/2021
246769	P3270	NONE	Oakland	94601	Odor	6/17/2021
246766	A0062	AB&I Foundry	Oakland	94621	Odor	6/17/2021
246767	P3270	NONE	Oakland	94601	Odor	6/17/2021
246768	A0062	AB&I Foundry	Oakland	94621	Odor	6/17/2021

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
246772	A0062	AB&I Foundry	Oakland	94621	Odor	6/17/2021
246770	A0062	AB&I Foundry	Oakland	94621	Odor	6/17/2021
246775	Z9228	None	Oakland	94619	Odor	6/17/2021
246782	A0062	AB&I Foundry	Oakland	94621	Odor	6/17/2021
246777	A0062	AB&I Foundry	Oakland	94621	Odor	6/17/2021
246776	A0062	AB&I Foundry	Oakland	94621	Odor	6/17/2021
246781	A0062	AB&I Foundry	Oakland	94621	Odor	6/17/2021
246863	A0062	AB&I Foundry	Oakland	94621	Odor	6/28/2021
246859	A0062	AB&I Foundry	Oakland	94621	Odor	6/28/2021
246862	A0062	AB&I Foundry	Oakland	94621	Odor	6/28/2021
246858	A0062	AB&I Foundry	Oakland	94621	Odor	6/28/2021
246875	A0062	AB&I Foundry	Oakland	94621	Odor	6/28/2021
246869	Z9105	NONE	Oakland	94602	Odor	6/28/2021
246872	A0062	AB&I Foundry	Oakland	94621	Odor	6/29/2021
246876	A0062	AB&I Foundry	Oakland	94621	Odor	6/29/2021
246881	Z9297	Shell	Oakland	94602	Gasoline Dispensing Facility	6/29/2021
246882	Z9299	SFD	Oakland	94619	Odor	6/29/2021
246887	A0062	AB&I Foundry	Oakland	94621	Odor	6/30/2021
246886	Z9310	SFD	Oakland	94619	Odor	6/30/2021
246891	P8267	NONE	Oakland	94605	Odor	6/30/2021
246961	A0062	AB&I Foundry	Oakland	94621	Odor	7/1/2021
246960	A0062	AB&I Foundry	Oakland	94621	Odor	7/1/2021
247027	A0062	AB&I Foundry	Oakland	94621	Odor	7/6/2021
247028	Z9349	NONE	Oakland	94605	Odor	7/6/2021
247032	A0062	AB&I Foundry	Oakland	94621	Odor	7/6/2021
247037	Z9355	NONE	Oakland	94603	Odor	7/7/2021
247036	A0062	AB&I Foundry	Oakland	94621	Odor	7/7/2021
247040	A0062	AB&I Foundry	Oakland	94621	Odor	7/7/2021
247039	A0062	AB&I Foundry	Oakland	94621	Odor	7/7/2021

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
247044	Z3844	NONE	Oakland	94606	Odor	7/8/2021
247075	A0062	AB&I Foundry	Oakland	94621	Odor	7/12/2021
247076	A0062	AB&I Foundry	Oakland	94621	Odor	7/12/2021
247089	Z9388	Safeway	Oakland	94602	Excessive Idling	7/12/2021
247088	A0062	AB&I Foundry	Oakland	94621	Odor	7/13/2021
247097	A0062	AB&I Foundry	Oakland	94621	Odor	7/14/2021
247108	A0062	AB&I Foundry	Oakland	94621	Odor	7/14/2021
247098	A0062	AB&I Foundry	Oakland	94621	Odor	7/14/2021
247099	Z9399	SFD	Oakland	94605	Dust/Particulates	7/14/2021
247100	A0062	AB&I Foundry	Oakland	94621	Odor	7/14/2021
247109	Z6758	SFD	Oakland	94603	Illegal Fire	7/14/2021
247114	A0062	AB&I Foundry	Oakland	94621	Odor	7/15/2021
247116	A0062	AB&I Foundry	Oakland	94621	Odor	7/15/2021
247117	Z9408	SFD	Oakland	94606	Asbestos	7/15/2021
247222	A0062	AB&I Foundry	Oakland	94621	Odor	7/20/2021
247219	Z9435	NONE	Oakland	94621	Odor	7/21/2021
247223	Z9439	NONE	Oakland	94619	Odor	7/21/2021
247274	W8339	NONE	Oakland	94603	Odor	7/26/2021
247286	Z9464	NONE	Oakland	94621	Odor	7/27/2021
247281	Z9462	NONE	Oakland	94606	Excessive Idling	7/27/2021
247283	Z7960	NONE	Oakland	94621	Odor	7/27/2021
247292	Z9465	Generator	Oakland	94601	Odor	7/28/2021
247296	P8390	NONE	Oakland	94621	Odor	7/28/2021
247294	A0062	AB&I Foundry	Oakland	94621	Odor	7/28/2021
247349	Z9497	MFD	Oakland	94601	Illegal Fire	8/3/2021
247549	Z9183	Bombera Restaurant	Oakland	94602	Illegal Fire	8/7/2021
247399	A0062	AB&I Foundry	Oakland	94621	Odor	8/9/2021
247486	A0062	AB&I Foundry	Oakland	94621	Odor	8/12/2021
247531	A0062	AB&I Foundry	Oakland	94621	Odor	8/17/2021

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
247533	A0062	AB&I Foundry	Oakland	94621	Odor	8/17/2021
247554	A0062	AB&I Foundry	Oakland	94621	Odor	8/19/2021
247572	A0062	AB&I Foundry	Oakland	94621	Odor	8/23/2021
247581	A0062	AB&I Foundry	Oakland	94621	Odor	8/24/2021
247597	Z9587	SFD	Oakland	94603	Asbestos	8/25/2021
247593	A0062	AB&I Foundry	Oakland	94621	Odor	8/26/2021
247591	A0062	AB&I Foundry	Oakland	94621	Odor	8/26/2021
247592	A0062	AB&I Foundry	Oakland	94621	Odor	8/26/2021
247595	A0062	AB&I Foundry	Oakland	94621	Odor	8/26/2021
247654	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247618	P3270	NONE	Oakland	94601	Odor	8/27/2021
247617	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247619	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247621	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247622	Z8106	NONE	Oakland	94619	Odor	8/27/2021
247623	Z3363	NONE	Oakland	94601	Odor	8/27/2021
247625	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247630	Z7960	None	Oakland	94621	Odor	8/27/2021
247620	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247628	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247629	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247626	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247627	Z8070	NONE	Oakland	94619	Odor	8/27/2021
247641	A0062	AB&I Foundry	Oakland	94621	Odor	8/27/2021
247667	Z9603	SFD	Oakland	94605	Odor	8/30/2021
247685	A0062	AB&I Foundry	Oakland	94621	Odor	9/1/2021
247732	A0062	AB&I Foundry	Oakland	94621	Odor	9/8/2021
247754	A0062	AB&I Foundry	Oakland	94621	Odor	9/9/2021
247825	A0062	AB&I Foundry	Oakland	94621	Odor	9/14/2021

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
247830	A0062	AB&I Foundry	Oakland	94621	Odor	9/14/2021
247844	A0062	AB&I Foundry	Oakland	94621	Odor	9/15/2021
247862	Z9677	NONE	Oakland	94603	Odor	9/17/2021
247891	P2412	NONE	Oakland	94606	Odor	9/20/2021
247887	A0062	AB&I Foundry	Oakland	94621	Odor	9/20/2021
247889	A0062	AB&I Foundry	Oakland	94621	Odor	9/21/2021
247890	A0062	AB&I Foundry	Oakland	94621	Odor	9/21/2021
247907	W8339	NONE	Oakland	94603	Odor	9/22/2021
247900	A0062	AB&I Foundry	Oakland	94621	Odor	9/22/2021
247966	A0062	AB&I Foundry	Oakland	94621	Odor	9/29/2021
247977	A0062	AB&I Foundry	Oakland	94621	Odor	9/30/2021
248022	A0062	AB&I Foundry	Oakland	94621	Odor	10/4/2021
248021	A0062	AB&I Foundry	Oakland	94621	Odor	10/4/2021
248020	A0062	AB&I Foundry	Oakland	94621	Odor	10/4/2021
248024	A0062	AB&I Foundry	Oakland	94621	Odor	10/4/2021
248025	A0062	AB&I Foundry	Oakland	94621	Odor	10/4/2021
248041	A0062	AB&I Foundry	Oakland	94621	Odor	10/6/2021
248052	A0062	AB&I Foundry	Oakland	94621	Odor	10/10/2021
248071	Z7072	NONE	Oakland	94606	Odor	10/13/2021
248072	A0062	AB&I Foundry	Oakland	94621	Odor	10/13/2021
248073	A0062	AB&I Foundry	Oakland	94621	Odor	10/13/2021
248080	Z9768	NONE	Oakland	94601	Dust/Particulates	10/14/2021
248079	Z9767	NONE	Oakland	94621	Odor	10/14/2021
248083	Z9770	Lake Merritt Gasoline GDF	Oakland	94601	Gasoline Dispensing Facility	10/14/2021
248090	Z8328	NONE	Oakland	94601	Odor	10/15/2021
248089	Z9435	NONE	Oakland	94621	Odor	10/15/2021
248093	Z9779	Bombera Restaurant	Oakland	94602	Illegal Fire	10/15/2021
248097	Z9781	NONE	Oakland	94619	Odor	10/15/2021
248124	A0062	AB&I Foundry	Oakland	94621	Odor	10/19/2021

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
248131	A0062	AB&I Foundry	Oakland	94621	Odor	10/19/2021
248126	A0062	AB&I Foundry	Oakland	94621	Odor	10/19/2021
248128	Z8070	NONE	Oakland	94619	Odor	10/19/2021
248129	Z9798	NONE	Oakland	94601	Odor	10/19/2021
248137	Z9803	None	Oakland	94601	Odor	10/20/2021
248139	A0062	AB&I Foundry	Oakland	94621	Odor	10/20/2021
248192	A0062	AB&I Foundry	Oakland	94621	Odor	10/26/2021
248195	Z9822	NONE	Oakland	94601	Odor	10/26/2021
248197	Z9823	NONE	Oakland	94601	Odor	10/27/2021
248198	Z9824	NONE	Oakland	94601	Odor	10/27/2021
248199	A0062	AB&I Foundry	Oakland	94621	Odor	10/27/2021
248212	A0062	AB&I Foundry	Oakland	94621	Odor	10/28/2021
248244	A0062	AB&I Foundry	Oakland	94621	Odor	11/1/2021
248265	Z9856	NONE	Oakland	94601	Odor	11/3/2021
248270	A0062	AB&I Foundry	Oakland	94621	Odor	11/3/2021
248273	A0062	AB&I Foundry	Oakland	94621	Odor	11/3/2021
248283	A0062	AB&I Foundry	Oakland	94621	Odor	11/4/2021
248348	A0062	AB&I Foundry	Oakland	94621	Odor	11/11/2021
248350	A0062	AB&I Foundry	Oakland	94621	Odor	11/12/2021
248376	A0062	AB&I Foundry	Oakland	94621	Odor	11/14/2021
248374	A0062	AB&I Foundry	Oakland	94621	Odor	11/15/2021
248379	A0062	AB&I Foundry	Oakland	94621	Odor	11/15/2021
248382	A0062	AB&I Foundry	Oakland	94621	Odor	11/15/2021
248384	A0062	AB&I Foundry	Oakland	94621	Odor	11/15/2021
248386	A0062	AB&I Foundry	Oakland	94621	Odor	11/15/2021
250835	FB173	Faultline Artspace	Oakland	94601	Other	11/16/2021
248422	A0062	AB&I Foundry	Oakland	94621	Odor	11/18/2021
248423	A0062	AB&I Foundry	Oakland	94621	Odor	11/18/2021
248444	Z9931	NONE	Oakland	94601	Odor	11/20/2021

Abbreviations: MFD- Multi-family Dwelling, NONE- No Site Name, NULL- No Alleged Site Number, SFD- Single Family Dwelling

Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
248448	A0062	AB&I Foundry	Oakland	94621	Odor	11/22/2021
248450	A0062	AB&I Foundry	Oakland	94621	Odor	11/22/2021
248493	A0062	AB&I Foundry	Oakland	94621	Odor	11/29/2021
248495	A0062	AB&I Foundry	Oakland	94621	Odor	11/29/2021
248526	A0062	AB&I Foundry	Oakland	94621	Odor	11/29/2021
248512	FA010	NONE	Oakland	94619	Odor	11/29/2021
248515	FA011	NONE	Oakland	94601	Odor	11/29/2021
248508	A0062	AB&I Foundry	Oakland	94621	Odor	11/29/2021
248509	A0062	AB&I Foundry	Oakland	94621	Odor	11/29/2021
248510	A0062	AB&I Foundry	Oakland	94621	Odor	11/29/2021
248513	A0062	AB&I Foundry	Oakland	94621	Odor	11/29/2021
248517	A0062	AB&I Foundry	Oakland	94621	Odor	11/29/2021
248530	FA015	NONE	Oakland	94619	Odor	11/29/2021
248514	A0062	AB&I Foundry	Oakland	94621	Odor	11/29/2021
248523	FA014	NONE	Oakland	94605	Odor	11/29/2021
248535	FA017	NONE	Oakland	94619	Odor	11/29/2021
248539	A0062	AB&I Foundry	Oakland	94621	Odor	11/30/2021
248538	A0062	AB&I Foundry	Oakland	94621	Odor	11/30/2021
248540	A0062	AB&I Foundry	Oakland	94621	Odor	11/30/2021
248550	A0062	AB&I Foundry	Oakland	94621	Odor	11/30/2021
248555	FA025	NONE	Oakland	94606	Odor	11/30/2021
248556	Z8779	NONE	Oakland	94619	Odor	12/1/2021
248577	A0062	AB&I Foundry	Oakland	94621	Odor	12/1/2021
248573	A0062	AB&I Foundry	Oakland	94621	Odor	12/1/2021
248576	A0062	AB&I Foundry	Oakland	94621	Odor	12/1/2021
248584	A0062	AB&I Foundry	Oakland	94621	Odor	12/2/2021
248587	A0062	AB&I Foundry	Oakland	94621	Odor	12/2/2021
248628	A0062	AB&I Foundry	Oakland	94621	Odor	12/7/2021
248637	Z9435	NONE	Oakland	94621	Odor	12/9/2021

Abbreviations: MFD- Multi-family Dwelling, NONE- No Site Name, NULL- No Alleged Site Number, SFD- Single Family Dwelling

Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
248665	FA072	NONE	Oakland	94601	Odor	12/13/2021
248657	A0062	AB&I Foundry	Oakland	94621	Odor	12/13/2021
248661	A0062	AB&I Foundry	Oakland	94621	Odor	12/13/2021
248658	A0062	AB&I Foundry	Oakland	94621	Odor	12/13/2021
248660	A0062	AB&I Foundry	Oakland	94621	Odor	12/13/2021
248663	A0062	AB&I Foundry	Oakland	94621	Odor	12/13/2021
249401	FA394	Meyers Sandblasting	Oakland	94603	Dust/Particulates	12/20/2021
248713	A0062	AB&I Foundry	Oakland	94621	Odor	12/23/2021
248874	FA172	Railroad Tracks behind house	Oakland	94603	Odor	1/14/2022
248883	FA173	NONE	Oakland	94602	Odor	1/15/2022
248895	A0062	AB&I Foundry	Oakland	94621	Odor	1/17/2022
248897	A0062	AB&I Foundry	Oakland	94621	Odor	1/18/2022
248910	A0062	AB&I Foundry	Oakland	94621	Odor	1/19/2022
248912	A0062	AB&I Foundry	Oakland	94621	Odor	1/19/2022
248941	Z7265	NONE	Oakland	94601	Odor	1/20/2022
248942	V8138	NONE	Oakland	94602	Odor	1/20/2022
248916	P8390	NONE	Oakland	94621	Odor	1/20/2022
248922	Z9349	NONE	Oakland	94605	Odor	1/20/2022
248929	A0062	AB&I Foundry	Oakland	94621	Odor	1/20/2022
248931	A0062	AB&I Foundry	Oakland	94621	Odor	1/20/2022
248944	P3270	NONE	Oakland	94601	Odor	1/20/2022
248973	FA195	NONE	Oakland	94605	Odor	1/24/2022
248978	A0062	AB&I Foundry	Oakland	94621	Odor	1/25/2022
248979	A0062	AB&I Foundry	Oakland	94621	Odor	1/25/2022
248990	FA010	NONE	Oakland	94619	Odor	1/26/2022
248992	FA173	NONE	Oakland	94602	Odor	1/26/2022
248989	FA010	NONE	Oakland	94619	Odor	1/26/2022
249026	FA217	NONE	Oakland	94619	Odor	1/26/2022
249030	A0062	AB&I Foundry	Oakland	94621	Odor	1/27/2022

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
249010	A0062	AB&I Foundry	Oakland	94621	Odor	1/27/2022
249011	A0062	AB&I Foundry	Oakland	94621	Odor	1/27/2022
249019	A0062	AB&I Foundry	Oakland	94621	Odor	1/27/2022
249012	A0062	AB&I Foundry	Oakland	94621	Odor	1/27/2022
249064	A0062	AB&I Foundry	Oakland	94621	Odor	1/31/2022
249065	A0062	AB&I Foundry	Oakland	94621	Odor	1/31/2022
249066	A0062	AB&I Foundry	Oakland	94621	Odor	1/31/2022
249067	A0062	AB&I Foundry	Oakland	94621	Odor	1/31/2022
249068	A0062	AB&I Foundry	Oakland	94621	Odor	1/31/2022
249069	Z9781	NONE	Oakland	94619	Odor	1/31/2022
249070	FA232	NONE	Oakland	94605	Odor	1/31/2022
249071	A0062	AB&I Foundry	Oakland	94621	Odor	1/31/2022
249073	FA233	SFD	Oakland	94603	Odor	1/31/2022
249085	A0062	AB&I Foundry	Oakland	94621	Odor	2/1/2022
249105	Z1885	NONE	Oakland	94601	Odor	2/3/2022
249100	A0062	AB&I Foundry	Oakland	94621	Odor	2/3/2022
249109	P8390	NONE	Oakland	94621	Odor	2/3/2022
249106	FA258	NONE	Oakland	94605	Odor	2/3/2022
249110	FA260	NONE	Oakland	94601	Odor	2/3/2022
249135	FA264	NONE	Oakland	94602	Odor	2/7/2022
249151	A0062	AB&I Foundry	Oakland	94621	Odor	2/8/2022
249152	A0062	AB&I Foundry	Oakland	94621	Odor	2/8/2022
249153	A0062	AB&I Foundry	Oakland	94621	Odor	2/8/2022
249154	FA272	NONE	Oakland	94605	Odor	2/8/2022
249183	A0062	AB&I Foundry	Oakland	94621	Odor	2/10/2022
249212	A2743	CEMEX Construction Materials Pacific, LLC	Oakland	94606	Illegal Fire	2/11/2022
249241	A0062	AB&I Foundry	Oakland	94621	Odor	2/15/2022
249254	FA315	NONE	Oakland	94605	Odor	2/16/2022
249252	FA010	NONE	Oakland	94619	Odor	2/16/2022

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
249300	FA334	Bee Green Recycling and Supply	Oakland	94621	Dust/Particulates	2/19/2022
249332	FA011	NONE	Oakland	94601	Odor	2/24/2022
249335	A0062	AB&I Foundry	Oakland	94621	Odor	2/24/2022
249336	A0062	AB&I Foundry	Oakland	94621	Odor	2/24/2022
249347	FA352	NONE	Oakland	94602	Odor	2/25/2022
249370	FA011	NONE	Oakland	94601	Odor	2/28/2022
249374	FA362	NONE	Oakland	94602	Odor	2/28/2022
249386	Z9781	NONE	Oakland	94619	Odor	3/1/2022
249390	FA272	NONE	Oakland	94605	Odor	3/1/2022
249397	A0062	AB&I Foundry	Oakland	94621	Odor	3/2/2022
249395	FA011	NONE	Oakland	94601	Odor	3/2/2022
249399	FA393	NONE	Oakland	94605	Odor	3/2/2022
249400	A0062	AB&I Foundry	Oakland	94621	Odor	3/2/2022
249410	FA401	NONE	Oakland	94621	Illegal Fire	3/3/2022
249430	FA412	Business	Oakland	94601	Odor	3/7/2022
249439	A0062	AB&I Foundry	Oakland	94621	Odor	3/8/2022
249447	FA422	NONE	Oakland	94601	Odor	3/8/2022
249444	A0062	AB&I Foundry	Oakland	94621	Odor	3/8/2022
249443	A0062	AB&I Foundry	Oakland	94621	Odor	3/8/2022
249449	A0062	AB&I Foundry	Oakland	94621	Odor	3/8/2022
249455	A0062	AB&I Foundry	Oakland	94621	Odor	3/9/2022
249457	A0062	AB&I Foundry	Oakland	94621	Odor	3/9/2022
249461	FA427	NONE	Oakland	94605	Odor	3/9/2022
249485	A0062	AB&I Foundry	Oakland	94621	Odor	3/14/2022
249486	A0062	AB&I Foundry	Oakland	94621	Odor	3/14/2022
249495	A0062	AB&I Foundry	Oakland	94621	Odor	3/15/2022
249496	A0062	AB&I Foundry	Oakland	94621	Odor	3/15/2022
249503	A0062	AB&I Foundry	Oakland	94621	Odor	3/16/2022
249502	FA440	NONE	Oakland	94605	Odor	3/16/2022

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
249508	A0062	AB&I Foundry	Oakland	94621	Odor	3/17/2022
249509	FA014	NONE	Oakland	94605	Odor	3/17/2022
249510	A0062	AB&I Foundry	Oakland	94621	Odor	3/17/2022
249523	A0062	AB&I Foundry	Oakland	94621	Odor	3/19/2022
249589	FA485	NONE	Oakland	94605	Dust/Particulates	3/21/2022
249542	FA465	Oakland Cannery	Oakland	94621	Illegal Fire	3/22/2022
249545	A0062	AB&I Foundry	Oakland	94621	Odor	3/22/2022
249544	A0062	AB&I Foundry	Oakland	94621	Odor	3/22/2022
249547	FA465	Oakland Cannery	Oakland	94621	Illegal Fire	3/22/2022
249554	A0062	AB&I Foundry	Oakland	94621	Odor	3/22/2022
249561	FA233	SFD	Oakland	94603	Illegal Fire	3/23/2022
249571	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2022
249570	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2022
249572	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2022
249577	FA233	SFD	Oakland	94603	Illegal Fire	3/24/2022
249575	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2022
249576	A0062	AB&I Foundry	Oakland	94621	Odor	3/24/2022
249593	A0062	AB&I Foundry	Oakland	94621	Odor	3/28/2022
249592	A0062	AB&I Foundry	Oakland	94621	Odor	3/28/2022
249612	FA501	Autobody	Oakland	94606	Odor	3/29/2022
249611	FA500	SFD	Oakland	94601	Illegal Fire	3/29/2022
249613	A0062	AB&I Foundry	Oakland	94621	Odor	3/29/2022
249617	A0062	AB&I Foundry	Oakland	94621	Odor	3/30/2022
249618	A0062	AB&I Foundry	Oakland	94621	Odor	3/30/2022
249624	A0062	AB&I Foundry	Oakland	94621	Odor	3/30/2022
249647	A0062	AB&I Foundry	Oakland	94621	Odor	4/4/2022
249649	FA531	Construction	Oakland	94605	Dust/Particulates	4/4/2022
249651	A0062	AB&I Foundry	Oakland	94621	Odor	4/4/2022
249663	A0062	AB&I Foundry	Oakland	94621	Odor	4/5/2022

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
249662	FA544	NONE	Oakland	94601	Odor	4/5/2022
249666	A0062	AB&I Foundry	Oakland	94621	Odor	4/6/2022
249670	A0062	AB&I Foundry	Oakland	94621	Odor	4/6/2022
249674	FA552	NONE	Oakland	94601	Odor	4/6/2022
249676	A0062	AB&I Foundry	Oakland	94621	Odor	4/6/2022
249678	A0062	AB&I Foundry	Oakland	94621	Odor	4/6/2022
249677	A0062	AB&I Foundry	Oakland	94621	Odor	4/6/2022
249800	FA394	Meyers Sandblasting	Oakland	94603	Other	4/6/2022
249699	A0062	AB&I Foundry	Oakland	94621	Odor	4/7/2022
249695	FA014	NONE	Oakland	94605	Odor	4/7/2022
249728	A0062	AB&I Foundry	Oakland	94621	Odor	4/11/2022
249756	A0062	AB&I Foundry	Oakland	94621	Odor	4/14/2022
249804	A0062	AB&I Foundry	Oakland	94621	Odor	4/18/2022
249793	A0062	AB&I Foundry	Oakland	94621	Odor	4/19/2022
249794	A0062	AB&I Foundry	Oakland	94621	Odor	4/19/2022
249798	FA011	NONE	Oakland	94601	Odor	4/20/2022
249799	A0062	AB&I Foundry	Oakland	94621	Odor	4/20/2022
249813	FA630	NONE	Oakland	94605	Odor	4/24/2022
249820	A0062	AB&I Foundry	Oakland	94621	Odor	4/26/2022
249823	FA633	SFD	Oakland	94606	Dust/Particulates	4/26/2022
249822	A0062	AB&I Foundry	Oakland	94621	Odor	4/26/2022
249824	A0062	AB&I Foundry	Oakland	94621	Odor	4/26/2022
249827	A0062	AB&I Foundry	Oakland	94621	Odor	4/27/2022
249828	A0062	AB&I Foundry	Oakland	94621	Odor	4/27/2022
249838	Z9767	NONE	Oakland	94621	Odor	4/28/2022
249846	A0062	AB&I Foundry	Oakland	94621	Odor	4/30/2022
249848	FA648	NONE	Oakland	94601	Odor	4/30/2022
249854	FA651	NONE	Oakland	94621	Odor	5/2/2022
249865	A0062	AB&I Foundry	Oakland	94621	Odor	5/3/2022

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
249867	A0062	AB&I Foundry	Oakland	94621	Odor	5/4/2022
249871	FA663	SFD	Oakland	94601	Odor	5/4/2022
249873	A0062	AB&I Foundry	Oakland	94621	Odor	5/4/2022
249878	A0062	AB&I Foundry	Oakland	94621	Odor	5/5/2022
249884	FA666	None	Oakland	94602	Odor	5/5/2022
249881	A0062	AB&I Foundry	Oakland	94621	Odor	5/5/2022
249885	A0062	AB&I Foundry	Oakland	94621	Odor	5/5/2022
249915	A0062	AB&I Foundry	Oakland	94621	Odor	5/11/2022
249919	A0062	AB&I Foundry	Oakland	94621	Odor	5/11/2022
249921	A0062	AB&I Foundry	Oakland	94621	Odor	5/11/2022
249928	FA690	NONE	Oakland	94601	Odor	5/12/2022
249927	A0062	AB&I Foundry	Oakland	94621	Odor	5/12/2022
249929	A0062	AB&I Foundry	Oakland	94621	Odor	5/12/2022
249946	A0062	AB&I Foundry	Oakland	94621	Odor	5/16/2022
249953	FA663	SFD	Oakland	94601	Odor	5/17/2022
249958	FA233	SFD	Oakland	94603	Illegal Fire	5/18/2022
249963	A0062	AB&I Foundry	Oakland	94621	Odor	5/18/2022
249982	A0062	AB&I Foundry	Oakland	94621	Odor	5/23/2022
249983	A0062	AB&I Foundry	Oakland	94621	Odor	5/23/2022
249990	A0062	AB&I Foundry	Oakland	94621	Odor	5/24/2022
250003	FA663	SFD	Oakland	94601	Odor	5/24/2022
250014	A0062	AB&I Foundry	Oakland	94621	Odor	5/25/2022
250013	FA011	NONE	Oakland	94601	Odor	5/25/2022
250018	A0062	AB&I Foundry	Oakland	94621	Odor	5/25/2022
250019	A0062	AB&I Foundry	Oakland	94621	Odor	5/25/2022
250034	A0062	AB&I Foundry	Oakland	94621	Odor	5/31/2022
250035	FA663	SFD	Oakland	94601	Odor	5/31/2022
250044	A0062	AB&I Foundry	Oakland	94621	Odor	6/1/2022
250055	FA663	SFD	Oakland	94601	Odor	6/1/2022

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
250046	A0062	AB&I Foundry	Oakland	94621	Odor	6/1/2022
250054	A0062	AB&I Foundry	Oakland	94621	Odor	6/2/2022
250079	A0062	AB&I Foundry	Oakland	94621	Odor	6/6/2022
250084	A0062	AB&I Foundry	Oakland	94621	Odor	6/6/2022
250090	FA768	The Oakland Cannery	Oakland	94621	Odor	6/6/2022
250091	A0062	AB&I Foundry	Oakland	94621	Odor	6/7/2022
250092	FA010	NONE	Oakland	94619	Odor	6/7/2022
250093	A0062	AB&I Foundry	Oakland	94621	Odor	6/7/2022
250098	FA773	NONE	Oakland	94621	Odor	6/8/2022
250101	A0062	AB&I Foundry	Oakland	94621	Odor	6/9/2022
250102	Z9767	NONE	Oakland	94621	Odor	6/9/2022
250125	FA783	NONE	Oakland	94621	Odor	6/13/2022
250134	FA791	NONE	Oakland	94621	Odor	6/14/2022
250139	A0062	AB&I Foundry	Oakland	94621	Odor	6/14/2022
250148	A0062	AB&I Foundry	Oakland	94621	Odor	6/15/2022
250170	A0062	AB&I Foundry	Oakland	94621	Odor	6/21/2022
250172	A0062	AB&I Foundry	Oakland	94621	Odor	6/21/2022
250182	FA828	NONE	Oakland	94605	Odor	6/21/2022
250167	A0062	AB&I Foundry	Oakland	94621	Odor	6/21/2022
250185	FA014	NONE	Oakland	94605	Odor	6/22/2022
250188	A0062	AB&I Foundry	Oakland	94621	Odor	6/22/2022
250260	T3379	SFD	Oakland	94602	Odor	6/30/2022
250290	FA899	SFD	Oakland	94602	Odor	7/6/2022
250307	A0062	AB&I Foundry	Oakland	94621	Odor	7/11/2022
250308	FA011	NONE	Oakland	94601	Odor	7/11/2022
250309	A0062	AB&I Foundry	Oakland	94621	Odor	7/11/2022
250343	FA478	Green Sage LLC	Oakland	94621	Odor	7/15/2022
250384	FA663	SFD	Oakland	94601	Odor	7/22/2022
250401	FA964	SFD	Oakland	94601	Illegal Fire	7/27/2022

Abbreviations: MFD- Multi-family Dwelling, NONE- No Site Name, NULL- No Alleged Site Number, SFD- Single Family Dwelling

Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
250489	FB023	RJR Technologies	Oakland	94605	Illegal Fire	8/7/2022
250517	FA663	SFD	Oakland	94601	Odor	8/16/2022
250532	FB176	A-1 Auto Collision	Oakland	94621	Odor	8/18/2022
250544	A0062	AB&I Foundry	Oakland	94621	Odor	8/23/2022
250547	FB050	NONE	Oakland	94621	Dust/Particulates	8/23/2022
250768	FB152	Chevron GDF	Oakland	94605	Gasoline Dispensing Facility	9/12/2022
250815	A2743	CEMEX Construction Materials Pacific, LLC	Oakland	94606	Dust/Particulates	9/16/2022
250839	A0062	AB&I Foundry	Oakland	94621	Odor	9/20/2022
250876	FB187	Restaurant	Oakland	94619	Illegal Fire	9/23/2022
250878	A0062	AB&I Foundry	Oakland	94621	Odor	9/23/2022
250918	A0062	AB&I Foundry	Oakland	94621	Odor	9/28/2022
250931	Z6758	SFD	Oakland	94603	Illegal Fire	9/29/2022
250935	A0062	AB&I Foundry	Oakland	94621	Odor	9/29/2022
250933	FB198	NONE	Oakland	94602	Odor	9/29/2022
251015	FB224	Old Safeway HQ	Oakland	94621	Dust/Particulates	10/6/2022
251270	A0062	AB&I Foundry	Oakland	94621	Odor	10/14/2022
251292	FB253	NONE	Oakland	94603	Illegal Fire	10/16/2022
251356	FB262	NONE	Oakland	94602	Odor	10/18/2022
251512	A2743	CEMEX Construction Materials Pacific, LLC	Oakland	94606	Dust/Particulates	11/16/2022
251527	A2743	CEMEX Construction Materials Pacific, LLC	Oakland	94606	Dust/Particulates	11/17/2022
251526	A0062	AB&I Foundry	Oakland	94621	Odor	11/17/2022
251531	A2743	CEMEX Construction Materials Pacific, LLC	Oakland	94606	Dust/Particulates	11/18/2022
251560	FB372	SFD	Oakland	94603	Odor	11/22/2022
251630	FB412	SFD	Oakland	94606	Illegal Fire	11/25/2022
251777	FB481	NONE	Oakland	94621	Odor	1/6/2023
251833	FB506	NONE	Oakland	94601	Illegal Fire	1/17/2023
251842	FB507	Heirloom Coffee	Oakland	94601	Odor	1/19/2023
251849	FB511	SFD	Oakland	94619	Illegal Fire	1/20/2023
251882	E0753	America's Best Beverage	Oakland	94601	Odor	1/25/2023

Abbreviations: MFD- Multi-family Dwelling, NONE- No Site Name, NULL- No Alleged Site Number, SFD- Single Family Dwelling

Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
251879	FB525	NONE	Oakland	94606	Dust/Particulates	1/25/2023
251881	FB506	NONE	Oakland	94601	Illegal Fire	1/25/2023
251876	FB507	Heirloom Coffee	Oakland	94601	Illegal Fire	1/25/2023
251896	FB525	NONE	Oakland	94606	Dust/Particulates	1/27/2023
251906	FB525	NONE	Oakland	94606	Dust/Particulates	1/31/2023
251918	FB506	NONE	Oakland	94601	Illegal Fire	1/31/2023
251949	FB556	SFD	Oakland	94619	Illegal Fire	2/5/2023
251961	FB565	NONE	Oakland	94605	Odor	2/6/2023
252010	FB506	NONE	Oakland	94601	Illegal Fire	2/9/2023
252055	FB506	NONE	Oakland	94601	Illegal Fire	2/17/2023
252108	FB628	NONE	Oakland	94621	Odor	2/21/2023
252159	FB669	Truck	Oakland	94601	Excessive Idling	3/2/2023
252189	FB686	MFD	Oakland	94603	Illegal Fire	3/4/2023
252177	FB506	NONE	Oakland	94601	Illegal Fire	3/7/2023
252204	FB686	MFD	Oakland	94603	Illegal Fire	3/11/2023
252266	FB744	NONE	Oakland	94603	Odor	3/19/2023
252339	U9783	SFD	Oakland	94605	Illegal Fire	4/6/2023
252314	FB763	Warehouse	Oakland	94603	Odor	4/6/2023
252340	FB769	Construction	Oakland	94619	Dust/Particulates	4/10/2023
252343	FB772	NONE	Oakland	94601	Odor	4/10/2023
252426	FB810	Community Center	Oakland	94605	Illegal Fire	4/21/2023
252432	FB812	Bee Green Recycling	Oakland	94621	Dust/Particulates	4/24/2023
252439	FB815	Homeless encampment	Oakland	94601	Odor	4/24/2023
252483	A0062	AB&I Foundry	Oakland	94621	Odor	4/28/2023
252497	E0722	Flores Auto Body	Oakland	94621	Odor	5/2/2023
252619	FB925	NONE	Oakland	94601	Odor	5/30/2023
252633	FB936	SFD	Oakland	94603	Odor	6/1/2023
252655	FB947	SFD	Oakland	94621	Dust/Particulates	6/6/2023
252668	FB936	SFD	Oakland	94603	Odor	6/8/2023

Abbreviations: MFD- Multi-family Dwelling, NONE- No Site Name, NULL- No Alleged Site Number, SFD- Single Family Dwelling

Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
252700	FB966	SFD	Oakland	94603	Illegal Fire	6/15/2023
252740	FB966	SFD	Oakland	94603	Odor	6/28/2023
252963	FC102	SFD	Oakland	94601	Odor	7/10/2023
252844	FC032	NONE	Oakland	94601	Odor	7/17/2023
252884	FC056	NONE	Oakland	94603	Odor	7/25/2023
252928	Z7237	Sparky's Giant Burgers	Oakland	94619	Illegal Fire	8/2/2023
252934	FC085	Larm's Building & Garden Supply	Oakland	94601	Dust/Particulates	8/4/2023
252952	FC056	NONE	Oakland	94603	Odor	8/8/2023
252964	FC103	MFD	Oakland	94602	Dust/Particulates	8/9/2023
252961	FA011	NONE	Oakland	94601	Odor	8/9/2023
252965	FC104	Green Bridge Botanicals	Oakland	94601	Odor	8/9/2023
252972	FC109	NONE	Oakland	94601	Odor	8/9/2023
253185	FC199	SFD	Oakland	94601	Odor	9/5/2023
253211	FC217	SFD	Oakland	94601	Asbestos	9/8/2023
253232	FC231	Taco Zamorano food truck	Oakland	94601	Odor	9/9/2023
253216	FC220	NONE	Oakland	94621	Odor	9/9/2023
253254	FC246	SFD	Oakland	94619	Asbestos	9/15/2023
253278	FC257	SFD	Oakland	94605	Illegal Fire	9/18/2023
253272	FC255	NONE	Oakland	94605	Odor	9/18/2023
253296	FC268	NONE	Oakland	94619	Illegal Fire	9/19/2023
253340	FC296	NONE	Oakland	94621	Odor	9/22/2023
253334	FA011	NONE	Oakland	94601	Odor	9/25/2023
253541	FC390	523 Southern Halal BBQ	Oakland	94603	Odor	10/13/2023
253444	Y4008	Independent Recycling & Hauling Services	Oakland	94603	Dust/Particulates	10/16/2023
CPM443948	NULL	NONE	Oakland	94601	Dust/Particulates	10/18/2023
CPM443948	NULL	NONE	Oakland	94601	Dust/Particulates	10/18/2023
253474	FA010	NONE	Oakland	94619	Odor	10/19/2023
253520	FC382	SFD	Oakland	94602	Odor	10/23/2023
253524	FC382	SFD	Oakland	94602	Dust/Particulates	10/24/2023

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
253549	FC394	NONE	Oakland	94621	Dust/Particulates	10/26/2023
CPM443994	NULL	NONE	Oakland	94603	Illegal Fire	11/3/2023
CPM443994	NULL	NONE	Oakland	94603	Illegal Fire	11/3/2023
CPM444062	NULL	Marble Countertops	Oakland	94621	Odor	11/8/2023
CPM444432	NULL	NONE	Oakland	94602	Odor	11/26/2023
CPM444442	S752963	Legacy Cultured Marble Inc	Oakland	94621	Odor	11/29/2023
CPM444560	NULL	SFD	Woodside	94602	Asbestos	12/1/2023
CPM444567	NULL	NONE	Oakland	94606	Dust/Particulates	12/7/2023
CPM445044	NULL	MFD	Oakland	94601	Asbestos	12/16/2023
CPM445083	NULL	NONE	Oakland	94621	Odor	12/21/2023
CPM445236	NULL	NONE	Oakland	94605	Odor	12/27/2023
CPM445516	NULL	Jack London Aquatic Center	Oakland	94606	Other	1/14/2024
CPM445570	NULL	MFD	Oakland	94621	Asbestos	1/17/2024
CPM445657	NULL	EcoCycle Solutions	Oakland	94601	Odor	1/23/2024
CPM446125	NULL	Emigh Ranch	Oakland	94603	Odor	2/25/2024
CPM446194	NULL	Argent Materials	Oakland	94621	Dust/Particulates	2/27/2024
CPM446398	NULL	NONE	Oakland	94601	Odor	3/14/2024
CPM446427	NULL	NONE	Oakland	94621	Odor	3/16/2024
CPM446454	NULL	Construction	Oakland	94601	Other	3/18/2024
CPM446468	E2474	Argent Materials Inc	Oakland	94621	Dust/Particulates	3/19/2024
CPM446499	NULL	SFD	Oakland	94602	Odor	3/21/2024
CPM446511	NULL	Pacific Galvanizing	Oakland	94601	Odor	3/22/2024
CPM446625	NULL	SFH	Oakland	94621	Odor	3/30/2024
CPM446657	NULL	RoofLine Supply & Delivery	Oakland	94601	Odor	4/3/2024
CPM446658	NULL	AM/PM	Oakland	94603	Gasoline Dispensing Facility	4/3/2024
CPM446668	NULL	SFD	Oakland	94605	Other	4/4/2024
CPM446768	NULL	NONE	Oakland	94603	Odor	4/10/2024
CPM446935	NULL	SFD	Oakland	94606	Odor	4/23/2024
CPM446970	NULL	Amtrak	Oakland	94606	Other	4/26/2024

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
CPM447187	NULL	NONE	Oakland	94601	Odor	5/8/2024
CPM447196	NULL	NONE	Oakland	94601	Odor	5/9/2024
CPM447209	NULL	NONE	Oakland	94601	Illegal Fire	5/9/2024
CPM447296	NULL	NONE	Oakland	94619	Odor	5/15/2024
CPM447396	NULL	NONE	Oakland	94605	Odor	5/24/2024
CPM447479	NULL	NONE	Oakland	94601	Odor	5/30/2024
CPM447508	NULL	NONE	Oakland	94621	Dust/Particulates	6/3/2024
CPM447572	NULL	NONE	Oakland	94601	Other	6/7/2024
CPM447785	NULL	SFD	Oakland	94605	Odor	6/23/2024
CPM447848	NULL	MFD	Oakland	94606	Asbestos	6/26/2024
CPM447848	NULL	MFD	Oakland	94606	Asbestos	6/26/2024
CPM447848	NULL	MFD	Oakland	94606	Asbestos	6/26/2024
CPM447848	NULL	MFD	Oakland	94606	Asbestos	6/26/2024
CPM447848	NULL	MFD	Oakland	94606	Asbestos	6/26/2024
CPM447848	NULL	MFD	Oakland	94606	Asbestos	6/26/2024
CPM447848	NULL	MFD	Oakland	94606	Asbestos	6/26/2024
CPM447848	NULL	MFD	Oakland	94606	Asbestos	6/26/2024
CPM447891	NULL	NONE	Oakland	94601	Odor	7/3/2024
CPM447921	NULL	MFD	Oakland	94606	Asbestos	7/5/2024
CPM447943	B9860	Commercial Waste & Recycling LLC	Oakland	94621	Dust/Particulates	7/8/2024
CPM447950	NULL	NONE	Oakland	94603	Illegal Fire	7/8/2024
CPM448025	NULL	NONE	Oakland	94603	Illegal Fire	7/12/2024
CPM448031	NULL	NONE	Oakland	94603	Odor	7/12/2024
CPM448065	NULL	Sylvia Mendez Elementary School	Berkeley	94605	Dust/Particulates	7/16/2024
CPM448224	NULL	NONE	Oakland	94621	Dust/Particulates	7/22/2024
CPM448369	NULL	NONE	Oakland	94601	Odor	7/23/2024
CPM448242	NULL	Bee Green Recycling and Supply	Oakland	94621	Dust/Particulates	7/30/2024
CPM448257	NULL	NONE	Oakland	94601	Dust/Particulates	7/31/2024
CPM448459	NULL	Truck	Oakland	94602	Odor	8/18/2024

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
CPM448506	NULL	523 Southern Halal BBQ And Soul Food	Oakland	94605	Dust/Particulates	8/21/2024
CPM448529	NULL	NONE	Oakland	94606	Dust/Particulates	8/22/2024
CPM448524	NULL	NONE	Oakland	94605	Odor	8/22/2024
CPM448579	NULL	Industrial BBQ Smoker	Oakland	94606	Odor	8/25/2024
CPM448603	NULL	Homeless encampment	Oakland	94601	Dust/Particulates	8/27/2024
CPM448605	NULL	NONE	Oakland	94601	Odor	8/27/2024
CPM448631	NULL	Homeless encampment	Oakland	94601	Odor	8/28/2024
CPM448622	NULL	Sewer	Oakland	94601	Odor	8/28/2024
CPM448799	NULL	NONE	Oakland	94601	Odor	9/10/2024
CPM448809	NULL	NONE	Oakland	94605	Odor	9/11/2024
CPM448924	NULL	PG&E	Oakland	94603	Odor	9/13/2024
CPM448865	NULL	NONE	Oakland	94603	Odor	9/13/2024
CPM448928	NULL	PG&E Substation	Oakland	94603	Dust/Particulates	9/20/2024
CPM448950	NULL	PG&E Substation	Oakland	94621	Odor	9/20/2024
CPM448927	NULL	PG&E	Oakland	94603	Other	9/20/2024
CPM448958	NULL	NONE	Oakland	94605	Odor	9/23/2024
CPM449168	NULL	NONE	Oakland	94606	Other	10/2/2024
CPM449434	NULL	NONE	Oakland	94619	Odor	10/3/2024
CPM449370	NULL	Central Reservoir Recreation Area	Oakland	94602	Odor	10/11/2024
CPM449443	NULL	MFD	Oakland	94601	Odor	10/15/2024
CPM449466	NULL	NONE	Oakland	94605	Dust/Particulates	10/18/2024
CPM449515	NULL	Amtrak	Oakland	94606	Dust/Particulates	10/22/2024
CPM449545	NULL	Train	Oakland	94606	Odor	10/23/2024
CPM449603	NULL	NONE	Oakland	94601	Odor	10/25/2024
CPM449780	NULL	La Morena Cuerros	Oakland	94601	Odor	11/7/2024
CPM449919	NULL	NONE	Oakland	94601	Dust/Particulates	11/14/2024
CPM449903	NULL	La Morena Cuerros	Oakland	94601	Odor	11/14/2024
CPM449933	NULL	MFD	Oakland	94606	Asbestos	11/15/2024
CPM449987	NULL	NONE	Oakland	94606	Dust/Particulates	11/18/2024

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Complaint #	Alleged Site #	Alleged Site/Business Name	City	ZIP Code	Complaint Type	Occurrence Date
CPM450010	NULL	NONE	Oakland	94606	Dust/Particulates	11/19/2024
CPM450038	A0678	Port of Oakland	Oakland	94621	Dust/Particulates	11/21/2024
CPM450053	A0456	Pacific Galvanizing	Oakland	94601	Dust/Particulates	11/22/2024
CPM450148	NULL	NONE	Oakland	94605	Dust/Particulates	11/30/2024
CPM450259	NULL	NONE	Oakland	94601	Asbestos	12/2/2024
CPM450339	NULL	La Morena Cuerros	Oakland	94601	Odor	12/4/2024
CPM450352	NULL	NONE	Oakland	94605	Odor	12/5/2024
CPM450421	NULL	523 Southern Halal BBQ	Oakland	94606	Dust/Particulates	12/8/2024
CPM450543	A0456	Pacific Galvanizing	Oakland	94601	Odor	12/13/2024
249579	FA478	Green Sage LLC	Oakland	94621	Odor	1/7/2020 (referred in 2022)
249901	FA680	Green Sage LLC	Oakland	94621	Odor	7/30/2020 (referred in 2022)

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Appendix E-2: Violations and Notices to Comply in East Oakland 2021-2024

Table E-2a: Notices of Violation (NOV), East Oakland, 2021–2024

NOV #	Regulation	Issued	Site #	Site	Address	ZIP Code	City	Type of Violation
A60539A	8-7-302	2021-01-07	Z8577	Save On Gas	4251 International Blvd	94601	Oakland	O
A60539B	8-7-301	2021-01-07	Z8577	Save On Gas	4251 International Blvd	94601	Oakland	O
A60540A	2-1-307	2021-01-07	Z8577	Save On Gas	4251 International Blvd	94601	Oakland	O
A59109A	11-2-401	2021-01-29	Z8572	Courtney Sharif	2541 66th Ave	94605	Oakland	A
A59111A	8-7-302	2021-02-10	Z8640	Altus Draft & Design	201 Athol Ave #103	94606	Oakland	A
A60550A	8-7-302	2021-03-29	Z8844	Pious Petroleum, LLC	4280 Foothill Blvd	94601	Oakland	O
A59678A	8-7-302	2021-04-09	Z8844	Pious Petroleum, LLC	4280 Foothill Blvd	94601	Oakland	O
A59678B	8-7-503	2021-04-09	Z8844	Pious Petroleum, LLC	4280 Foothill Blvd	94601	Oakland	A
A59678C	2-1-307	2021-04-09	Z8844	Pious Petroleum, LLC	4280 Foothill Blvd	94601	Oakland	A
A60127A	11-2-401	2021-04-14	Z8973	SFD	5324 Wentworth Ave	94601	Oakland	A
A58844A	1-301	2021-06-21	A0062	McWane, Inc	7825 San Leandro St	94621	Oakland	O
A59647A	8-7-301	2021-08-03	Z9562	Metropolitan Golf Links	10051 Doolittle Dr	94603	Oakland	O
A59647B	8-7-302	2021-08-03	Z9562	Metropolitan Golf Links	10051 Doolittle Dr	94603	Oakland	O
A59647C	2-1-307	2021-08-03	Z9562	Metropolitan Golf Links	10051 Doolittle Dr	94603	Oakland	O
A59696A	8-7-301	2021-08-26	Z9617	United Parcel Service	8400 Pardee Dr	94621	Oakland	O
A59699A	2-1-302	2021-09-21	Z9692	Eagle 1 Gas	4301 San Leandro St	94601	Oakland	P
A61359A	2-1-307	2021-11-17	A2258	AC Transit District - Central Maint.	10626 International Blvd	94603	Oakland	O
A61367A	8-7-302	2021-12-15	Z8844	Pious Petroleum, LLC	4280 Foothill Blvd	94601	Oakland	O
A61412A	8-7-302	2022-03-29	FA538	GO! Petroleum, LLC	720 High St	94601	Oakland	O
A61414A	2-1-307	2022-04-19	Z6202	Tony Star Gas	3609 International Blvd	94601	Oakland	O
A61416A	8-7-301	2022-04-27	FA655	Ken Betts Chevron	4150 Redwood Rd	94619	Oakland	O
A61416B	8-7-302	2022-04-27	FA655	Ken Betts Chevron	4150 Redwood Rd	94619	Oakland	O
A60655A	2-1-301	2022-05-03	FA654	Meadows in Bloom	5601 San Leandro St	94621	Oakland	P
A60655B	2-1-302	2022-05-03	FA654	Meadows in Bloom	5601 San Leandro St	94621	Oakland	P
A61427A	2-1-307	2022-06-22	FA835	Alexander Goren	8255 San Leandro St	94621	Oakland	O

Abbreviations (Type of Violation): A- Administrative, O-Operational, P- Permit Related

NOV #	Regulation	Issued	Site #	Site	Address	ZIP Code	City	Type of Violation
A60139A	11-2-401	2022-07-13	FA929	Planting Justice	359 105th Ave	94603	Oakland	A
A62239A	2-1-307	2022-09-08	FB141	Robert Saunders	7000 Coliseum Way	94621	Oakland	O
A62243A	8-7-301	2022-10-12	Z9297	Shell	2120 Montana St	94602	Oakland	O
A60657A	2-1-307	2022-11-16	E2474	Argent Materials Inc	8300 Baldwin St	94621	Oakland	A
A60657B	6-6-501	2022-11-16	E2474	Argent Materials Inc	8300 Baldwin St	94621	Oakland	O
A59289A	6-3-301	2022-11-25	FB408	Malone Malachi Malone Josette	3265 Nicol Ave	94602	Oakland	O
A60658A	2-1-307	2022-11-29	E0905	S E Combined Services of California	9850 Kitty Lane	94603	Oakland	O
A60659A	2-1-307	2022-12-13	E0905	S E Combined Services of California	9850 Kitty Lane	94603	Oakland	A
A61929A	2-1-302	2023-06-21	A4557	EBMUD Upper San Leandro WTP	7700 Greenly Dr	94605	Oakland	P
A62853A	8-7-301	2023-07-05	FC449	Port of Oakland	530 Webster St	94621	Oakland	O
A61930A	2-1-301	2023-07-26	E2474	Argent Materials Inc	8300 Baldwin St	94621	Oakland	P
A61930B	2-1-302	2023-07-26	E2474	Argent Materials Inc	8300 Baldwin St	94621	Oakland	P
A61933A	2-1-307	2023-11-07	E0753	America's Best Beverage	600 50th Ave	94601	Oakland	O
A61933B	6-1-301	2023-11-07	E0753	America's Best Beverage	600 50th Ave	94601	Oakland	O
A59765A	2-1-307	2023-11-22	B2094	Design Workshops	486 Lesser St	94601	Oakland	O
A61934A	9-7-307	2024-01-18	A3651	Western Colloid Products	700 71st Ave	94621	Oakland	O
A58649A	2-1-301	2024-02-16	C0192	Eagle 1 Gas	4301 San Leandro St	94601	Oakland	P
A58649B	2-1-302	2024-02-16	C0192	Eagle 1 Gas	4301 San Leandro St	94601	Oakland	P
A62662A	8-7-301	2024-04-12	S760969	9800 International Inc.	9800 International Blvd	94603	Oakland	A
A62662B	2-1-307	2024-04-12	S760969	9800 International Inc.	9800 International Blvd	94603	Oakland	O
A61937A	2-1-302	2024-06-24	B9580	Peralta Community Colleges District	333 E 8th St	94606	Oakland	P
A61938A	2-1-301	2024-08-20	S762433	NUG	580 Julie Ann Way	94621	Oakland	P
A61938B	2-1-302	2024-08-20	S762433	NUG	580 Julie Ann Way	94621	Oakland	P
A62671A	8-7-302	2024-08-27	C9208	MacArthur 76	4276 Macarthur Blvd	94619	Oakland	O
A62671B	8-7-301	2024-08-27	C9208	MacArthur 76	4276 Macarthur Blvd	94619	Oakland	O
A61939A	2-1-307	2024-09-03	B9378	McGuire & Hester	9009 Railroad Ave	94603	Oakland	A
A62672A	11-2-401	2024-09-11	S763902	The Unity Council	1900 Fruitvale Ave #2A	94601	Oakland	A
A62674A	11-2-401	2024-10-11	S765259	AJW Construction	866 81st Ave	94621	Oakland	A
A62704A	8-7-302	2024-12-02	S700286	All Star Gas	3820 San Leandro St	94601	Oakland	O

Abbreviations (Type of Violation): A- Administrative, O-Operational, P- Permit Related

NOV #	Regulation	Issued	Site #	Site	Address	ZIP Code	City	Type of Violation
A61940A	2-1-301	2024-12-06	A6390	Evergreen Cemetery	6450 Camden St	94605	Oakland	P
A61940B	2-1-302	2024-12-06	A6390	Evergreen Cemetery	6450 Camden St	94605	Oakland	P
A63367A	2-1-301	2024-12-10	C0667	Central Gas, 3	2400 Fruitvale Ave	94601	Oakland	P
A61941A	2-1-301	2024-12-19	C8419	NG Grewal Inc.	4265 Foothill Blvd	94601	Oakland	O
A61941B	2-1-302	2024-12-20	S714408	Wheels America SF	525 66th Ave	94621	Oakland	P
A63237A	6-3-301	2024-12-30	S768074	SFD	10717 Snowdown Ave	94605	Oakland	O

Abbreviations (Type of Violation): A- Administrative, O-Operational, P- Permit Related

Table E-2b: Notices to Comply (NTC), East Oakland, 2021–2024

NTC #	Regulation	Issued	Site #	Site	Address	ZIP Code	City	Type of Violation
A48577	2-1-301	5/24/2022	112360	Cali	3315 High St	94619	Oakland	A
A48578	2-1-302	5/25/2022	111778	Fast Gas & Shop	5910 MacArthur Blvd	94605	Oakland	A
A48598	2-1-302	9/8/2022	109015	Oakland Alameda County Coliseum	7000 Coliseum Way	94621	Oakland	A
A47989	2-1-307, 2-1-405, 8-7-302, 8-7-503	4/20/2022	111410	Royal Gas	10151 International Blvd	94603	Oakland	A
A47990	8-7-302, 8-7-503	4/20/2022	111778	Fast Gas and Shop	5910 MacArthur Blvd	94605	Oakland	A
A47711	8-7-302	10/21/2021	112182	Grand Petroleum	9800 International Blvd	94603	Oakland	A
A48351	8-7-302	1/26/2022	107000	Portwood Shell #135696	820 Portwood Ave	94601	Oakland	A
A48600	8-7-302	10/12/2022	106951	Bhushan Bansal / Bansal Inc.	2120 Montana St	94602	Oakland	A
A48601	2-1-307, 8-7-503	10/13/2022	108419	NG Grewal Inc	4265 Foothill Blvd	94601	Oakland	A
A49375	8-7-301, 8-7-308, 8-7-503	3/14/2024	112182	Grand Petroleum Inc	9800 International Blvd	94603	Oakland	A
A47988	8-7-503	4/19/2022	108062	Laurel Chevron & Auto Service	3420 35th Ave	94619	Oakland	A
A47980	8-7-301, 8-7-503	3/21/2022	112450	Hegenberger Shell	285 Hegenberger Rd	94621	Oakland	A
A47987	8-7-301, 8-7-503	4/19/2022	108774	Tony Star Gas	3609 International Blvd	94601	Oakland	A
A48297	8-7-307, 8-7-503, 8-7-508	3/1/2021	111279	Seminary Gas	6235 Seminary Ave	94605	Oakland	A
A47931	8-7-503	6/15/2021	100667	Quik Stop #67	2400 Fruitvale Ave	94601	Oakland	A
A47671	8-7-307, 8-7-503	7/27/2021	110294	MacArthur Valero Gas	3530 MacArthur Blvd	94619	Oakland	A
A47674	8-7-503.2	8/3/2021	112473	Metropolitan Golf Links	10051 Doolittle Dr	94603	Oakland	A
A48599	8-7-503.2	9/29/2022	200452	All Star Gas	3820 San Leandro St	94601	Oakland	A
A47679	8-7-307, 8-7-503	3/29/2021	112446	Chevron #9-1851	457 Hegenberger Rd	94621	Oakland	A
A49186	8-7-503	12/10/2024	10667	Central Gas	2400 Fruitvale Ave	94601	Oakland	A
A48751	2-1-301, 2-1-302	8/29/2024	B3651	Mettler-Toledo Rainin, LLC	7500 Edgewater Dr	94621	Oakland	A
A48750	2-1-302	5/10/2023	E0722	Rolando H Marrufo Flores Auto Body	7340 International Blvd	94621	Oakland	A
A49275	8-7-301	6/28/2023	678	Port of Oakland	530 Water St	94621	Oakland	O
A47982	8-7-301, 8-7-302	3/30/2022	112521	Coliseum Shell	540 Hegenberger Rd	94621	Oakland	O

Abbreviations (Type of Violation): A- Administrative, O-Operational, P- Permit Related

NTC #	Regulation	Issued	Site #	Site	Address	ZIP Code	City	Type of Violation
A47992	8-7-301, 8-7-302, 2-1-307	4/27/2022	100803	Ken Betts / Ken Betts Chevron	4150 Redwood Rd	94619	Oakland	O

Abbreviations (Type of Violation): A- Administrative, O-Operational, P- Permit Related

Appendix E-3: List of Permitted Facilities in East Oakland

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
73	Gallagher & Burk, Inc	344 High St	Oakland	94601	Aggregate, Concrete & Asphalt Operations
158	Miller Milling Company	2201 E 7th St	Oakland	94606	Food Processing Facility
456	Pacific Galvanizing	715 46th Ave	Oakland	94601	Storage of Organic Liquids
519	Chevron, Oakland Airport-North	8550 N Earhardt Dr	Oakland	94621	Storage of Organic Liquids
678	Port of Oakland	#1 Airport Dr	Oakland	94621	Storage of Organic Liquids
1095	Right Away Redy Mix Inc*	401 Kennedy St	Oakland	94606	Aggregate, Concrete & Asphalt Operations
1955	Larms, Inc	743 High St	Oakland	94601	Aggregate, Concrete & Asphalt Operations
2035	SVC Manufacturing, Inc dba Pepsico	1175 57th Ave	Oakland	94621	Food Processing Facility
2258	AC Transit District - Central Maintenance Building*	10626 International Blvd	Oakland	94603	Solvent and Coating Operations
2537	Melrose Metal Finishing, Inc	10222 Pearmain St	Oakland	94603	Solvent and Coating Operations
2743	CEMEX Construction Materials Pacific, LLC*	333 23rd Ave	Oakland	94606	Aggregate, Concrete & Asphalt Operations
2751	Equipment Fabricating Corporation*	729 45th Ave	Oakland	94601	Solvent and Coating Operations
2899	AC Transit District	1100 Seminary Ave	Oakland	94621	Solvent and Coating Operations
2949	East Bay Municipal Utility District	5601 Oakport St	Oakland	94621	Wastewater Treatment Plants
3012	Lockwood Cleaners*	6160 International Blvd	Oakland	94621	Dry Cleaners
3166	Pacific Gas and Electric Company/Env Field Svcs	4801 Oakport St	Oakland	94601	Gasoline Dispensing Facility
3651	Western Colloid Products	700 71st Ave	Oakland	94621	Aggregate, Concrete & Asphalt Operations
3863	Brooks Motor Cars/Collision Repair by Brooks	9829 Bigge St	Oakland	94603	Autobody Shop
3885	Alameda Health System - Highland Hospital Campus	1411 E 31st St	Oakland	94602	Boilers
4557	EBMUD Upper San Leandro WTP	7700 Greenly Dr	Oakland	94605	Wastewater Treatment Plants
4627	Diamond Cleaners*	6816 Bancroft Ave	Oakland	94605	Dry Cleaners

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
5972	Master Tech Auto Body*	1518 E 12th St	Oakland	94606	Autobody Shop
6390	Evergreen Cemetery	6450 Camden St	Oakland	94605	Crematorium
6968	Mercy Retirement and Care Center	3431 Foothill Blvd	Oakland	94601	Boilers
7058	Choy's Auto Body and Repair	1407 Foothill Blvd	Oakland	94606	Autobody Shop
7281	Bay 1 Hour Cleaners*	4140 Redwood Rd	Oakland	94619	Dry Cleaners
7552	Chilton Auto Body of Oakland*	1049 9th Ave	Oakland	94606	Autobody Shop
7881	Moal's Body Shop*	937 E 12th St	Oakland	94606	Autobody Shop
7908	Thrifty 1hr Cleaners*	3920 Macarthur Blvd	Oakland	94619	Dry Cleaners
8108	Classic Touch Fashion Cleaners*	3518 Fruitvale Ave	Oakland	94602	Dry Cleaners
8231	Performance Auto Body Center*	635 E 12th St	Oakland	94606	Autobody Shop
8389	Maharlika Body Shop	1011 39th Ave	Oakland	94601	Autobody Shop
8416	JP Standard Company*	5525 Foothill Blvd	Oakland	94605	Autobody Shop
8601	East Bay Municipal Utility District*	225 Embarcadero-West	Oakland	94606	Generators/Stationary Engines
8655	K J's Auto Body Repair	8921 San Leandro St	Oakland	94621	Autobody Shop
8755	Turbo Auto Body*	1722 International Blvd	Oakland	94606	Autobody Shop
8818	Automax of Bay Area*	1750 E 12th St	Oakland	94606	Autobody Shop
8820	Chau's Auto Sport	1259 48th Ave	Oakland	94601	Autobody Shop
8934	The Art Craft Company	10441 Edes Ave	Oakland	94603	Solvent and Coating Operations
8994	Fast Collision Center	1223 Miller Ave	Oakland	94601	Autobody Shop
9234	Smooth Auto Body	1228 41st Ave	Oakland	94601	Autobody Shop
9582	Parkmead Products*	930 45th Ave	Oakland	94601	Solvent and Coating Operations
10035	Everett Graphics	7300 Edgewater Dr	Oakland	94621	Solvent and Coating Operations
10444	Wood Tech Furniture LLC	4611 Malat St	Oakland	94601	Solvent and Coating Operations
10912	V & J Body Shop*	4647 Foothill Blvd	Oakland	94601	Autobody Shop
11051	Fast Lane Intermodal, LLC*	850A 92nd Ave	Oakland	94603	Solvent and Coating Operations
11260	Friendly Cab Inc	4849 E 12th St	Oakland	94601	Autobody Shop
11431	City of Oakland Public Works Agency	7101 Edgewater Dr	Oakland	94621	Generators/Stationary Engines
11867	Hostess Brands Corporation*	580 Julie Ann Way	Oakland	94621	Boilers
11892	Bay Bridge Auto Body	2130 90th Ave	Oakland	94603	Autobody Shop
11922	Alpine Cleaners*	3800 Park Blvd	Oakland	94602	Dry Cleaners

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
12094	Design Workshops*	486 Lesser St	Oakland	94601	Solvent and Coating Operations
12527	J1 Auto Body	1101 98th Ave	Oakland	94603	Autobody Shop
12566	Auto World Body & Frame*	844 E 12th St	Oakland	94606	Autobody Shop
12581	Quality Auto Service*	1200 E 12th St	Oakland	94606	Autobody Shop
13165	Kong Auto Body*	1131 6th Ave	Oakland	94606	Autobody Shop
13344	Experience Auto Body*	2230 International Blvd	Oakland	94606	Autobody Shop
13495	Pacific Bell	2112 Fruitvale Ave	Oakland	94601	Generators/Stationary Engines
13497	Pacific Bell*	2810 Mountain Blvd	Oakland	94602	Generators/Stationary Engines
13498	Pacific Bell	8925 Holly St	Oakland	94621	Generators/Stationary Engines
13603	City of Oakland, Env Svcs Division	7200 Bancroft Ave	Oakland	94605	Generators/Stationary Engines
13651	Mettler-Toledo Rainin, LLC	7500 Edgewater Dr	Oakland	94621	Generators/Stationary Engines
13726	East Bay Municipal Utility Dist	5601 Oakport St	Oakland	94621	Gasoline Dispensing Facility
13734	East Bay Municipal Utility Dist PSG	9301 Doolittle Dr	Oakland	94621	Generators/Stationary Engines
13735	East Bay Municipal Utility Dist PSH	4399 Oakport St	Oakland	94619	Generators/Stationary Engines
13736	East Bay Municipal Utility Dist PSJ*	2201 Frederick St	Oakland	94606	Generators/Stationary Engines
13949	Amazon.com Services LLC - DSJ9	5800 Coliseum Way	Oakland	94621	Generators/Stationary Engines
14297	City of Oakland, Env Svcs Division	97th & International Blvd	Oakland	94603	Generators/Stationary Engines
14349	AEG Management Oakland, LLC	7000 Colliseum Way	Oakland	94621	Boilers
14685	Centurylink Communications, LLC*	260 5th Ave	Oakland	94606	Generators/Stationary Engines
14803	Federal Aviation Administration*	Redwood Park	Oakland	94621	Generators/Stationary Engines
14822	Federal Aviation Administration	Oakland Airport	Oakland	94621	Generators/Stationary Engines
14956	Coliseum Body Shop	835 75th Ave	Oakland	94621	Autobody Shop
15010	Verizon Wireless - (East 14th & 98th)	10950 International Blvd	Oakland	94619	Generators/Stationary Engines
15214	May Cleaners*	1924 Park Blvd	Oakland	94606	Dry Cleaners
15591	MH Auto Repair & Body*	1211 11th Ave	Oakland	94606	Autobody Shop
15748	San Francisco Bay Area Rapid Transit District	3401 E 12th St	Oakland	94602	Generators/Stationary Engines
15866	MD Auto Body	5111 San Leandro St	Oakland	94601	Autobody Shop
15894	The Home Depot #1007	4000 Alameda Ave	Oakland	94601	Generators/Stationary Engines
16071	Chino's Customs	7895 International Blvd	Oakland	94621	Autobody Shop
16095	Comcast of California/Colorado, LLC	8120 MacArthur Blvd	Oakland	94605	Generators/Stationary Engines

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
16290	Verizon Wireless - East 14th/High Street	742 45th Ave	Oakland	94601	Generators/Stationary Engines
16295	Verizon Wireless- 815053 – (Hwy 880/Hegenberger)	7000 Coliseum Way	Oakland	94621	Generators/Stationary Engines
16362	Verizon Wireless - Oakland South*	819 Kennedy St	Oakland	94606	Generators/Stationary Engines
17066	CJ Distribution (Oakland) Inc.	155 98th Ave	Oakland	94603	Generators/Stationary Engines
17341	Arcadis Us, Inc*	411 High St	Oakland	94601	Soil Remediation
17518	FedEx Express – OAKRT	9190 Edes Ave	Oakland	94603	Generators/Stationary Engines
17533	FedEx Express-OAKH	1 Sally Ride Way	Oakland	94621	Generators/Stationary Engines
17643	Oakland Collision Truck Painting	600 McClary Ave	Oakland	94621	Autobody Shop
17745	Northeastern University	5000 MacArthur Blvd	Oakland	94613	Boilers
17824	Agricultural Bag Mfg, Inc	960 98th Ave	Oakland	94603	Solvent and Coating Operations
17853	Neo Auto Works*	1220 E 12th St	Oakland	94606	Autobody Shop
18027	City of Oakland, Env Scvs Division	5050 Coliseum Way	Oakland	94601	Generators/Stationary Engines
18032	Sid's Collision and Glass Repair	6017 International Blvd	Oakland	94621	Autobody Shop
18337	Food Maxx #484	3000 E 9th St	Oakland	94601	Generators/Stationary Engines
18461	Rose of Sharon Rehabilitation*	1600 Lakeshore Ave	Oakland	94621	Generators/Stationary Engines
18579	H & H Auto Collision, Inc	3031 E 12th St	Oakland	94601	Autobody Shop
18612	Due Torri Coffee	910 81st Ave, Unit 15	Oakland	94621	Food Processing Facility
18615	Verizon Wireless (Kings Estate)	8800 Fontaine St	Oakland	94605	Generators/Stationary Engines
18628	Alameda County Public Works Agency*	7th St	Oakland	94606	Generators/Stationary Engines
18839	Bay One Auto Body	2939 E 7th St	Oakland	94601	Autobody Shop
19086	K&G Auto Body Shop*	1215 10th Ave	Oakland	94606	Autobody Shop
19155	Telecare Corporation	2633 E 27th St	Oakland	94601	Generators/Stationary Engines
19265	Eagle Auto Co	8515 San Leandro St	Oakland	94621	Autobody Shop
19325	Swissport Fueling, Inc	1 Edward White Way	Oakland	94621	Storage of Organic Liquids
19378	McGuire & Hester*	9009 Railroad Ave	Oakland	94603	Generators/Stationary Engines
19435	Allstar Auto Body Inc	3658 Foothill Blvd	Oakland	94601	Autobody Shop
19534	Transtar Auto Body Shop*	940 E 12th St	Oakland	94606	Autobody Shop
19564	Lucky #736*	247 E 18th St	Oakland	94606	Generators/Stationary Engines

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
19580	Peralta Community Colleges District Admin Center*	333 E 8th St	Oakland	94606	Boilers
19646	Sin Mex Auto Body Inc.	4028 International Blvd	Oakland	94601	Autobody Shop
19700	Verizon Wireless (Keller Ave)*	4292 Keller Ave	Oakland	94605	Generators/Stationary Engines
19829	Verizon Wireless (Melrose)	5345 Foothill Blvd	Oakland	94601	Generators/Stationary Engines
19860	Commercial Waste & Recycling LLC*	725 Independent Rd	Oakland	94621	Waste & Recycling Operations
20049	New H & L Auto Body,Inc*	1221 12th Ave	Oakland	94606	Autobody Shop
20171	SFBART District (Laney College)*	601 E 8th Ave	Oakland	94606	Generators/Stationary Engines
20385	Allied Storage Containers*	790 54th Ave	Oakland	94601	Solvent and Coating Operations
20591	Oakland Fire Station 18	1700 50th St	Oakland	94601	Generators/Stationary Engines
20606	Compass Container Group Inc	6345 Coliseum Way	Oakland	94621	Solvent and Coating Operations
20680	Fruitvale Collision Center	3009 Foothill Blvd	Oakland	94601	Autobody Shop
20722	Flores Auto Body	7340 International Blvd	Oakland	94621	Autobody Shop
20804	E &A Auto Collison Center	8227 International Blvd	Oakland	94621	Autobody Shop
20856	TY Auto Body LLC*	2222 E 12th St	Oakland	94606	Autobody Shop
20866	Diamond Auto Center	3475 Champion St	Oakland	94602	Autobody Shop
20868	First Quality Auto	6506 International Blvd	Oakland	94621	Autobody Shop
20905	S E Combined Services of California	9850 Kitty Lane	Oakland	94603	Crematorium
20984	Earl Scheib Oakland*	901 International Blvd	Oakland	94606	Autobody Shop
21092	East Bay Zoological Society*	9777 Golf Links Rd	Oakland	94605	Generators/Stationary Engines
21126	Featherweight Performance and Restoration	10966 San Leandro St	Oakland	94603	Autobody Shop
21149	Verizon Wireless (Doolittle)	77 Hegenberger Rd	Oakland	94621	Generators/Stationary Engines
21216	Waste Management of Alameda County, Inc	172 98th Ave	Oakland	94603	Solvent and Coating Operations
21398	Snow Cleaners, Inc*	2678 Coolidge Ave	Oakland	94601	Soil Remediation
21491	Reunion Autoworks	1432 14th Ave	Oakland	94606	Autobody Shop
21533	East Bay Regional Communications System Authority*	9333 Seneca St	Oakland	94605	Generators/Stationary Engines
21544	Pro Speed Auto Body	1410 31st Ave	Oakland	94601	Autobody Shop
21599	One Toyota of Oakland	8181 Oakport St	Oakland	94621	Generators/Stationary Engines
21651	City of Oakland	9333 Seneca St	Oakland	94605	Generators/Stationary Engines
21964	Pacific Collision	98 Hegenberger Loop	Oakland	94621	Autobody Shop

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
22135	SF Bay Area Rapid Transit District	70 Hegenberger Rd	Oakland	94621	Generators/Stationary Engines
22368	Alameda County GSA*	2901 Peralta Oaks Ct	Oakland	94605	Generators/Stationary Engines
22474	Argent Materials Inc	8300 Baldwin St	Oakland	94621	Aggregate, Concrete & Asphalt Operations
22480	Signature Flight Support	9465 Earhart Rd	Oakland	94621	Storage of Organic Liquids
22501	Oakland Collision Center*	504 E 10th St	Oakland	94606	Autobody Shop
22685	Morgan Todt, LLC dba Envision Cold	860 81st St	Oakland	94621	Generators/Stationary Engines
22686	Crash Champions, LLC	7801 Oakport St	Oakland	94621	Autobody Shop
23015	Philz Coffee	680 85th Ave	Oakland	94621	Food Processing Facility
23018	Coasters Fine Furniture	8350 Pardee Dr	Oakland	94621	Generators/Stationary Engines
23079	Oakland Logistics Center LLC c/o JLL	8350 Pardee Dr	Oakland	94621	Generators/Stationary Engines
23103	Verizon Wireless – Clinton*	1221 E 20th St	Oakland	94606	Generators/Stationary Engines
23161	Alameda County GSA	7195 Oakport St	Oakland	94621	Generators/Stationary Engines
23587	ICBP IV Holdings 37, LLC.	6195 Coliseum Way	Oakland	94621	Generators/Stationary Engines
23605	Green Waste Recycling	740 Julie Ann Way	Oakland	94621	Waste & Recycling Operations
23615	Pick-n-Pull Auto Dismantlers – Oakland #70	8451 San Leandro St	Oakland	94621	Waste & Recycling Operations
23837	Triple A Roasters*	1024 9th Ave	Oakland	94606	Food Processing Facility
23973	Cafe Santana Roasting Company*	4100 MacArthur Blvd	Oakland	94619	Food Processing Facility
23983	Bee Green Recycling & Supply	5900 Coliseum Way	Oakland	94621	Waste & Recycling Operations
24238	Red Bay Coffee Company*	3098 E 10th St	Oakland	94601	Food Processing Facility
24287	Air-Sea Containers, Inc	9832 Gould St	Oakland	94603	Solvent and Coating Operations
24319	America's Best Beverage	600 50th Ave	Oakland	94601	Food Processing Facility
24365	Posada De Colores – The Unity Council	2221 Fruitvale Ave	Oakland	94601	Soil Remediation
24437	Zarsion-OHP I, LLC*	1618 6th Ave	Oakland	94606	Aggregate, Concrete & Asphalt Operations
24665	College for Certain, LLC*	1009 66th Ave	Oakland	94621	Soil Remediation
24692	Savemart/Foodmax #417*	10950 International Blvd	Oakland	94603	Generators/Stationary Engines
24785	Moz Designs	711 Kevin Court	Oakland	94621	Solvent and Coating Operations
24890	Apex Companies*	2114 MacArthur Blvd	Oakland	94602	Soil Remediation

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
24892	The Church of Jesus Christ of Latter-Day Saints*	4945 Lincoln Way	Oakland	94602	Generators/Stationary Engines
25023	Alaska Airlines-OAK	1 Airport Dr	Oakland	94621	Solvent and Coating Operations
25142	E2C Remediation	10700 MacArthur Blvd	Oakland	94605	Soil Remediation
100079	Swissport Fueling Inc	1 Edward White Way	Oakland	94621	Storage of Organic Liquids
100275	Oakland Unified School*	955 High St	Oakland	94601	Gasoline Dispensing Facility
100276	Oakland Unified School	900 High St	Oakland	94601	Generators/Stationary Engines
100553	Pacific Pride*	421 23rd Ave	Oakland	94606	Gasoline Dispensing Facility
100608	Quik Stop #56	3132 Beaumont Ave	Oakland	94602	Gasoline Dispensing Facility
100667	Central Gas, 3	2400 Fruitvale Ave	Oakland	94601	Gasoline Dispensing Facility
100802	Dollar Rent A Car – Misuk Kim	1050 Langley St	Oakland	94621	Gasoline Dispensing Facility
100803	Ken Betts Chevron*	4150 Redwood Rd	Oakland	94619	Gasoline Dispensing Facility
100957	Oakland Airport-Aviation Maint	8500 Earhart Rd	Oakland	94621	Gasoline Dispensing Facility
106475	City of Oakland-Municipal Service Center	7101 Edgewater Dr	Oakland	94621	Gasoline Dispensing Facility
106872	Fruitvale Gas Food & Auto Mechanic LLC	3070 Fruitvale Ave	Oakland	94602	Gasoline Dispensing Facility
106951	Shell/Bansal Inc #135675*	2120 Montana St	Oakland	94602	Gasoline Dispensing Facility
107000	Portwood Shell #135696	820 Portwood Ave	Oakland	94601	Gasoline Dispensing Facility
107074	SF-Oakland Auto Truck Plaza	8255 San Leandro St	Oakland	94621	Gasoline Dispensing Facility
107277	Alameda Contra Costa Transportation District	1100 Seminary Ave	Oakland	94621	Gasoline Dispensing Facility
107308	Federal Express – Oakland Metroplex	1 Sally Ride Way	Oakland	94621	Gasoline Dispensing Facility
107385	City of Oakland – Fire Department*	2795 Butters Dr	Oakland	94602	Gasoline Dispensing Facility
107558	United Parcel Service	8400 Pardee Dr	Oakland	94621	Gasoline Dispensing Facility
107628	Northeastern University*	5000 MacArthur Blvd	Oakland	94613	Gasoline Dispensing Facility
107643	High Street Shell	630 High St	Oakland	94601	Gasoline Dispensing Facility
107951	Bay Area Rapid Transit District*	601 E 8th St	Oakland	94606	Gasoline Dispensing Facility
108062	Laurel Chevron & Auto Service	3420 35th Ave	Oakland	94619	Gasoline Dispensing Facility
108419	NG Grewal Inc.	4265 Foothill Blvd	Oakland	94601	Gasoline Dispensing Facility
108607	Sequoyah Country Club*	4550 Heafey Rd	Oakland	94605	Gasoline Dispensing Facility
108654	US Rentals	700 98th Ave	Oakland	94603	Gasoline Dispensing Facility
108774	Tony Star Gas and Food	3609 International Blvd	Oakland	94601	Gasoline Dispensing Facility

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
108978	A&N Ventures Oakland Inc.	845 66th Ave	Oakland	94621	Gasoline Dispensing Facility
109013	Chabot Golf Course*	11450 Golf Links Rd	Oakland	94605	Gasoline Dispensing Facility
109015	Oakland Alameda County Coliseum	7000 Coliseum Way	Oakland	94621	Gasoline Dispensing Facility
109208	MacArthur 76*	4276 Macarthur Blvd	Oakland	94619	Gasoline Dispensing Facility
109259	Bancroft Gas Corp	7225 Bancroft Ave	Oakland	94605	Gasoline Dispensing Facility
109331	7-Eleven Inc.*	506 International Blvd	Oakland	94606	Gasoline Dispensing Facility
109342	24-7 Gas & Food Mart	8930 Bancroft Ave	Oakland	94605	Gasoline Dispensing Facility
109993	OFD Fire Station #20	1401 98th Ave	Oakland	94603	Generators/Stationary Engines
109995	OFD Fire Station	2611 98th Ave	Oakland	94605	Generators/Stationary Engines
110294	MacArthur Valero Gas*	3530 MacArthur Blvd	Oakland	94619	Gasoline Dispensing Facility
110546	Valero*	2200 E 12th St	Oakland	94606	Gasoline Dispensing Facility
110650	ARCO Facility #0276	10600 Macarthur Blvd	Oakland	94605	Gasoline Dispensing Facility
110692	Hertz QTA Facility	8000 Earhart Road	Oakland	94621	Gasoline Dispensing Facility
110771	Flyers #454	8515 San Leandro St	Oakland	94621	Gasoline Dispensing Facility
110966	Avis Rental Car RAC QTA	1050 Wright St	Oakland	94621	Gasoline Dispensing Facility
110984	SAVE ON GAS	4251 International Blvd	Oakland	94601	Gasoline Dispensing Facility
111253	Unocal #5781	3535 Pierson St	Oakland	94619	Gasoline Dispensing Facility
111279	Seminary Gas	6235 Seminary Ave	Oakland	94605	Gasoline Dispensing Facility
111347	GO! Gas & Food	720 High St	Oakland	94601	Gasoline Dispensing Facility
111369	Herc Rentals	7727 Oakport St	Oakland	94621	Gasoline Dispensing Facility
111410	Royal Gas	10151 International Blvd	Oakland	94603	Gasoline Dispensing Facility
111417	Oakland 355th Petroleum Inc	3130 35th Ave	Oakland	94619	Gasoline Dispensing Facility
111586	Grand Gas Oakland #2	2951 High St	Oakland	94619	Gasoline Dispensing Facility
111611	Eagle 1 Gas	4301 San Leandro St	Oakland	94601	Gasoline Dispensing Facility
111613	TEC of California	8099 S Coliseum Way	Oakland	94621	Gasoline Dispensing Facility
111672	Golden Gas	6600 Foothill Blvd	Oakland	94605	Gasoline Dispensing Facility
111686	3101 98th Ave LLC	3101 98th Ave	Oakland	94605	Gasoline Dispensing Facility
111744	Tosco Northwest Company	3201 35th Ave	Oakland	94619	Gasoline Dispensing Facility
111778	Fast Gas and Shop	5910 Macarthur Blvd	Oakland	94605	Gasoline Dispensing Facility
111789	Silver Gas	9755 Edes Ave	Oakland	94603	Gasoline Dispensing Facility

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
111790	SKRR Corp, DBA Park Boulevard 76*	4500 Park Blvd	Oakland	94602	Gasoline Dispensing Facility
111859	East Bay Regional Park District*	9999 Redwood Rd	Oakland	94619	Gasoline Dispensing Facility
111918	98th Gas And Mart	2740 98th Ave	Oakland	94605	Gasoline Dispensing Facility
111939	ARCO Facility #07026	566 Hegenberger Rd	Oakland	94621	Gasoline Dispensing Facility
112037	Airport Plaza Union 76	191 98th Ave	Oakland	94603	Gasoline Dispensing Facility
112182	9800 International, Inc. dba Arco AM/PM	9800 E 14th St	Oakland	94621	Gasoline Dispensing Facility
112218	Oliver de Silva Inc dba Gallagher & Burk	4500 Tidewater Ave	Oakland	94601	Gasoline Dispensing Facility
112231	National Rental (US) Inc	165 98th Ave	Oakland	94603	Gasoline Dispensing Facility
112360	Grand Gas Oakland	3315 High St	Oakland	94619	Gasoline Dispensing Facility
112411	NW Shell	3750 International Blvd	Oakland	94601	Gasoline Dispensing Facility
112446	Chevron #9-1851	451 Hegenberger Rd	Oakland	94621	Gasoline Dispensing Facility
112450	Hegenberger Shell	285 Hegenberger Rd	Oakland	94621	Gasoline Dispensing Facility
112473	Metropolitan Golf Links	10051 Doolittle Dr	Oakland	94603	Gasoline Dispensing Facility
112492	East Bay Gas & Food*	2146 E 12th St	Oakland	94606	Gasoline Dispensing Facility
112521	Hegenberger Shell	540 Hegenberger Rd	Oakland	94621	Gasoline Dispensing Facility
112547	Golf Links Station, Inc.*	9750 Golf Links Rd	Oakland	94605	Gasoline Dispensing Facility
112558	Hegenberger Fuel and Food	449 Hegenberger Rd	Oakland	94621	Gasoline Dispensing Facility
112578	Ahmed Dobashi	4280 Foothill Blvd	Oakland	94601	Gasoline Dispensing Facility
112592	Enterprise Rent-A-Car	7800 Earhart Rd	Oakland	94621	Gasoline Dispensing Facility
200075	Dry Clean Time of America, Inc*	4032 E 15th St	Oakland	94601	Dry Cleaners
200099	A & E Auto Body Shop*	7933 International Blvd	Oakland	94621	Autobody Shop
200103	Hi-Hat Dry Cleaners*	2996 MacArthur Blvd	Oakland	94602	Dry Cleaners
200182	Young's Cleaners*	10700 MacARthur Blvd	Oakland	94605	Dry Cleaners
200291	Foothill Collision Center*	6821 Foothill Blvd	Oakland	94605	Autobody Shop
200308	American Auto Collision	3927 International Blvd	Oakland	94601	Autobody Shop
200327	Modern Auto Body*	1640 E 12th St	Oakland	94606	Autobody Shop
200432	All Star Gas	3820 San Leandro St	Oakland	94601	Gasoline Dispensing Facility
200511	City of Oakland Public Works	205 Hegenberger Rd	Oakland	94621	Generators/Stationary Engines
200557	Yaqub Corp DBA: 98th Gas	1141 98th Ave	Oakland	94603	Gasoline Dispensing Facility
200558	Spectacular Auto Works*	1101 7th Ave	Oakland	94606	Autobody Shop

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
200725	VIP Auto Collision Repair*	1220 E 12th St	Oakland	94606	Autobody Shop
200735	601 City Center LLC*	601 12th St	Oakland	94606	Boilers
200865	Lake Merritt Apartments dba Lake Merritt II Prsrvtn Ltd P'ship*	1417 1st Ave	Oakland	94606	Generators/Stationary Engines
200873	Carl's Jr. Restaurant*	10770 MacArthur Blvd	Oakland	94605	Food Processing Facility
201312	Angeles Auto Body Repair	910 92nd Ave	Oakland	94603	Autobody Shop
201419	East Bay Regional Park District*	2950 Peralta Oaks Ct	Oakland	94605	Generators/Stationary Engines
201508	Qualawash Holdings, LLC*	9957 Medford Ave	Oakland	94603	Boilers
201610	Alameda County Community Food Bank	7900 Edgewater Dr	Oakland	94621	Generators/Stationary Engines
201685	Lucasey Lofts, LP	2744 E 11th St	Oakland	94601	Generators/Stationary Engines
201736	BH 3500 Mountain Blvd, LLC*	3500 Mountain Blvd	Oakland	94619	Boilers
201740	Wheels America SF	525 66th Ave	Oakland	94621	Autobody Shop
201764	Brink's U.S.	3775 Alameda Ave	Oakland	94601	Generators/Stationary Engines
201970	Fresenius Kidney Care*	610 Hegenberger Rd	Oakland	94621	Generators/Stationary Engines
202073	T-Mobile – BA02023A-HN*	3700 Dorisa Ave	Oakland	94605	Generators/Stationary Engines
202178	IF – 85th	550 85th Ave	Oakland	94621	Food Processing Facility
202494	Parkridge Sanitary Sewer Pump Station*	5199 Parkridge Dr	Oakland	94619	Generators/Stationary Engines
202519	Verizon Wireless – Hwy 580/13*	5000 Macarthur Blvd	Oakland	94613	Generators/Stationary Engines
202646	Oakland 11*	6345 Coliseum Way	Oakland	94621	Generators/Stationary Engines
202884	Angeles Auto Body Repair*	9819 Pearmain St	Oakland	94603	Autobody Shop
202896	T-Mobile – BA62012S*	4901 East 12th St	Oakland	94601	Generators/Stationary Engines
203253	Oscar's Autobody Shop*	10025 San Leandro St	Oakland	94603	Autobody Shop
210087	Burger King #8326*	580 Hegenberger Rd	Oakland	94621	Food Processing Facility
210104	Burger King #4760*	7200 Bancroft Ave	Oakland	94605	Food Processing Facility
210295	Burger King*	1541 E 12th St	Oakland	94606	Food Processing Facility
210467	Agribag Inc.*	3925 Alameda Ave	Oakland	94601	Solvent and Coating Operations
210489	Alameda Contra Costa Transit District*	10626 International Blvd	Oakland	94603	Solvent and Coating Operations
211033	Moraga Emerald Inc/Burger King 2288*	4200 International Blvd.	Oakland	94601	Food Processing Facility
211353	Exquisite Auto Paint*	9611 Thermal St	Oakland	94605	Autobody Shop
211468	Dent Wizard/ Enterprise*	165 98th Ave	Oakland	94603	Autobody Shop

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Facility ID#	Name	Street	City	ZIP Code	Type of Facility
211522	Dr. Dave's Mobile Paint*	4755 Davenport Ave	Oakland	94619	Autobody Shop
211527	Colors on Parade*	4748 Brookdale Ave	Oakland	94619	Autobody Shop

*Facility within 94601, 94602, 94603, 94605, 94606, 94613, 94619, or 94621 ZIP Code but outside East Oakland community boundary

Appendix F-1: Facility Problem Statements

Background

As an early step to assist strategy development, Communities for a Better Environment (CBE) and the Community Steering Committee (CSC) identified a number of facilities of concern to East Oakland residents that are in the East Oakland Community Emissions Reduction Plan Community Boundary. While there are many industrial facilities in East Oakland that contribute to emissions and quality of life issues, Communities for a Better Environment (CBE) identified four specific facilities for deeper study based on years of community concerns. These facilities raised concerns such as incompatible land use (commingled industrial and residential zoning), land and water hazardous contamination, fugitive dust, toxic air pollution, and violations of environmental regulations.

Communities for a Better Environment (CBE) developed 'Problem Statements' for four facilities to describe their impact on the East Oakland community and to start a discussion with the Air District about how those impacts can be reduced. CBE research included compiling and analyzing extensive records from local and state government agencies, summarizing scientific information about potential health impacts of key pollutants, identifying nearby community gathering places most impacted by pollution, and collecting community history on facility impacts.

The four problem statements summarized in this document focus on:

- Prologis Redevelopment (formerly AB&I Foundry)
- Argent Materials, Inc.
- SE Combined Services of California (East Bay Crematory)
- Sterling Environmental Corporation

Over several months, CBE shared draft Problem Statements with Air District staff to clarify community concerns, discuss technical and regulatory information, and identify areas where Plan strategies and actions could feasibly address identified problems, particularly in the Commercial & Industrial focus area.

Developing the Problem Statements was a critical early step of the Plan process. The research illuminated patterns of environmental injustice in East Oakland, areas for improvement in Air District policy, regulations, and programs, a need for further research and improved information sharing with the CSC and broader community, opportunities for inter-governmental agency collaboration, pathways for community involvement in various city and county plans and procedures, and ultimately informed strategies and actions in the final Plan.

Facility Problem Statements Overview and Informed Actions

Problem Statements included community concerns that led to collaborative research, identification of detailed environmental health problem statements, and development of CERP strategies and actions.

Prologis Redevelopment of Former AB&I Foundry

Facility & Pollutants Summary

AB&I Foundry (AB&I) was located at 7825 San Leandro Street and was a manufacturing facility for cast-iron and metal pipe fittings that operated for close to a century in East Oakland before ceasing operations in 2022. It was located directly upwind of the densely populated Coliseum, Fitchburg, Woodland, and Arroyo Viejo residential neighborhoods where residents are primarily people of color and live below the Federal Poverty Level. Within these neighborhoods are many community-centered spaces that serve local residents, including Acorn-Woodland Elementary School, EnCompass Academy, the 81st Avenue Library, and Allen Temple Baptist Church. For years, community reported strong chemical smells and respiratory distress in the vicinity of AB&I. Long-term community advocacy culminated in lawsuits against AB&I's parent company in 2021-2022 for exposing members of the public to toxic hexavalent chromium emissions without warning.[1]

Almost immediately after AB&I closed, the former foundry site was acquired by Prologis with plans to build a 311,000 square-foot warehouse.[2] The Alameda County Department of Environmental Health (ACDEH) is overseeing the remediation process for the cleanup of toxic substances in the soil and groundwater at the site.[3] Community members have expressed concerns about exposure to pollutants during remediation and construction, increased particulate matter exposure and traffic due to trucks entering and leaving the site during construction, and a lack of community input on the future use of the site.

[1] California Department of Justice, Office of the Attorney General (Cal AG). Press Release: Attorney General Bonta Files Lawsuit Against East Oakland Metal Foundry Over Emissions of Hexavalent Chromium, a Dangerous Carcinogen. February 15, 2022. Accessed May 17, 2023: https://oag.ca.gov/news/press-releases/attorney-general-bonta-files-lawsuit-against-east-oakland-metal-foundry-over. Communities for a Better Environment (CBE). Press Release: Community group sues East Oakland's AB&I Foundry for violating Prop 65. December 16, 2021. Accessed July 6, 2025. https://www.cbecal.org/wp-content/uploads/2021/12/CBE-Foundry-Lawsuit-Press-Release-FINAL.pdf.
[2] 7825 San Leandro Street Project, SCH Number 2024090014, CEQAnet.gov (last visited March 11, 2025).
[3] 7825 San Leandro Street GeoTracker Site T10000019792, State Water Resources Control Board (last visited March 6, 2025).

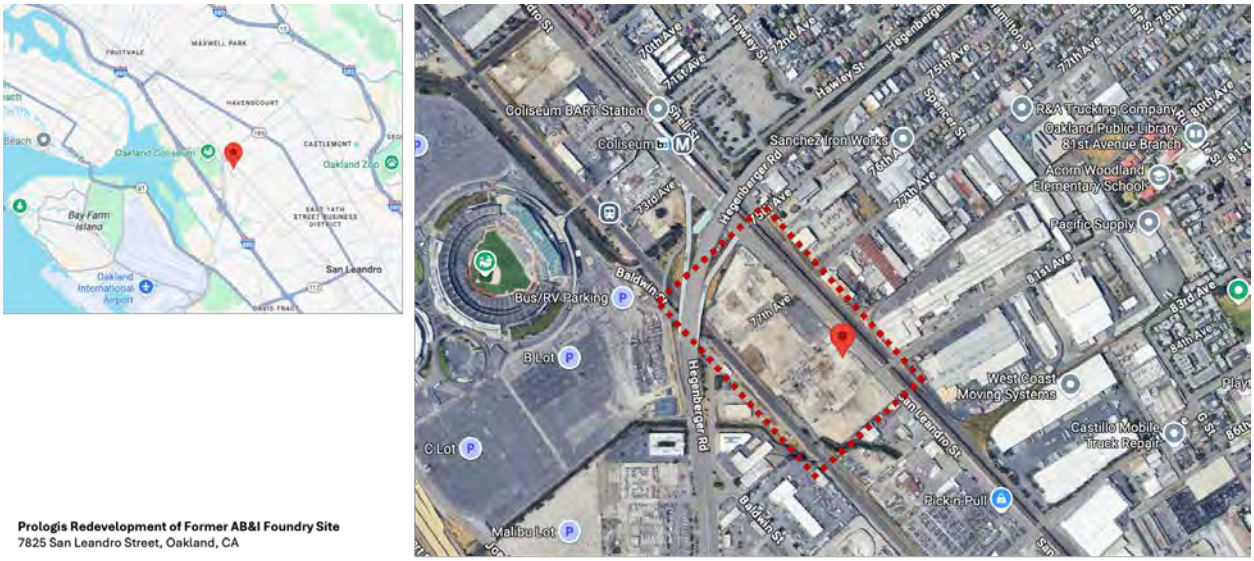


Figure F-1a: Location of Prologis Redevelopment of Former AB&I Foundry

Problem Statement / Community Concern

Redevelopment of the property into a large warehouse would result in increased truck traffic and subsequently diesel particulate matter in a neighborhood already experiencing very high rates of asthma-related issues. The development of additional industry in this area, which already contains other trucking and logistics businesses nearby, takes away from the opportunity for community-focused development, such as educational centers and community gathering places.

Related CERP Strategies and Actions

- Action T&M 1.1. Indirect Source Policy Package, Transportation & Mobile Sources Focus Area
- Strategy 3. Advancing Environmental Justice Through Zoning and Land Use Tools, Built Environment Focus Area

Argent Materials, Inc.

Facility & Pollutants Summary

Argent Materials, Inc. (Argent) is a single facility with two yards that operate adjacent to and upwind of the Air District former Community Air Risk Evaluation (CARE) Program communities, including the Fitchburg, Woodland, Rudsdale, and Highland neighborhoods. Argent's Main Yard is located at 8300 Baldwin Street, which is directly across the street from the East Bay SPCA Oakland Adoption Center and a shopping plaza. The Main Yard includes outdoor and indoor recycling operations that grind concrete and raw asphalt (collectively referred to as "aggregate"). Adjacent to the Main Yard is Argent's Fulfillment Yard located at 8501 San Leandro Street. The Fulfillment Yard is a storage and overflow location for Argent's finished aggregate. Trucks transfer material to and from both yards. Argent's operations produce particulate matter ($PM_{2.5}$ and PM_{10}) and toxic air contaminants (TACs).



Figure F-1b: Location of Argent Materials

Problem Statement / Community Concern

The community has observed dust in the air and material tracked out onto the pavement outside Argent, and an increase in dust when Argent expanded its operations. The community is concerned about potential health impacts from breathing in dust containing silicas and other forms of particulate matter, as well as exposure to truck emissions.

Related CERP Strategies and Actions

- Strategy 1. Reduce Exposure from Fugitive Dust, Material Handling, and Construction Activities, Commercial & Industrial Focus Area
- Action C&I 1.2. Advocate for and/or Implement Local Best Practices at Facilities with the Potential to Produce Fugitive Dust, Commercial & Industrial Focus Area
- Action C&I 3.1 Improve Permitting Processes to be More Efficient and Timely
- Action C&I 3.2 Provide Clear and Accessible Air District Permitting Information

- Action C&I 7.1. Targeted Inspections to Address Repeat Violators, Commercial & Industrial Focus Area
- Strategy 8. Improve Accessibility to and Effectiveness of the Air Quality Complaint Program, Commercial & Industrial Focus Area
- Action PH 3.1. East Oakland Air Monitoring Project, Public Health and Community Wellness Focus Area
- Action T&M 1.1. Indirect Source Policy Package, Transportation & Mobile Sources Focus Area

SE Combined Services of California (East Bay Crematory)

Facility & Pollutants Summary

SE Combined Services of California (also known as East Bay Crematory or Crematorium) is located at 9850 Kitty Lane and is a crematorium upwind from the Columbia Gardens residential neighborhood and other sensitive receptors already experiencing the cumulative health impacts of pollution from the I-880 freeway, Oakland International Airport, and other local industry. The Crematorium's operations include incinerating human remains and caskets using natural gas-fired furnaces that produce particulate matter ($PM_{2.5}$ and PM_{10}) and toxic air contaminants (TACs).[4]

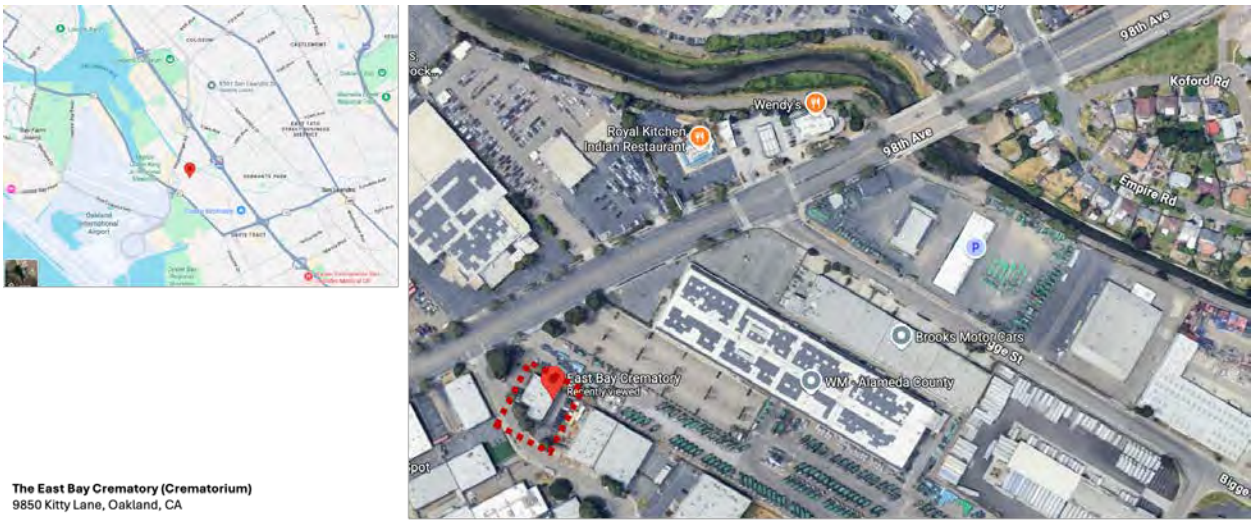


Figure F-1c: Location of East Bay Crematory

Problem Statement / Community Concern

The community is concerned about potential health impacts from exposure to the Crematorium's emissions and added cumulative impacts.

Related CERP Strategies and Actions

- Strategy 2. Improve Implementation of Rule 11-18 and the Facility Risk Reduction Program While Engaging Community, Commercial & Industrial Focus Area
- Action C&I 3.4. Reduce Industrial Pollution on Unhealthy Air Quality Days, Commercial & Industrial Focus Area
- Strategy 3. Advancing Environmental Justice Through Zoning and Land Use Tools, Built Environment Focus Area

[4] Bay Area Air District, East Oakland Emissions Inventory (June 2024), https://www.baaqmd.gov/~/media/files/ab617-community-health/east-oakland/documents/2024/east-oakland-emission-inventory-report-eng-pdf.pdf?rev=86984a9878a74cd29954f2e13314e06a&sc_lang=en

Sterling Environmental Corporation

Facility & Pollutants Summary

Sterling Environmental Corporation (Sterling) is located at 10203 E Street and is an asbestos and lead abatement consultant that is approved for the temporary on-site storage of hazardous materials and waste, including asbestos-containing building demolition debris.

Sterling is located alongside the Elmhurst Park and North Stonehurst neighborhoods, directly across from residential homes. The facility shares a property line with two elementary schools, both of which are attended predominantly by low-income People of Color, and a public pre-K program for children aged three to five years old. Sterling's fence line is directly adjacent to a community garden that is tended and used to teach students about agriculture, soil science, and nurturing the land.



Figure F-1d: Location of Sterling Environmental

Problem Statement / Community Concern

Community members are concerned about school children and residents being exposed to hazardous materials stored onsite, such as asbestos and lead.

Related CERP Strategies and Actions

- Strategy 8. Improve Accessibility to and Effectiveness of the Air Quality Complaint Program, Commercial & Industrial Focus Area
- Strategy 1. Reduce Exposure from Fugitive Dust, Material Handling, and Construction Activities, Commercial & Industrial Focus Area
- Strategy 3. Advancing Environmental Justice Through Zoning and Land Use Tools, Built Environment Focus Area

Appendix F-2: Proactive City Updates and CSC Engagement

This appendix lists policies adopted by various agencies that are of interest to the CSC across all Focus Areas.

Built Environment and Land Use

BE 1.6. Proactive City Updates and CSC Engagement on Safe and Healthy Homes: The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives:

- **Housing Element, Action 2.1.3:** The City of Oakland will develop a proactive rental inspections program to significantly improve housing safety and quality and address housing needs, particularly in areas with older housing stock and communities experiencing health disparities.
- **Environmental Justice Element, Policy EJ-4.3:** As part of the Joint Lead Hazard Abatement Program in partnership with Alameda County Public Health Department (ACPHD), improve ongoing ability to screen for and eliminate lead hazards through proactive approaches, including proactive inspections of rental property dwellings and lead-safe certification requirements for childcare facilities and schools. Prioritize abatement, testing, outreach, and education activities in high-risk areas and serving the populations most likely to live in high-risk dwellings in EJ Communities, as identified in Figure EJ-18. See also Action 2.1.2 in the 2023-2031 Housing Element.

BE 3.4. Oakland's Anti-Displacement Strategic Action Plan: Support the CSC's involvement in monitoring the implementation of the City of Oakland's Anti-Displacement Strategic Action Plan, which builds upon the City's recently adopted Housing Element and other related housing initiatives. The equity framework for this plan includes:

- Homelessness Prevention
- Tenant Anti-Displacement
- Homeowner Anti-Displacement
- Citywide Stabilization, ensuring a protective policy and regulatory environment

BE 3.5. Oakland's General Plan Update: Support the CSC in participating in the City of Oakland General Plan Land Use and Transportation Element (LUTE) Update to identify opportunities to relocate truck attracting and heavy industrial business away from East Oakland neighborhoods.

BE 3.6. Proactive City Updates and CSC Engagement on Brownfield Sites and Other Contaminated Lands: The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives:

- **Safety Element Action SAF-A.30:** Outreach and engage with the Alameda County Department of Environmental Health (ACDEH), California Department of Toxic Substances Control (DTSC), and the Regional Water Resources Control Board (to ensure the public has access to a database with detailed site information on all brownfields and contaminated sites in the city and the existing restrictions placed on those sites.

- **Safety Element Policy SAF-5.3:** Through enforcement of standard conditions of approval, ensure buildings and sites are or have been investigated for the presence of hazardous materials and/or waste contamination before development or if there is reason to believe an existing building or site may contain hazardous materials that pose a threat to possible users. Continue to require remediation and construction techniques for adequate protection of construction workers, future occupants, adjacent residents, and the environment are adequately protected from hazards associated with contamination.
- **Safety Element Policy SAF-5.5:** Study Options to Provide Financing for the Remediation of Environmentally Contaminated Sites, with Priority for Affordable Projects. As grant and loan funding sources are secured, support property owners through technical assistance and financing of characterization and/or remediation of environmentally contaminated sites. Prioritize bioremediation techniques to remove contamination from water sources.

Commercial and Industrial

C&I 5.3. Food Preparation General Plan Policies and Incentives. The City of Oakland collaborates with the CSC to ensure new General Plan policies and zoning amendments about restaurants, food trucks, and street food vendors reflect the latest research and technology[1] for reduced indoor and outdoor air pollution from commercial food preparation.

C&I 6.4. Auto Body General Plan Policies: The City of Oakland collaborates with the Air District and the CSC to ensure that new General Plan policies and zoning amendments about auto body shops, mechanics, tow yards, and gas dispensing facilities reflect the latest research and technology for reduced indoor and outdoor air pollution from auto-related businesses and activities.

Transportation and Mobile Sources

T&M 2.4. Proactive City Updates and CSC Engagement on Traffic Safety, Walkability, and East Bay Greenway Projects: The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives:

- Safe Oakland Streets[2] (see Capital Improvement Plan Major Projects interactive map link)[3]
- **Equitable Climate Action Plan policy TLU-8:** Expand and Strengthen Transportation Demand Management Requirements.

[1] City of Oakland. "Building Electrification for Business Owners and Commercial Property." 2025. https://www.oaklandca.gov/Government/Oakland-Improvement-Projects/Building-Electrification/Building-Electrification-for-Business-Owners-and-Commercial-Property.
[2] Safe Oakland Streets Documents. https://www.oaklandca.gov/Public-Safety-Streets/Traffic-Safety/Safe-Oakland-Streets#documents. Accessed October 1, 2025.
[3] City of Oakland Department of Transportation (OakDOT) Projects Map. https://www.oaklandca.gov/Public-Safety-Streets/Transportation-Projects-Reports/OakDOT-Projects-Map. Accessed October 1, 2025.

Public Health and Wellness

PH 2.2. Proactive City Updates and CSC Engagement on Improving the Local Economy: The City of Oakland will proactively update and seek input from the CSC during the development and implementation of the Economic Development Action Plan (EDAP) in order to retain, support, and grow local businesses in East Oakland.

PH 2.3. Proactive City Updates and CSC Engagement on Participatory Budgeting: The City of Oakland proactively updates and seeks input from the CSC during the implementation of the following EJ Element Actions:

- **EJ-A.34:** Develop a participatory budgeting process for EJ Community investments and explore expansion into other departments. Related to Housing Element Action 5.2.9.
- **EJ-A.36:** Integrate community-led and community-driven initiatives into City planning processes, such as other General Plan elements, future action and area plans, the Capital Improvement Program (CIP) process, the adopted City budget, bond measures, and other City investments and resource allocations.

PH 5.3. Proactive City Updates and CSC Engagement on Emergency Training for Community Members: In alignment with Oakland General Plan Safety Element[4] policy SAF-8.10 "Community Training and Awareness", connect interested East Oakland community members with the CORE (Communities of Oakland Respond to Emergencies) Program, Community Emergency Response Training (CERT) program, and other emergency training opportunities, particularly as they align with air quality incidents and emergencies like wildfires.

- **SAF-8.10: Community Training and Awareness.** Continue to offer community training on emergency prevention, preparedness, and response as part of the CORE program. Partner with community organizations to target harder-to-reach populations, such as the unhoused, or linguistically isolated populations. Training and educational materials should build capacity among residents to respond to an emergency.

PH 6.2. Proactive City Updates and CSC Engagement on Indoor Air Pollutant Awareness: The City of Oakland proactively updates and seeks input from the CSC during the implementation of the following EJ Element Actions:

- **EJ-4.4: Healthy Homes Awareness**: Continue to work with Oakland Housing & Community Development (HCD), Alameda County Public Health Department (ACPHD), and community organizations to promote safe and sanitary housing in EJ Communities in Figure EJ-17 by providing owners and occupants with culturally appropriate and linguistically accessible information and resources about home health, including lead/Lead Safe Home Program grants, indoor air pollutants, asthma triggers, hazard zones, and other information. Efforts may include the development and dissemination of healthy home checklists, conducting trainings, workshops, or audits.

[4] City of Oakland, Oakland 2045 General Plan, Oakland Safety Element. Adopted September 26, 2023. https://www.oaklandca.gov/files/assets/city/v/1/planning-amp-building/documents/sp/gp/safety-element/safety-element_adopted-9.26.23_89907-c.m.s-1.pdf. Accessed October 1, 2025.

Illegal Dumping

ID 1.6. Proactive City Updates and CSC Engagement on Illegal Dumping: The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives:

- **EJ-3.2 Blight Control and Prevention:** Control and mitigate impacts of blight-producing industrial and commercial activities with a high tendency of attracting trash and litter, such as recyclers, fast food restaurants, warehouses and industrial sites, and other businesses that may attract blight. Additionally, vacant lots should be routinely maintained by property owners and kept clean.
- **EJ-3.3 Proactive Illegal Dumping Cleanup:** Support the expansion of proactive cleanup crews that target illegal dumping "hot spot" areas first in EJ Communities.
- **EJ-3.4 Illegal Dumping Enforcement:** Continue to enforce dumping as an illegal activity, including increased monitoring of hot spots on weekends and before/after business hours, ticketing, and expansion of Environmental Enforcement Officers. Annually assess, as part of the budget process enforcement, efforts to ensure discriminatory patterns do not emerge.
- **EJ-3.5 Community Education on Illegal Dumping:** Expand community campaigns in EJ Communities in partnership with community members to prevent dumping, inform neighbors about affordable services and ways to report illegal dumping, and support youth leadership. Develop campaign outreach materials in a variety of languages.

Urban Greening and Workforce Development

UGW 3.1. City of Oakland Engages the CSC in the General Plan OSCAR Update: The City of Oakland consults with the CSC in its park planning efforts to prioritize improvement of greenway networks between parks and neighborhoods in East Oakland, as part of the Open Space, Conservation, and Recreation (OSCAR) Element in Phase 2 of the General Plan Update. The CSC is also engaged in designing high-quality, inclusive programming, with a simplified process for permissions or approvals, that encourages diverse usage of park facilities throughout the day and into the evenings, catering to older adults, youth, and people with disabilities.

UGW 3.2. Proactive City Updates and CSC Engagement related to Neighborhood Gardening: The City of Oakland proactively updates and seeks input from the CSC during the implementation of these initiatives:

- **Environmental Justice (EJ) Element Policy EJ-5.3:** Community and Home Gardening. Support community and home gardening efforts and – particularly in EJ communities underserved by healthy food retail – by providing financial incentives such as land transfers or discounted water rates and technical assistance in the form of online and library resources and workshops on gardening basics and cooking easy, healthy meals with fresh produce. Work with community groups to increase the prevalence of accessible, local gardens.

UGW 4.1. Tracking Employment Pathways for Green Jobs: The City of Oakland and Alameda County engage the CSC for input and updates during the development and implementation of proactive workforce development policies:

City of Oakland 2030 Equitable Climate Action Plan Just Transition

- Buildings-2: Plan for All Existing Buildings to be Efficient and All Electric by 2040
    - By 2022, develop a policy roadmap to achieve decarbonization of the existing building stock by 2040 without additional cost burden or displacement risk to frontline communities. The roadmap must address:
        - Equitable process and outcomes, including avoiding bill increases, ensuring benefits flow to renters, and local green jobs; etc.

City of Oakland Zero Emission Vehicle Action Plan

- City Leadership
    - Action 4: Collaborate With Partner Agencies to Expand the Network of Public EV Chargers
        - The City can collaborate with the Community College District for vocational training opportunities in the Zero Emission Vehicle (ZEV) sector (see Action ZE-3). A partnership can also be developed to expand public charging opportunities on community college parking lots for use by students, staff, faculty, and local Oakland residents
    - Action 6: Support ZEV Education and Awareness in Underserved Communities
        - By 2023, launch or expand partnerships with Oakland Unified School District (OUSD) and others to expand awareness of ZEV-related career pathways

- Zero Emission Vehicles (ZEV) Economy
    - Action 2: Hold An Annual “Clean, Green, And Just Business and Employment Expo”
        - Training providers like the Cypress Mandela Training Center, Youth Employment Partnership, local community colleges, and others can recruit trainees, link their own students to businesses, and strengthen connections that will build strong pathways from training to high-road jobs.
        - By 2023, work with partners to launch an annual Expo highlighting business, career, and training opportunities in ZEV technologies and services as well as other fields related to equitable decarbonization, carbon sequestration, and climate adaptation.
    - Action 3: Partner With Local Community Colleges and Workforce Training Partners to Create ZEV-Specific Training Programs and Pathways
        - City must work with its training partners, as well as with the private sector, to ensure that workers formerly employed in local fossil-fuel-related jobs (such as maintaining internal combustion engines) can be retrained and receive the financial support they need to shift careers if necessary
        - As the City's 2021 Decarbonization Workforce Stakeholder Series made clear, many of the components of a robust workforce development network supporting Oakland's Just Transition are already in place. The city can support this ecosystem by providing clear guidance about these types of positions needed and the ultimate goals of equitable decarbonization. The city must also nurture partnerships that will underpin reliable career pathways.

- Action 6: Build Partnerships with Local Labor Leaders to Ensure Critical Needs Are Being Addressed
    - Working with unions, labor leaders, and training partners, identify ways to best serve the communities that need resources the most. Workforce efforts must prioritize historically disadvantaged, impacted, and underinvested communities

Ava Community Energy: Zero-Emission Medium and Heavy-Duty Goods Movement Blueprint

- Workforce Development:
    - Vehicle Maintenance: Partnerships for Equipment and/or Facilities
        - Action 10:
            - Enter a partnership affording community college students internship opportunities, granting them access to training facilities and hands-on vehicle maintenance experience
        - Action 11:
            - Prepare a retrospective report to public agency stakeholders about the Peterbilt partnership detailing components that worked well, opportunities to scale this type of training partnership further, and what is needed to deliver that scale. Coordinate with Peterbilt for review and approval before publication.
        - Action 12:
            - Enter a Memorandum of Understanding (MOU) with one or more local medium and heavy-duty (MDHD) dealers or employers they are currently working with to offer ZE mechanics apprenticeships annually.
    - Vehicle Maintenance: Trainer Capacity Building and Retention
        - Action 6:
            - Negotiate partnership(s) with OEM(s) to enable mechanics employed by the OEM or a dealer in their network to teach ZE mechanics courses within the community college programs. Evaluate engagement with a formal coalition of truck OEMs, e.g., Clean Truck Partnership.
        - Action 7:
            - Evaluate possibility of entering a Memorandum of Understanding with a local dealership and/or parent OEM to establish a partnership for workforce training opportunities at the local OEM or dealership facilities and/or with OEM-trained technicians.
    - Vehicle Maintenance: Workforce Analysis and Retention
        - Action 8**:**
            - Provide funding to support community college faculty upskilling to teach ZE-MDHD mechanics programs. Authority: California Air Resources Board (CARB), California Energy Commission (CEC), Air District
        - Action 15:
            - Co-fund California Community Colleges' Next Gen Auto social media campaign to expand the reach and potential for driving

enrollments with a focus on equity and messaging that resonates with underrepresented communities. BACCC) to present to State agencies, retain control over the regional campaign, and support State in contemplating how to expand the campaign to other regions in California.

        - Action 17:
            - Conduct high school campus recruiting visits, leveraging marketing materials and messaging developed through Actions #14 and #15.
    - Charging Infrastructure: Partnerships for Equipment and/or Facilities
        - Action 27:
            - Evaluate feasibility of a Community Workforce Grant to fund/support local workforce training programs. Funds could be raised by Ava via some combination of EV charging revenues, low-carbon fuel standard (LCFS) credit sales, future Ava Board-approved budget, and/or private sector development partner commitment of funds and/or charging equipment.
    - Charging Infrastructure: Curriculum Development
        - Action 24:
            - Develop (OEMs) and implement (Eden Area ROP) Introductory EV Charging Coursework for Upskilling and Returning Workers programming. Program to have ability to expand to serve high school students if/as electrical offerings are approved by school districts.
- Community Benefits
    - Direct Community Investments
        - Action 7**:**
            - Expand awareness of educational and career pathways to ensure residents can take advantage of workforce training and community hire programs. Also see Workforce Actions #16 and #17.

Alameda County Climate Action Plan for Government Services and Operations through 2026

- Green Economy and Prosperity (GEP-1): Vendor Sustainability and Resilience
    - Submeasure A:
        - Integrate outreach, training, and resources in sustainable, climate smart, equitable, and climate resilient operations into programs for current and prospective vendors.
        - Target outreach to small, emerging, and disadvantaged local businesses.
    - Submeasure C:
        - Explore new incentives, requirements, mechanisms, and funding for contracted service providers serving populations disproportionately harmed by climate change to support clients' uptake of appropriate protective actions and health services needed before, during, and after climate shocks.
    - Submeasure D:

        - Explore and implement contract mechanisms or other incentives to encourage vendors to advance sustainability in their operations, such as becoming certified by the Alameda County Green Business Program. Encourage businesses to produce sustainable goods locally when possible.
- Green Economy and Prosperity (GEP-3): Hiring on Climate-Related Large Capital Projects.
    - For large climate-related capital projects at the County, meet or exceed goals in existing workforce agreements to prioritize hire of and outreach to local residents with high barriers to employment.
    - Submeasure A:
        - Continue monitoring contractors to prioritize hiring disadvantaged residents on covered projects, with a goal of 40 percent of all apprentice hours worked by disadvantaged residents
        - Perform robust outreach to connect disadvantaged residents (i.e., those unemployed at commencement of work and sponsored into or enrolled in an approved apprenticeship program) with organizations providing pre-apprenticeship and preemployment support. Work with outside organizations on outreach to communities of interest, including those who are formerly incarcerated, former foster youth, those who have experienced homelessness, single parents, and others struggling to find full time employment. Make referrals to training as needed.
        - Continue to monitor and enforce adherence to the County's Project Stabilization and Community Benefits Agreement (PS/CBA).
- Green Economy and Prosperity (GEP-4): Green Job Promotion
    - Promote pathways and access to climate-related County jobs so that employees in climate roles represent the diversity of communities in the County and all groups benefit from the green economy.
    - Submeasure A:
        - Identify climate-related jobs, growth potential, and pathways at the County.
    - Submeasure B:
        - Share County green career paths with employees.
    - Submeasure C:
        - Support agencies to partner with community-based organizations, trade organizations, and community colleges on recruitment to broaden reach for climate and green economy jobs, in a manner informed by priority communities
    - Submeasure D:
        - Give input to trade schools on training needs for sustainable and resilient, high-priority workforce training needs at the County, such as those related to building operations and maintenance.
    - Submeasure E:
        - Provide employees with training opportunities on the latest technologies and approaches to maintain County buildings and fleets
- Green Economy and Prosperity (GEP-5): Growing the Alameda County Climate Workforce
    - Expand County partnerships with local workforce development programs, including educational partners and employers, to support a diverse, trained, and ready workforce for climate-related career opportunities and serve as a resource for industry partners seeking to build pathways into the clean

economy. Include these opportunities in County departments that administer workforce development programs.
    - Submeasure A:
        - Identify key local stakeholders and develop robust partnerships to support climate-related workforce development efforts.
    - Submeasure B:
        - Encourage service providers to prioritize high-growth, climate-related employment opportunities that provide career pathways to good, family-sustaining/quality careers for diverse communities (including people of color, women, people with disabilities, youth, low-wage earners), and people with barriers to employment.
    - Submeasure C:
        - Educate and facilitate service provider connections with training entities that enable exposure to climate-related instruction or on-the-job training, as informed by local labor market information.
    - Submeasure D:
        - Increase focus on County departments that administer workforce programs to engage in matching Alameda County residents from diverse and low-income communities, as well as youth and people historically affected by systemic barriers and/or facing individual barriers to employment, with high-quality green employment opportunities, as available.
    - Submeasure E:
        - Prioritize the recruitment of county residents from BIPOC and low-income communities as workers on County construction projects covered by the Countywide Project Stabilization/ Community Benefits Agreement.
- Green Economy and Prosperity (GEP-6): Developing the Regional Circular Economy
    - Support a circular economy based on reuse, repair, recovery, and refurbishment.
    - Submeasure A:
        - Participate in a regional collaborative focused on community reuse and repair programs to increase waste diversion, reduce material consumption, and create green jobs.
        - Operate a pilot program through the County Library system for distribution of tools that support the growth of the sharing economy in the community and expand the County's seed lending library to support home gardens.
- Sustainable Materials Management 1: Operational Program Implementation
    - Implement programs and projects to reduce waste generation at County facilities and manage generated waste in a sustainable manner for maximum landfill diversion.
    - Submeasure D:
        - Expand linkages to paid employment through litter abatement programs for individuals with barriers to traditional employment, while connecting the participants to additional job-training and career opportunities.

Appendix G: Applicability Analysis for California Environmental Quality Act

The California Environmental Quality Act (CEQA) is a state law that requires public agencies to consider the environmental impacts of certain projects they undertake or approve. For projects that are subject to CEQA, the statute imposes specific legal requirements that agencies must follow before carrying out or approving the project. This appendix evaluates whether CEQA applies to this project – the Community Emissions Reduction Plan (CERP) for East Oakland. As explained in more detail later in this discussion, Bay Area Air Quality Management District (Air District) staff have reviewed all aspects of the CERP and determined that it is exempt from CEQA, for multiple reasons.

First, as an overall matter, the CERP is being adopted to benefit the environment and the health of residents of the East Oakland community, and all of the action items within the CERP support this goal. Therefore, adoption of the CERP is exempt from CEQA review under CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment. This exemption applies to actions taken by regulatory agencies, as authorized by law, to "assure the maintenance, restoration, enhancement, or protection of the environment." The Air District is a regulatory agency charged with the protection of air quality in its jurisdiction. Because the goal of the CERP is to protect air quality and public health, its adoption fits within the category of actions subject to this exemption. This same exemption would also apply to each of the individual strategies within the CERP that involve actions by the Air District.

Second, all of the individual strategies and actions set forth in the CERP would be exempt if they were implemented on their own, apart from adoption of the CERP. For example:

Strategies that would either not cause any physical changes to the environment or involve such minimal physical changes that it can be seen with certainty that there is no possibility that the proposed project may have a significant adverse effect on the environment fall within the common sense exemption in CEQA Guidelines section 15061(b)(3). Examples include actions that involve encouraging local governments to establish vegetative buffer zones (Urban Greening actions 1.1, 2.1 and 3.1), advocating for the City of Oakland to modify its zoning or land use regulations (Built Environment and Land Use actions 3.2 through 3.5), and developing model policies or ordinances for possible future adoption by other entities (Transportation and Mobile Sources action 1.1).

Strategies that call for feasibility and planning studies are exempt under Public Resources Code section 21150 and CEQA Guidelines section 15262 ("A project involving only feasibility or planning studies for possible future actions which the agency . . . has not approved, adopted, or funded does not require the preparation of an EIR or negative declaration but does require consideration of environmental factors."). Examples include exploring the feasibility of expanding the Air District's existing Air Filtration Program to supply air filtration units to Head Starts (Built Environment and Land Use action 1.1), studying the feasibility of policies to address the impacts of large warehouses and other types of business that are "magnets" for heavy duty truck trips (Transportation and Mobile Sources action 1.1), participating in the development of a planning study focusing on improving transit on Foothill Boulevard (Transportation and Mobile Sources action 2.2), and studying the efficacy of street sweeping to

evaluate the areas in greatest need for sweeping (Transportation and Mobile Sources action 5.1).

Strategies that would result only in the modification of existing facilities or the construction of new minor facilities are exempt under CEQA Guidelines sections 15301 (“Existing Facilities”; class 1) and 15303 (“New Construction or Conversion of Small Structures”; class 3). These strategies include the installation of air filters and monitoring equipment, and the installation of bus boarding islands or bus bulbs to improve rider boarding safety and access.

Strategies that call for information collection, inspections, enforcement, education, and workplace regulations are exempt under CEQA Guidelines sections 15306 (“Information Collection”; class 6), 15309 (“Inspections”; class 9), 15321 (“Enforcement Actions by Regulatory Agencies”; class 21), 15322 (“Educational or Training Programs Involving No Physical Changes”; class 22), and 15324 (“Regulations of Working Conditions”). These categorical exemptions would exempt CERP strategies that include activities like air quality monitoring or other data collection, performance inspections or compliance checks, certain enforcement actions involving permit enforcement or revocation, development of webpages or community outreach campaigns, gathering information about potential fundings sources, and changes to Air District staffing or coordination practices.

The Air District also considered the strategies included in the CERP that will involve undertaking rulemaking activities to address specific air quality concerns. These rulemakings include proceedings to further reduce public health impacts from fugitive dust, to improve implementation of rules to reduce toxic air emissions at existing facilities, and to reduce localized emissions from backup diesel generators. These rulemaking proceedings could potentially be subject to CEQA review when they occur, depending on the nature of any rules the Air District may propose to adopt in them. At this point, however, the CERP merely calls for these proceedings to be initiated in the future, generally following a period of study to determine how to approach a particular issue. The CERP has not identified, let alone committed to, any particular type of new or more stringent rule or regulation that would be developed or adopted in these rulemaking proceedings. Given that it is uncertain what the result of those regulatory proceedings would be, it is not possible at this stage to determine whether they could result in potentially significant environmental impacts. Therefore, CEQA review is not required because the nature and extent of any environmental impacts would be too speculative for evaluation at this point. When the Air District initiates a specific rulemaking process, it will determine whether and what level of CEQA review is required for that rulemaking at that time.

Response to Public Comments
Draft Right to Breathe: East Oakland Community Air Quality Justice Plan

On November 3, 2025, the Air District and the East Oakland Community Steering Committee released the *Draft Right to Breathe: East Oakland Community Air Quality Justice Plan*. The public comment period extended for four weeks from November 3 to December 7, 2025. A public Open House was held on November 13, 2025, at Youth UpRising.

The following document provides responses to public comments. A total of 11 members of the public commented on the Draft Plan including individuals, representatives of local non-profits, international think tanks, local businesses and the Port of Oakland. An additional 119 members of the public commented on behalf of the Stop Oakland Airport Expansion Coalition, focused on opposing the Oakland San Francisco Bay Airport expansion project.

- **Attachment 1** contains a response to comments, including documenting changes to the Draft Plan to reflect public feedback. The attachment begins with general comments; the second part contains the comments from the Stop Oakland Airport Expansion Coalition.
- **Attachment 2** contains the copies of all comment letters received.

Throughout this document “Plan” refers to the version of the Community Emissions Reduction Plan that will be voted on by the CSC in February. The “Draft Plan” refers to the version that was out for public comment.

Attachment 1

In the table below, the commenter name appears in black font in the first row. Additional comments by the same commenter appear in grey font to easily see comments related to one person.

Name	Organization	Comment	Response
Kimberly Ryan		General - Consider adding chapter numbers in addition to page numbers to assist with tracking while reviewing the document	Comment is respectfully noted.
Kimberly Ryan		Chapter 5 - Figures 5-18 and 5-21: these figures seem to compare similar modeled risks (cancer risk per million) but show two very different results. Understanding the nuanced differences may be difficult for a reader who lacks the expertise to distinguish between the two. Suggest using more detailed or clarifying language in place of the "key local sources" referenced in Figure 5-18 "and the "permitted facilities" in Figure 5-21.	Plan revised as follows: caption for Figure 5-18 was expanded to list all the sources included in the mapped result. A footnote was added to the discussion of Figure 5-21 to make it clear that the map only covers permitted sources (not all modeled sources like Figure 5-18).
Kimberly Ryan		Chapter 7 -Community Concern Statement 4 (page 186): The first statement referring to diesel trucks seems random - is that intentional? If so, suggest tying-in to why the diesel truck traffic is specifically relevant to Oakland Airport activities here.	Plan revised to delete first sentence (clerical error).
Kimberly Ryan		Chapter 7 -The term "health stakeholder" is confusing and one that I have never heard. Following an internet search, nothing popped-up. Suggest adding "public" in front of "health" or using the term "public health officials" if that clarifies the intended usage.	Plan revised to add "public" to "health stakeholder".
Kimberly Ryan		Appendix F-1 - - Consider starting a new page for each of the different facilities in order to facilitate review of the associated community concerns and avoid confusion	Plan revised so that each problem statement now begins on a new page.

Name	Organization	Comment	Response
Kimberly Ryan		Appendix F-1 -If possible, create hyperlinks to the associated CERP strategies/actions so that readers can easily move between the documents	Comment is respectfully noted.
Kimberly Ryan		Appendix F-1 - If Argent Materials continues to operate in at least two different locations, as indicated on Figure F-1b, suggest including the address of both facilities in the "Facility & Pollutants Summary", as well as a summary of activities for the 85th Ave site.	Plan revised to edit Appendix F-1 to clarify that Argent Materials is a single facility operating two adjacent yards.
Kimberly Ryan		Appendix F-1 -An additional and primary concern for the Argent Materials property has historically been the expansion of operations with little to no oversight for years due to regulatory delay and inconsiderate land-use policy decisions made by Planning Commission/ City Council. Consider including any associated strategies/actions for agency commitment to faster and more community-oriented decisionmaking and permitting reviews (e.g. C&I Strategy 3).	Plan revised to add actions C&I 3.1 and C&I 3.2 to list of related actions in Appendix F-1.
Charles Reed	E. Oak CERP Co-chair Lifers Leaving a Legacy	Staunch advocate of studying the legitimate health impacts of 'Unaccounted for Surface Source Pollutants' in regards to Illegal Dumpsites and Burned out Abandoned Vehicles. The Air District's responsibility and accountability of mitigating and eliminating ANY and ALL "Emissions negatively impacting the health and quality of life in Communities of Concern". Air District can no longer ignore the cumulative impacts on air quality that 'Unaccounted For Surface Source Pollutants' have on our health and quality of life. These are polluted emissions that can be mitigated and eliminated through a Focused and Intentional Instant	Plan revised as follows: Chapter 7 Illegal Dumping introduction edited to include issues related to mold and expanded health impacts description.

Name	Organization	Comment	Response
		Response and Removal process that protects our already vulnerable communities through the containment of an inevitable air contamination source. I ask that we as a united CSC stand together in the fact that these two cumulative causes of negative health impacts be prioritized in the CERP process as a Public Health and Safety Issue in regards to our CSC Community Emissions draft and our Oakland General Plan.	
Charles Reed	E. Oak CERP Co-chair Lifers Leaving a Legacy	Email attachment 1: Illegal Dumping & Health: New Evidence of Direct Community Impacts Why this matters: (top community concern, evidence shows it directly contributes to harmful pollutant exposure and elevates illegal dumping from a blight issue to a public health priority) Key Health Findings: dumped material often contain or generate mold spores, VOCs, particulate matter from decomposition, chemical residues and toxins. These pollutants can become airborne and spread into residential areas Health Impacts on E. Oakland Residents: increased asthma triggers, respiratory irritation and chronic inflamation, higher exposure risks for children elders and medically vulnerable residents, exacerbation of existing cumulative environmental burdens Environmental Pathways: mold growth on wet or deteriorating materials; VOCs released from broken furniture, paints, adhesives, plastics; contaminated dust	Plan revised as follows: Chapter 7 Illegal Dumping introduction edited to include issues related to mold and expanded health impacts write up.

Name	Organization	Comment	Response
		and particulates blowing into homes, stagnant waste attracting pests and pathogens Why this is urgent: E. Oakland is already overburdened by emissions and pollution; illegal dumping amplifies these risks; immediate action can prevent avoidable health harms What we need to do: strengthen removal and clean up times; increase prevention resources, improve enforcement coordination, integrate public health data into dumping strategies; mobilize community and partner agencies Call to action: Illegal dumping must be recognized and addressed as a serious environmental-health threat requiring urgent, coordinated intervention.	
Charles Reed	E. Oak CERP Co-chair Lifers Leaving a Legacy	Attachment 2 Fact Sheet addresses: Illegal Dumping Sites as Unaccounted for Surface Source Pollutants What are unaccounted for Surface Source Pollutants: Illegal dump sites function as unmonitored, unregulated air pollution sources. They are not included in emissions inventories or air quality models, yet they emit: - Mold spores & fine particulate matter (PM2.5 / PM1.5) - Volatile Organic Compounds (VOCs) - Microplastics & toxic dusts - Gases from decomposing waste These emissions occur at ground level, directly where people live, walk, and breathe. - How mold grows in illegal dump sites - Why this is an air qualty issue	Plan revised as follows: Chapter 7 Illegal Dumping introduction edited to include issues related to mold and expanded health impacts write up.

Name	Organization	Comment	Response
		- Health impacts on nearby residents - EJ concerns - Mental health impacts - Harm reduction: the power of community-led clean up Key message: Illegal dump sites are unaccounted-for surface source pollutants. They pollute the air, threaten respiratory health, and disproportionately harm communities of color. Community-led cleanup is an essential harm reduction tool.	
Patrick Messac		The Plan does not yet function as an emissions reduction plan. It describes conditions but does not require results at the sources responsible for the most significant harm. The comments below identify where the Plan should be strengthened to produce measurable public health outcomes. 1. Measurable air quality and health outcome targets The Plan lacks quantifiable emission reduction targets, baseline years, or timelines in either Chapter 7 or Chapter 9. Without defined objectives, the public cannot evaluate whether conditions are improving. Other AB 617 communities have adopted enforceable performance standards. For example, the West Oakland Community Action Plan established numeric targets for diesel particulate, PM 2.5, and cancer risk in Chapter 4, identified a baseline year, and set 2025 and 2030 goals. It also modeled pollution levels with and without implementation in Chapter 6 and established a tracking framework in Chapter 8. East Oakland should meet the same standard. Chapter 9 should be revised to include specific targets for reductions in PM2.5,	Each Community Emissions Reduction Plan is unique due to its community-scale context, sources of emissions, and community direction. For East Oakland, we have included emissions forecasts for 2031 and 2036 in Appendix D that reflect the impact of known regulations, anticipated growth, etc. In five years, the Air District and East Oakland Community Steering Committee will evaluate actual progress for 2031. This will include information on quantifiable emissions reductions for plan actions for which such calculations can be made. Additionally, the five-year milestone report will include an update to the Community Description which includes the socio-economic/demographic and health data.

Name	Organization	Comment	Response
		diesel particulate matter, and toxic air contaminants; identification of a baseline year; interim and long-term target years; annual public reporting; and inclusion of health indicators such as asthma-related emergency room visits and hospitalizations	
Patrick Messac		2. Prioritize stationary sources responsible for the most significant exposure The emissions inventory shows that just 11 permitted facilities account for 98% of PM 2.5 emissions from the permitted source sector. Permitted sources are also the primary emitters of mercury, dioxins and furans, and hydrogen sulfide in the community Chapter 5 identifies major contributors, including: Davis Street Transfer Station; Miller Milling Company; Peet's Coffee and Tea The Plan also identifies facilities identified by the community in Appendix F-1, including: AB&I Foundry (now Prologis redevelopment); Argent Materials; Crematorium on 98th Avenue (SE Combined Services of California); Sterling Environmental These facilities represent the types of operations that should be designated as Priority Facilities for immediate action. Chapter 7 should be revised to explicitly identify high-risk facilities and focus regulatory action on those sources first. Without prioritization, resources will be diluted across actions that do not materially reduce risk.	The Commercial & Industrial (C&I) actions are focused on reducing emissions from facilities of concern. For example: - C&I Strategy 1 is focused on fugitive dust, which may help mitigate emissions at Davis Street Transfer Station and Argent Materials. - C&I Strategy 2 is focused on evaluating and reducing toxic air contaminant emissions. While the Air District Rule 11-18 facilities in East Oakland are considered Phase II, Action C&I 2.1 is intended to prioritize implementation. - C&I Strategies 3 and 8 would reduce emissions through enhanced permitting and compliance programs.

Name	Organization	Comment	Response
Patrick Messac		3. Enforcement defined by meaningful deterrence, not paperwork Chapter 6 reviews past enforcement activity but establishes no forward-looking commitments. A Notice of Violation alone does not reduce exposure. The analysis of East Oakland NOVs excluded consideration of whether the NOVs included a financial penalty and the amount of that penalty. Meaningful enforcement must include financial penalties that deter repeat behavior, cease and desist orders for ongoing harm, mandatory compliance deadlines, permit restrictions when necessary, and escalation for chronic violators. The Plan itself describes a case where enforcement produced outcomes. AB&I Foundry emitted hexavalent chromium until CARB and the District secured a $2.5M settlement, and the facility ceased operations. This is what effective enforcement looks like. Chapter 6 should include inspection frequency commitments, penalty thresholds, compliance timelines, and escalation standards. Without these elements, enforcement remains discretionary in practice.	Action C&E 7.1 Targeted Inspection Program is being developed to enhance enforcement in overburdened communities. The action contains elements of baseline frequency, which in effect are elevated further by a facility being within an AB617 community and further uplifted by being a facility of community concern.
Patrick Messac		4. Required controls at high-polluting facilities Chapter 7 identifies industrial risk, but does not require the installation of modern control technology at the facilities driving emissions.	The Air District cannot require a facility to install Best Available Retrofit Control Technology (BARCT) or equivalent controls unless there's a requirement in existing rules or a new command and control rule. For example, planned amendments to Air District Rules 6-1,

Name	Organization	Comment	Response
		Facilities responsible for disproportionate burdens should be required to install Best Available Retrofit Control Technology or equivalent controls on a defined timeline. The Plan should specify which classes of facilities are subject to this requirement and how compliance will be enforced.	6-4 and 6-6 addressing emissions from fugitive dust sources and metal recycling facilities would introduce new requirements for applicable sites. This would also be the case for sites applicable to an Indirect Source Rule when adopted. Existing BARCT requirements would be evaluated in the permitting process and enforced through inspections.
Patrick Messac		5. Authority and transparency The Plan lists implementing partners but does not distinguish which actions the Air District controls and which rely on other agencies. Chapter 7 should classify each strategy by authority so the public can see where regulatory responsibility lies. All permits for East Oakland facilities should also be posted online in one searchable system. Accountability is not possible without access to operating conditions, emission limits, and compliance history.	Plan revised to add a new action: C&I 3.3 Develop a Tool for Accountability and Transparency. This new action will leverage a mapping platform to compile information related to permitting, violations, inspections, etc. that will be available to the public.
Martin Stratte (Bill Crotinger)	Argent Materials, CSC member	On September 4, 2025, I submitted comments on the July 2025 draft "East Oakland Community Emissions Reduction Plan" (CERP). My comments were submitted to the CERP co-leads: the Air District and Communities for a Better Environment (CBE). My comments identified multiple inaccuracies and mischaracterizations regarding the operations of Argent Materials, Inc. (Argent). I asked for these statements to be corrected or otherwise revised prior to publication of a final draft. Upon reviewing the November 2025 version of the plan, I am disappointed to see that none of my comments were addressed in the revised plan currently available for public review	Changes were previously made to the Public Review Draft Plan to clarify that Argent received two NOVs, with each NOV containing two violations – for a total of four violations (replaced "NOV" with "violations").

Name	Organization	Comment	Response
Martin Stratte (Bill Crotinger)	Argent Materials, CSC member	In chapter 6: Enforcement Overview & Findings, the Plan incorrectly lists Argent as having received two NOVs in 2022 and two NOVs in 2023, and on that basis identifies Argent as the second biggest "offender" for the period of 2021 to 2024.1 This is incorrect. Argent was issued one NOV for its 8300 Baldwin site on November 16, 2022, and one NOV for its 8501 San Leandro site on July 26, 2023. Please edit Page 2 of Appendix E to reference only two NOV's total.	Changes were previously made to the Public Review Draft Plan to clarify that Argent received two NOVs, with each NOV containing two violations – for a total of four violations (replaced "NOV" with "violations").
Martin Stratte (Bill Crotinger)	Argent Materials, CSC member	In chapter 5: Air Quality Overview, Argent is characterized as a "facility of concern" for PM exposure from fugitive dust. The Plan provides no justification for this characterization. The Plan names 11 facilities that account for 98% of local PM 2.5 emissions. Argent is not included on the list. Please remove Argent as a "facility of concern" as its listing is unjustified and unsubstantiated.	Argent was mentioned in the Plan due to concerns raised by the community. For example, Table 5-1 lists Argent among concerns identified by community members, and a footnote on page 146 references community concerns about Argent raised at CSC Meeting #10 on July 23, 2023.
Martin Stratte (Bill Crotinger)	Argent Materials, CSC member	In chapter 5: Air Quality Overview, Argent is characterized as a facility of concern for toxic exposure from toxic emissions. However, Argent is not listed as a top 10 emitter of toxic air emissions for cancer-related toxic emissions or chronic-related toxic emissions. The Plan provides no justification for why Argent would be identified as a facility of concern. Please remove Argent as a "facility of concern" for toxic emissions as its listing is unjustified and unsubstantiated	Argent was mentioned in the Plan due to concerns raised by the community. For example, Table 5-1 lists Argent among concerns identified by community members, and a footnote on page 146 references community concerns about Argent raised at CSC Meeting #10 held on July 23, 2023.
Martin Stratte (Bill Crotinger)	Argent Materials, CSC member	In Appendix F-1, Argent is listed as one of four facilities for which CBE developed "Problem Statements."5 Characterizing Argent as a "problem" appears to be based on the misstatements noted above and is inappropriate. Please remove Argent as a "facility of concern" in the Problem Statements of Appendix F-1 as its listing is unjustified and unsubstantiated.	Argent is a facility of concern to the E. Oakland community (which is what Appendix F-1 documents).

Name	Organization	Comment	Response
Martin Stratte (Bill Crotinger)	Argent Materials, CSC member	Enclosed is an overview of our community involvement. - In East Oakland, our team contributes daily to the neighborhood by cleaning up illegally dumped trash along more than three miles of nearby streets. We support and donate to over a dozen local nonprofits, host holiday giveaways throughout the year, and prioritize local hiring - more than 10% of our workforce are returning family members, reflecting our investment in long-term community relationships - Argent is the only carbon neutral concrete, asphalt, and aggregate recycler in the U.S. Achieved through the use of electric equipment, conversion to renewable diesel, and purchase of carbon free electricity from East Bay Community Energy, etc.	Comment is respectfully noted.
Maurissa Brown	Greenlining Institute	We would welcome the opportunity to work together with you as the plan moves toward finalization and implementation. Please count on us as a partner committed to helping ensure the CERP's success and bringing cleaner air and environmental justice to Oakland	Comment is respectfully noted.
Maurissa Brown	Greenlining Institute	The ISR policy package should build on the South Coast Air Quality Management District Rule 2305, or the WAIRE program, to be more health-protective. We would like to see the ISR policy package be more health-protective than Rule 2305. We also recommend careful consideration for the mitigation fee for use to fund further zero emission transportation programs and restorative justice actions in East Oakland	The Air District plans to publish a concept paper outlining potential Indirect Source Rule (ISR) approaches, including health-focused design concepts that emphasize particulate matter (PM) and localized impacts, which may differ from the NOx-focused WAIRE Program, and may also discuss the role of mitigation fees as a potential compliance option.
Maurissa Brown	Greenlining Institute	We also urge the Air District to take early action to support Assembly Bill 914 (Garcia), Air Pollution: Indirect Sources, in the upcoming legislative cycle,	The Air District is supporting this effort, but it is unclear if this bill will pass. As such, currently

Name	Organization	Comment	Response
		which would strengthen statewide efforts to regulate indirect sources and provide much-needed protections for communities most impacted by freight and goods-movement pollution. Aligning regional action with statewide policy will ensure a more comprehensive and effective approach.	the Air District is developing tools for local control.
Maurissa Brown	Greenlining Institute	urge the Air District to continue to oppose anti-ISR bills in the future	Comment is respectfully noted.
Maurissa Brown	Greenlining Institute	re:" T&M Strategy 1. Address Trucking Near Neigthborhoods…" We strongly recommend deeper collaboration with regional Caltrans leadership to ensure that no new general-purpose lanes are funded or advanced. We recommend feedback to the City of Oakland Department of Transportation (OakDOT) be in alignment with Greenlining's previously run 2024 bill Assembly Bill 2535 (Bonta), Trade Corridor Enhancement Program, which originally aimed to prohibit the allocation of state transportation funds to highway projects that add general-purpose lanes or expand highway capacity in communities facing significant pollution impacts as evidenced by CalEnviroScreen	Comment is respectfully noted. Caltrans does not have any general-purpose lane additions planned for the study area.
Maurissa Brown	Greenlining Institute	re: "T&M Strategy 1. Address Trucking Near Neighborhoods…" We strongly support OakDOT engaging with the Community Steering Committee (CSC) to get feedback on truck routing. There should be stronger language in the CERP that commits to truck re-routing. We recommend adding a "Truck Re-routing Study" as a separate, individual action within this section. This study could be similar to the Truck Re-route Study that occurred in South Fresno. Truck routes must be updated to better reduce truck idling and	Comment is respectfully noted. The City of Oakland is currently undergoing Phase 2 of its General Plan Update, which focuses on its Land Use and Transportation Element. AB 98 (2024) requires agencies to update their circulation elements to include truck routes and requires, among other elements, identification of truck parking and appropriate idling facility locations. In alignment with the Phase 2 General Plan Update and its guiding principles, which includes equity and environmental

Name	Organization	Comment	Response
		prevent truck routes from cutting through residential areas	justice, OakDOT staff will work with the Planning and Building Department, as well as Economic and Workforce Development, the Port of Oakland, and community stakeholders to update and advance a proposed route to Council no later than January 1, 2028, as now required by State law. Additional truck studies, including but not limited to re-routing and mitigation, will be advanced as needed to implement the adopted general plan.
Maurissa Brown	Greenlining Institute	We appreciate the strong language in Action T&M 3.4 to provide grants for owners of older heavy-duty diesel trucks, buses, and off-road equipment...we recommend the District use the 2026 AB 617 funds to execute this action in order to make it even more near-term and urgent, as well as coordinate with CARB's incentive programs for medium-heavy duty and off-road equipment	Comment is respectfully noted. The Air District has multiple funding sources secured to support this action.
Maurissa Brown	Greenlining Institute	Additionally, we recommend the CERP Strategy 3 metrics should include the number of vehicles and types of vehicle replaced. This data is useful for identifying the impact of incentive dollars	Plan revised to add a new metric: "Number of Projects Completed."
Maurissa Brown	Greenlining Institute	T&M 4.1 Study Impacts of I-580 Truck Ban - To ensure this work is done with the depth and collaboration it deserves, we urge the Air District to also ensure that a partner on this analysis within Caltrans, is the Caltrans Office of Racial Equity & Tribal Affairs, as well as to the Interagency Equity Advisory Committee (EAC). Based on the Interstate 580 Truck Access Study website, it does not seem like the Caltrans Office of Racial Equity & Tribal Affairs or the EAC are a study partner for the project. Their leadership, assistance, and frameworks can help evaluate historic harm, identify	Comment is respectfully noted (and comment was forwarded to Caltrans).

Name	Organization	Comment	Response
		disproportionate impacts, and guide just and community-centered solutions.	
Maurissa Brown	Greenlining Institute	T&M 4.2 Consider Racial Equity in Future Decision-making Related to the I-580 Truck Ban - We find that within the CERP action there is not clear, strong language to actually execute the forthcoming recommendations for restorative justice. Execution of the forthcoming recommendations should be included as an individual, separate action.	Plan revised to add new action: T&M 4.3 Implement Findings from Racial Equity Assessment. This action calls for the implementation of findings from the Historical Disparities and Root Causes Memo (action T&M 4.2).
Nikita Pavlenko	International Council on Clean Transportation (ICCT)	Implement comprehensive air quality monitoring at Oakland Airport. Transparent pollutant measurements will enable East Oakland communities and policymakers to monitor existing pollutant levels, improve transparency for affected communities, and allow BAAQMD to track progress towards air quality goals.	The Draft Plan includes multiple air monitoring efforts, including the East Oakland air monitoring project (action PH 3.1 led by the Air District) and for the Port to install fenceline air monitoring at the airport (action T&M 7.4). The Air District looks forward to consulting with the Port on their approach for fenceline monitoring.
Nikita Pavlenko	International Council on Clean Transportation (ICCT)	Accelerate zero-emission ground support equipment deployment. Recent research demonstrates that ground support equipment (GSE) can be electrified without disruption to existing operations or significant increase in fleet size, making this timeline both feasible and effective for reducing local air pollutants.	Comment is respectfully noted (comment is addressed by action T&M 6.2 Electric Ground Support Equipment).
Nikita Pavlenko	International Council on Clean Transportation (ICCT)	Phase out leaded aviation gasoline before 2030 through STC reimbursements, infrastructure investments, and financial incentives. With approximately 120 kg of lead emitted annually near the airport and prevailing winds dispersing emissions toward East Oakland where children face elevated blood lead exposure risks, rapid adoption of certified unleaded alternatives like G100UL is both urgent and achievable ahead of the 2031 statewide deadline	Comment is respectfully noted (comment is addressed by action T&M 6.5 Accelerate Phase-out of Leaded Aviation Gas).

Name	Organization	Comment	Response
Nikita Pavlenko	International Council on Clean Transportation (ICCT)	Expand the Transportation and Mobile Source strategy to address aircraft landing and takeoff emissions through an Indirect Source Rule and operational measures. Aircraft operations account for 71-99% of airport emissions depending on the pollutant (including 87% of NOx and 75% of PM2.5), making it challenging to achieve substantial air quality improvements without addressing these emissions. There are multiple technologies and changes in practice that can be deployed to reduce aircraft engine emissions, such as blending lower-aromatic fuels, zeroemission or single-engine taxiing, and the use of learn burn engines.	The Air District is currently looking at indirect emissions due to warehouses, similar to the South Coast Warehouse Actions and Investments to Reduce Emissions (WAIRE) Rule. Other magnet sources may be considered following this rule development effort.
Nikita Pavlenko	International Council on Clean Transportation (ICCT)	In addition to adding a mitigation measure for T&M Strategy 6, we also propose the following strategy metrics be adopted to measure progress: 1) Set annual emission reduction goals for air pollutants and track progress towards achieving those quantitative targets. 2) Report annual progress relative to the national and state ambient air quality standards (NAAQS and CAAQS) requirements. This would involve reporting current levels of each pollutant's concentration over the relevant time average in East Oakland, the national requirement, and the California state requirement. 3) Quantify and report contribution of each implemented measure to reducing pollutant concentrations.	Each Community Emissions Reduction Plan is unique due to its community-scale context, sources of emissions, and community direction. For East Oakland, we have included emissions forecast for 2031 and 2036 in Appendix D that reflect the impact of known regulations, anticipated growth, etc. In five years, the Air District will evaluate actual progress for 2031. This will include information on quantifiable emissions reductions for plan actions for which such calculations can be made. Additionally, the five-year milestone report will include an update to the Community Description which includes the socio-economic/demographic and health data. This plan is focused on localized sources of air pollution and exposure concerns that aren't the sole driver of compliance with the National Ambient Air Quality Standards (NAAQS) and

Name	Organization	Comment	Response
			California Ambient Air Quality Standards (CAAQS). The CERP uses emissions and emissions-related metrics to track progress since the concentrations of different pollutants in East Oakland are affected by not only changes in local emissions, but also by changes in meteorology and contributions to air pollution from outside the East Oakland AB 617 community boundary or even outside the Bay Area. As noted in Chapter 5, the air monitoring data at the East Oakland monitoring site currently show air pollution concentrations below the level of the NAAQS and CAAQS, and the locations that currently drive compliance considerations for the NAAQS and CAAQS are outside the East Oakland AB 617 community boundary. The Air District will continue to report on trends of the measured concentration of air pollutants at the East Oakland monitoring site and other locations using context of these health-based standards and other metrics as part of the Air District's broader efforts to improve data accessibility.
Adele Watts	CBE	To facilitate strong participation and build trust in East Oakland, it is crucial to conduct early education and outreach to build literacy on air quality issues, recognizing that community cannot identify issues and participate without access to information on air quality issues and Air District procedures. To that end, we recommend scheduling workshops and meetings in collaboration with trusted local organizations, at accessible locations and times in East Oakland, and with a strong emphasis on language access and justice	The Draft Plan development process included community education to the Community Steering Committee (CSC) as part of the community outreach. All CSC meetings included interpretation, translation, community-friendly location, accessible hours, food and stipends for CSC members (For more information see Draft Plan Chapter 2). Community education and awareness will continue in implementation

Name	Organization	Comment	Response
		(including outreach, education, and proceedings). Board meetings should also be more accessible to community members for Board members to be fully informed.	through public CSC meetings and outreach (see Chapter 9 for more details on implementation).
Adele Watts	CBE	C&I 1.1: Rule Amendments to Address Fugitive Dust CBE strongly supports timely amendments to Regulation 6 to address fugitive dust emissions. CBE urges the Air District to adopt the most progressive dust control options available, including the whitepaper recommendations to require, among other things, minimum moisture content and stabilization testing of stockpiles. Facilities in East Oakland often purport to follow moisture content requirements despite continual community observations that stockpiles are leading to fugitive dust and track-out (e.g. Argent Materials). We also urge the Air District to consider the impact of fugitive dust on unhoused people near facilities, and to incorporate health protective measures and outreach and noticing procedures that include unhoused people's needs.	The "impact of fugitive dust on unhoused people" is not currently something within the scope of the current rule amendments for Air District Rule 6-1 or 6-6. While not within the scope of the rule amendment, it is possible that with the increased requirements for fugitive dust, that this health concern to this specific population would be alleviated. Separate from the Air District's fugitive dust rules, when conducting a health risk assessment on stationary sources, our engineering division evaluates the acute impacts from toxic air contaminants on unhoused people.
Adele Watts	CBE	C&I 1.3: Review and Comment on California Environmental Quality Act (CEQA) Analysis of Proposed Projects CBE strongly supports this action and thanks the Air District for its early implementation, as providing notice of CEQA projects in East Oakland CERP boundaries provided CBE the opportunity to review and notice community of an upcoming metal scrap facility expansion. From the perspective of community lawyers, the Air District's expert comments on major CEQA projects is invaluable. Under CEQA guidelines and case law, expert agencies are afforded a higher deference than impacted community members.	We appreciate your comments on the proposed rulemaking to streamline the implementation of Air District Rule 11-18. The Air District will respond to those comments in the final rulemaking package.

Name	Organization	Comment	Response
		Without expert comments, particularly on issues of methodology and cumulative health risks, community and organizations have few options to understand and challenge highly consequential projects.	
Adele Watts	CBE	C&I 2.2 Rule Amendments to Improve Implementation of Rule 11-18 While CBE supports improving Rule 11-18 implementation, we have several concerns about proposed changes, as detailed in a comment letter submitted by Kaitlin Alcontin on October 10, 2025, to Rule Development. Amendments should ensure that Health Risk Assessments are conducted by neutral parties, ensure that overburdened communities are still prioritized for early action, and include foreseeable emissions beyond "routine" emissions that underestimate real emissions.	While the Air District Rule 11-18 facilities in East Oakland are considered phase II, action C&I 2.1 is intended to prioritize implementation, underlining the Air District's commitment to ensuring that overburdened communities are still prioritized for early action.
Adele Watts	CBE	C&I 3.4 Reduce Industrial Pollution on Unhealthy Air Quality Days CBE strongly supports this action and appreciates the Air District's collaboration to address this longstanding community concern. Going back at least five years, CBE members have raised concerns that commercial and industrial sources are contributing emissions on poor air quality days in East Oakland (e.g. Spare the Air days and wildfire smoke events). Community observed industrial sources increasing their operations on severe air quality days, presumably hoping to hide the added pollution in the wildfire smoke in 2020. An unhealthy air quality day is more frequent and more impactful to health in East Oakland than in less polluted communities given the existing pollution and health burdens. While Spare the Air Day is an excellent communication tool, community feels that industrial	Comment is respectfully noted.

Name	Organization	Comment	Response
		sources, not just individuals, should be required to curb emissions. As wildfire events increase due to the climate crisis, it is becoming increasingly urgent to improve emergency air quality event procedures. We look forward to continued discussion on this matter.	
Adele Watts	CBE	C&I 4.1 Evaluate Opportunities to Reduce Localized Emissions and Address Impacts from BUGs CBE strongly supports timely attention to the issue of diesel back-up generators, particularly given the alarming national growth of data centers that frequently rely on toxic diesel generators. Additionally, the City of Oakland is updating the Oakland General Plan, and early information on the land use element suggests a turn towards sectors that may rely on generators in East Oakland.	Comment is respectfully noted. Action C&I 4.1 time frame currently noted as Medium Term (2-3 years).
Adele Watts	CBE	PH 1.1 Develop Methods for Understanding Cumulative Impacts CBE strongly supports this action as there is an urgent need for scientific methodology, regulation, and the law to more accurately reflect the real health burdens in environmental justice communities. This methodology would improve all aspects of the Air District's work. CEQA guidelines currently require project sponsors to assess and disclose the health impacts of emissions. However, the most used current methodology is severely lacking and prevents decisionmakers and the public from being fully informed about impacts as required by CEQA. Cumulative impacts methodology must account for the full scope of project emissions (CAPs and TACs), local background air quality conditions, and community-specific health risks (unlike the EIR prepared for the Oakland Airport Expansion that only assessed TACs)	Comment is respectfully noted.

Name	Organization	Comment	Response
Adele Watts	CBE	T&M 1.1: Indirect Source Policy Package. CBE thanks the Air District for their work on Indirect Source Rule. While the state was forced to roll back critical truck emission standards that long promised to reduce deadly diesel pollution in environmental justice communities, Air Districts retain clear authority to regulate indirect sources. CBE suggests early education and outreach in communities impacted by indirect source pollution magnets to inform rule concepts and allow balanced participation in the rulemaking process. As Air District staff heard at the CBE East Oakland community workshop on the CERP, residents are deeply concerned with diesel truck pollution and want to know what the Air District can do.	The Air District will engage communities during the rule development process and can continue to collaborate with the Community Steering Committee during the process.
Adele Watts	CBE	T&M Strategy 6: Emission Reductions at the Oakland International Airport. CBE appreciates the Air District's thoughtful engagement on issues related to the airport in the CERP process and understands the Port has most local authority. CBE strongly encourages the Air District to proactively engage in opportunities to reduce airport emissions. The Oakland Airport is one of the single largest pollution sources in the Bay Area, with 2019 airport-related NOx emissions exceeding the NOx emissions of the Chevron Richmond Refinery, and reducing airport emissions will be critical to reaching air quality and climate goals throughout the region. CBE urges the Air District to consider health risk assessments or other health-protective considerations of cumulative impacts prior to granting any permits related to ongoing or expanded airport operations.	Comment is respectfully noted.
Jacob Klein	Industrious Labs and Earthjustice	Industrial heating processes, like those from burning methane gas in industrial boilers, produce nitrous oxide (NOx), particulate matter 2.5 (PM 2.5), volatile organic	Amendments to Air District Rule 9-7 are not currently scheduled on the Air District's 5-year work plan.

Name	Organization	Comment	Response
		compounds (VOCs), and other air pollutants that contribute to the health disparities that East Oakland residents experience. Currently, BAAD regulates emissions from industrial boilers, steam generators, and process heaters above 2 MM BTU per hour through Regulation 9 Rule 7. Unfortunately, the rule has not been updated since 2011, allowing boilers to continue emitting health-harming pollutants. A strengthened Rule 9-7 with a zero emissions standard would address these emissions, reducing the air pollution burden that East Oakland faces. Currently, the CERP only makes passing mention of Rule 9-7, leaving a key opportunity on the table. According to Industrious Labs analysis of Rule 9-7 permitted facilities data, 16 facilities operate 44 industrial boilers emitting nearly 18 tons of NOx, 1.4 tons of PM 2.5, and 1.7 tons of VOCs in East Oakland. Therefore, strengthening the rule would be consistent with the CERP's goals. Including additional language in the CERP for a zero-emission update to Rule 9-7 would also address two of the facilities that "Right to Breathe" identified as key facilities of concern: Peet's Coffee and Tea and Gallagher & Burk. While both facilities also have emissions from sources other than boilers, strengthening Rule 9-7 would help alleviate the burden from these key facilities. Other industrial facilities in the East Oakland region would also be implicated,	

Name	Organization	Comment	Response
		contributing to the cumulative benefits of a stronger Rule 9-7.	
Jacob Klein	Industrious Labs and Earthjustice	Public Health, PH 1.1, A methodology that takes into account the full ecosystem of air pollution levels and the specific health risks that communities face must be developed to better compare how communities like East Oakland differ from non-environmental justice communities, with pollution burdens having situational disparities. By advancing Rule 11-18 to build cumulative impacts into the health risk methodology, BAAD can address air quality issues more holistically. Furthermore, as part of amending Rule 11-18, meeting health risk assessments and risk reduction strategies should require kickstarting other rule updates and amendments.	Comment is respectfully noted.
Colleen Liang	Port of Oakland	As described previously in the Port of Oakland's (Port) letter dated June 11, 2025, adjacent communities are a valuable partner to the Port in advancing zero-emission operations at the Port. The Port values engaging with the CSC as a non-voting member and participating in the process in the development of the strategies in the CERP The Port appreciated the opportunity to meet in June 25, 2025 and July 7, 2025 to discuss the draft strategies related to the Port, describe the limitations of the Port's authority, and discuss past, ongoing, and future initiatives in advancing zero emission airport operations. The Port will continue to engage and dialogue with CSC members on the proposed strategies. Please note that Oakland San Francisco Bay Airport	Plan revised to update reference to airport, per the Port of Oakland's comment.

Name	Organization	Comment	Response
		name change was approved by the Port of Board Commissioners at a July 2025 Board meeting. All references to Oakland International Airport in the final draft of the Right to Breathe: East Oakland Community Air Quality Justice Plan should be revised to Oakland San Francisco Bay Airport.	
Njeri McGee-Tyner	CSC member	Love the urban greening maps are well illustrated. Ch. 7 - UGW 1.2 Funding sources are important to support urban greening workforce pathways and educational career pathways. UGW 2.2 Urban Greening funding - prefer this be changed to short term Glad to see the needle has moved in this focus area. looking forward to these actions rolling out the most.	Comment is respectfully noted.
Sky		High fees on dumping at waste management definitely encourages dumping! Enforcement of illegal dumping? Much worse crimes will go unpunished in Oakland. I feel encouraging people/companies to dump in proper locations would help more. More surveillance feels like a human rights violation on par with living next to a trash pile. No hate. Thank you for your hard work	Comment is respectfully noted.

Name	Organization	Comment	Response
Nate Miley	Supervisor, District 4 Alameda County Board of Supervisors	Concerned about inaccuracies in the Final Draft Right to Breathe and concerned that criteria used to identify "facilities of concern" are not being applied consistently in the Plan. One example is in Chapter 5: Air Quality Overview where Argent Materials is characterized as a "Facility of Concern" for toxic exposure from toxic emission, despite not listed among the top ten emitters of toxic air contaminants in East Oakland. The inclusion is based on community testimony during CSC meetings, rather than on quantitative emissions or exposure metrics. This designation is then carried forward into Appendix F-1, where Argent Materials is included among four facilities for which CBE developed a Problem Statement, with the justification for inclusion being their status as a "Facility of Concern. This circular reasoning is concerning and creates the appearance that the conclusions of the CERP are not being driven by empirical analysis. This approach raises concern about the integrity of the CSC's work and the CERP as a whole, and about whether the resulting recommendations are adequately supported by the evidence.	Comment is respectfully noted.

Name	Organization	Comment	Response
Stop OAK Expansion Comments			
See below	Stop Oak Airport Expansion Coalition	The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Note: The Air District also has no authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.	**Stop OAK Expansion Response 1** The Air District maintains regulatory authority over stationary sources of air pollution, while the California Air Resources Board (CARB) is responsible for emissions from mobile sources, except where federal law preempts CARB's jurisdiction. Although aircraft emissions fall outside the Air District's regulatory authority, the Plan addresses their associated impacts. Air quality impacts from airports have been extensively studied and documented through multiple air monitoring efforts, with findings summarized in Plan Chapter 5, *Air Quality Overview*. To further reduce emissions from the airport, the Plan includes several targeted actions, detailed in Chapter 7, *Strategy 6: Emission Reductions at Oakland San Francisco Bay Airport*. To further reduce emissions from Oakland Airport, the Plan incorporates a series of targeted actions designed to address sources of air pollution associated with airport operations. Details of these measures are detailed in Plan Chapter 7, *Strategy 6: Emission Reductions at Oakland San Francisco Bay Airport*

Name	Organization	Comment	Response
Names: Gregory Stevens, Kay Guinane, Beth Weinberg, Carol Hirth, Brandon Svec, Scott Hochberg, Irene Hilgers, John Carrese, Martin Horwitz, Eric Pash, Jean Tepperman, Alvaro Ramos, Laura Bernstein, Marcia Flannery, Ron Kamangar, Charles Bret, Leah Redwood, Laura Gibbons, Leane Grossman, No Name No Name, Jordan Jackson, AJ Cho, Ariella Granett, Nishanga Bliss, Flora Tso, Leana Zang-Rosetti, Piper No Name, Tamara Haw, Margaret Steppe, Rena Pallof, Matt Courter, Karen Beck, Dan Ouellet, Meggie Kang, Cate Leger, Joan Starr, M Kathleen Archambeau, Scott Roth, Martha Booz, Yuan Xu, Andrew Jordan, Martin Horwitz, Carol Schaffer, Suzanne Baker, Collin Shea Casey, Karen and Keith Miller, Linda Jordan, Karen Kirschling, Eric Pash, Leah Redwood, Sandra Kwak, Susan No Name, AJ Cho, Kathleen Richards, Barbara Benzwi, Marcia Edelen, Esther Lerman, Carol Kuelper, Jeff White, Leana Zhang-Rosetti, Janet Stromberg, Mary Gamson, David Baca, Rashid Patch, Ruby Macdonald, Laura Leipzig, Connie Cronin, Becca Schonberg, Melissa Mandel, Marjory Keenan, Patrice Haan, Jane Maxwell, Judith Smith, Dr. Tony Marks-Block, Jackie Feazell, No Name No Name, Gregory Fite, Susan Harris, Susanne La Faver, Jean Tepperman, Greg Hom, No Name No Name, Anita Watkins, Deborah Jung, Nima Sherpa, Liam Hroziencik, Kristen Okorn, Mary Flanagan, Julia Dashe, Dee Dee Kramer, Jim Wilson, Claire Broome, Ben Keller, Ellen McClure, Eileen Chieco, Victor Chieco, Margaret Steppe, Rafael Gonzalez, Katherine Dillon, Lynne Baker, Beth Weinberg, Lynne Powe, Alfreda Wright, Heather MacLeod, No Name No Name, Marion Grau, Frances Aubrey, Janice Cecil, Christopher Lutz, Veronica Oberholzer, Berta Gelbr, Stephanie Prugel, David Gassman, Stephen Ongerth, Ara Bicakci, Margaret O'Halloran, Jo Heilman, Christopher Lish, Aaron Reaven, Ann Harvey			

Name	Organization	Comment	Response
See below	Stop Oak Airport Expansion Coalition	A larger grid of pollution monitors is needed, including fenceline monitors. This monitoring should be initiated now, as the Community Steering Committee (CSC) prefers, to provide a baseline of data for future comparison and modeling. Include ultrafine particles and hourly fluctuations to indicate peak levels of pollution.	**Stop OAK Expansion Response 2** Air quality impacts from airports have been researched and documented in numerous air monitoring studies, findings from which are highlighted in Chapter 5 *Air Quality Overview*. The Air District notes the interest in ultrafine particles (UFP) monitoring, given that aircraft are a source of UFP. However, additional UFP monitoring is unlikely to provide actionable information related to the proposed airport expansion as UFP is not a regulated pollutant and there are no health-based thresholds for UFP. *Transportation and Mobile Sources Action 7.4* includes fenceline monitoring to be installed and operated by the Port of Oakland (Port), which the Air District can consult with the Port on. This monitoring was agreed to as part of a Settlement Agreement between the Port and the City of Alameda.
Names: Gregory Stevens, Kay Guinane, Beth Weinberg, Carol Hirth, Brandon Svec, Scott Hochberg, Irene Hilgers, John Carrese, Martin Horwitz, Eric Pash, Jean Tepperman, Alvaro Ramos, Laura Bernstein, Marcia Flannery, Ron Kamangar, Charles Bret, Leah Redwood, Laura Gibbons, Leane Grossman, No Name No Name, Jordan Jackson, AJ Cho, Ariella Granett, Nishanga Bliss, Flora Tso, Leana Zang-Rosetti, Piper No Name, Tamara Haw, Margaret Steppe, Rena Pallof, Matt Courter, Karen Beck, Dan Ouellet, Meggie Kang, Cate Leger, Joan Starr, M Kathleen Archambeau, Scott Roth, Martha Booz, Yuan Xu, Andrew Jordan, Martin Horwitz, Carol Schaffer, Suzanne Baker, Collin Shea Casey, Karen and Keith Miller, Linda Jordan, Karen Kirschling, Eric Pash, Leah Redwood, Sandra Kwak, Susan No name, AJ Cho, Kathleen Richards, Barbara Benzwi, Marcia Edelen, Esther Lerman, Carol Kuelper, Jeff White, Leana Zhang-Rosetti, Janet Stromberg, Mary Gamson, David Baca, Rashid Patch, Ruby Macdonald, Laura Leipzig, Connie Cronin, Becca Schonberg, Melissa Mandel, Marjory Keenan, Patrice Haan, Jane Maxwell, Judith Smith, Dr. Tony Marks-Block, Jackie Feazell, No Name No Name, Gregory Fite, Susan Harris, Susanne La Faver, Jean Tepperman, Greg Hom, No Name No name, Anita Watkins, Deborah Jung, Nima Sherpa, Liam Hroziencik, Kristen Okorn, Mary Flanagan, Julia Dashe, Dee Dee Kramer, Jim		

Name	Organization	Comment	Response
Wilson, Claire Broome, Ben Keller, Ellen McClure, Eileen Chieco, Victor Chieco, Margaret Steppe, Rafael Gonzalez, Katherine Dillon, Lynne Baker, Beth Weinberg, Lynne Powe, Alfreda Wright, Heather MacLeod, No Name No name, Marion Grau, Frances Aubrey, Janice Cecil, Christopher Lutz, Veronica Oberholzer, Berta Gelbr, Stephanie Prugel, David Gassman, Stephen Ongerth, Ara Bicakci, Margaret O'Halloran, Jo Heilman, Christopher Lish, Aaron Reaven, Ann Harvey			
See below	Stop Oak Airport Expansion Coalition	The report should call for any plans for expanding operations or facilities at the establishments listed in the East Oakland Air Monitoring Project, including the Oakland airport, (Section 3.2) that would increase pollution to be suspended until the health impacts on East Oakland residents are better understood. A specific Health Impact Assessment (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.	**Stop OAK Expansion Response 3** The Air District appreciates the interest in the East Oakland air monitoring project and looks forward to discussing findings from this air monitoring project with the East Oakland community. As noted in the Plan, the Air District, CBE, and UC Berkeley are conducting an air monitoring project in East Oakland, referred to in *Public Health Action 3.1* and *Transportation and Mobile Sources Action 7.3*. One component of this project is to use the Air District's air monitoring van to measure concentrations of key pollutants including multiple VOCs, PM, UFP, black carbon, NOx, and CO. This monitoring is focused on pollution sources prioritized by community, one of which is the airport. The resulting data will be leveraged to the extent possible to help inform air quality issues that may be related to the airport, and we review past research on this topic to help inform our data assessments. While mobile monitoring will provide measurements of multiple key pollutants in many locations in East Oakland, the short snapshots of data do not provide information to estimate health risks. A second component of the East Oakland air monitoring project is deployment of a PM2.5 sensor network, which

Name	Organization	Comment	Response
			is making hourly and even sub-hourly real-time PM2.5 data available in more locations in East Oakland. Both components of this project were previously scoped and are already underway, and this project is funded in part by a U.S. EPA grant that ends in June 2026. Data and findings from the East Oakland air monitoring project will be made publicly available for other uses. However, conducting health impact assessments for the airport expansion or for other facilities or operations falls outside the scope of the East Oakland air monitoring project.
Names: Gregory Stevens, Kay Guinane, Beth Weinberg, Carol Hirth, Brandon Svec, Scott Hochberg, Irene Hilgers, John Carrese, Martin Horwitz, Eric Pash, Jean Tepperman, Alvaro Ramos, Laura Bernstein, Marcia Flannery, Ron Kamangar, Charles Bret, Leah Redwood, Laura Gibbons, Leane Grossman, No Name No Name, Jordan Jackson, AJ Cho, Ariella Granett, Nishanga Bliss, Flora Tso, Leana Zang-Rosetti, Piper No Name, Tamara Haw, Margaret Steppe, Rena Pallof, Matt Courter, Karen Beck, Dan Ouellet, Meggie Kang, Cate Leger, Joan Starr, M Kathleen Archambeau, Scott Roth, Martha Booz, Yuan Xu, Andrew Jordan, Martin Horwitz, Carol Schaffer, Suzanne Baker, Collin Shea Casey, Karen and Keith Miller, Linda Jordan, Karen Kirschling, Eric Pash, Leah Redwood, Sandra Kwak, Susan No name, AJ Cho, Kathleen Richards, Barbara Benzwi, Marcia Edelen, Esther Lerman, Carol Kuelper, Jeff White, Leana Zhang-Rosetti, Janet Stromberg, Mary Gamson, David Baca, Rashid Patch, Ruby Macdonald, Laura Leipzig, Connie Cronin, Becca Schonberg, Melissa Mandel, Marjory Keenan, Patrice Haan, Jane Maxwell, Judith Q. Smith, Dr. Tony Marks-Block, Jackie Feazell, No Name No Name, Gregory Fite, Susan Harris, Susanne La Faver, Jean Tepperman, Greg Hom, No Name No name, Anita Watkins, Deborah Jung, Nima Sherpa, Liam Hroziencik, Kristen Okorn, Mary Flanagan, Julia Dashe, Dee Dee Kramer, Jim Wilson, Claire Broome, Ben Keller, Ellen McClure, Eileen Chieco, Victor Chieco, Margaret Steppe, Rafael Gonzalez, Katherine Dillon, Lynne Baker, Beth Weinberg, Lynne Powe, Alfreda Wright, Heather MacLeod, No Name No name, Marion Grau, Frances Aubrey, Janice Cecil, Christopher Lutz, Veronica Oberholzer, Berta Gelbr, Stephanie Prugel, David Gassman, Stephen Ongerth, Ara Bicakci, Margaret O'Halloran, Jo Heilman, Christopher Lish, Aaron Reaven, Ann Harvey			

Name	Organization	Comment	Response
Aaron Reaven	Stop Oak Airport Expansion Coalition	Transportation and Mobile Environment – Oakland International Airport (pg 108). Add a concluding paragraph stating, ***"Given the air quality impacts of the airport, prior to any expansion of the facility, a comprehensive Health Impact Assessment should be conducted. Both the City of Oakland and the Port of Oakland have authority to require such a pause and a study–See Chapter 9***."	See response **Stop OAK Expansion Response 1** and **Response 3.**
Aaron Reaven, Stop OAK Admin	Stop Oak Airport Expansion Coalition	Built Environment– add as action BE 3.7 (Pg. 145): "***Pause expansion of the airport, which will attract additional aircraft daily thus necessarily bringing increased NOx, SOx, PM 2.5 and PM 0.1 ultrafine particles to homes and to gathering places of vulnerable populations, until the airport performs a Health Impact Assessment and recirculates a revised FEIR for the Modernization and Development Project with a plan for full mitigation of the increased air pollution its development will cause***." Lead: Port of Oakland Timeframe: Medium term (2-3 years)	See response **Stop OAK Expansion Response 1** and **Response 3.**
Aaron Reaven, Stop OAK Admin	Stop Oak Airport Expansion Coalition	Public Health– add as action 3.5 (Pg. 171): "***Any plans for expansion of operations or facilities at the establishments listed in the East Oakland Air Monitoring Project Section (3.2) that would increase pollution should be suspended until such time as a thorough assessment is conducted of the potential impact on the health of East Oakland residents. Such health impact assessments shall include accounting for the well-documented pre-existing health inequities in East Oakland communities***."	See response **Stop OAK Expansion Response 2.**

Name	Organization	Comment	Response
Aaron Reaven, Stop OAK Admin	Stop Oak Airport Expansion Coalition	T&M 6.1 (Pg. 187) To this section's description of the Port Emissions Reduction Plan, add the following: "***The Port of Oakland will pause the Modernization and Development Plan, which would increase emissions, until after it performs a Health Impact Assessment, incorporates data from that assessment into the project EIR, and recirculates the EIR***."	See response **Stop OAK Expansion Response 1** and **Response 3.**
Aaron Reaven, Stop OAK Admin	Stop Oak Airport Expansion Coalition	Transportation & Mobility–T&M 7.3 (Pg. 189) – add specifics designated below in bold italics: The East Oakland Air Monitoring Project (see PH 3.1) will include exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM) (including ultrafine particles (UFPs), a key aviation-related pollutant) around specific facilities and air quality concerns identified and prioritized by community members. Oakland International Airport is one of the identified facilities. ***Communities for a Better Environment (CBE) has partnered with the University of California, Berkeley and the Bay Area Air District to greatly improve the numbers and distribution of pollution sensors in East Oakland. The new sensor grid shall operate with hourly resolution to identify peak concentrations of pollutants, and operate for at least a year.*** Using information collected from this project, the Air District will analyze and evaluate data and summarize and report findings with attention to occurrences of unusually high levels of different pollutants, including UFPs, that may be associated with airport-related emissions. ***Findings from the overall project are expected to inform a specific Health Impact Analysis, improve efforts to reduce pollution emissions, and reveal any need for***	See response **Stop OAK Expansion Response 2.**

Name	Organization	Comment	Response
		additional information. Expansion of the airport should be paused until these findings are analyzed and discussed.	
Aaron Reaven	Stop Oak Airport Expansion Coalition	Transportation & Mobility T&M 7.4 – (Pgs. 189-199): This focus area action states, "The Port of Oakland shall install fence line air quality monitor(s) no later than **one year after the opening of the new terminal** as described in the 2024 Oakland International Airport Terminal Modernization and Development Project Final Environmental Impact Report. . ." This assumes that the Airport expansion will be implemented. But there are currently three lawsuits challenging the FEIR, and, as noted above, the City and the Port still have to make decisions about whether to proceed with the project. It's also important to understand that the FEIR projected significant increases in flights, but these have not materialized. In fact, total passengers using the airport have declined recently and have not reached pre-Covid levels as shown in the graph below. ***Reference to the "opening of the new terminal" should be deleted from this report.***	See response **Stop OAK Expansion Response 1.**
Aaron Reaven	Stop Oak Airport Expansion Coalition	T&M 7.4 (Pgs. 189-190): This action recommends delaying fenceline air quality monitoring. Since emissions from the Airport have already been identified as a problem, there is no excuse for waiting. The report notes that the "CSC prefers" not waiting. This action item should be modified to read ***"Fenceline air quality monitoring that includes hourly sampling for VOCs, fine PM and Ultra-Fine PM should be installed immediately." (see PH 3.1)***	See response **Stop OAK Expansion Response 2.**

Name	Organization	Comment	Response
Aaron Reaven	Stop Oak Airport Expansion Coalition	Chapter 9 Implementation and Reporting – Government Collaboration and Agency roles – City of Oakland pg 208. add: ***"The City of Oakland, through its General Plan, has the authority to rule that the airport expansion can only proceed if it shows that air quality in East Oakland will not be further damaged."*** This would be consistent with the Environmental Justice Element of the General Plan.	See response **Stop OAK Expansion Response 1.**
Aaron Reaven, Stop OAK Admin	Stop Oak Airport Expansion Coalition	Chapter 9 Implementation and Reporting – Government Collaboration and Agency roles – Port of Oakland pg 209. Add sentence: ***"Notwithstanding the findings of the Environmental Impact Report pursuant to the airport expansion, the Port should pause the project to better determine the health impacts on East Oakland Residents as well as other considerations."***	See response **Stop OAK Expansion Response 1** and **Response 3.**
Aaron Reaven	Stop Oak Airport Expansion Coalition	Technical Concern 1) Noise Pollution. Add this to Appendix D regarding noise measurement thresholds, relating to SFO: ***Although noise is mentioned as a community concern (Pg. 178), there are no action items to address this issue. A starting point would be to collect data recognizing that 65 decibels Day-Night average Level (DNL) is an outdated standard. The FAA's continued reliance on the 65 DNL threshold is no longer defensible for evaluating the noise impacts of airport expansion projects such as those proposed at Oakland Airport. The FAA's own 2021 Neighborhood Environmental Survey (NES) demonstrated that substantial community annoyance occurs well below 65 DNL, with its regression model indicating an equivalent response near 46 DNL. Despite this, both the FAA and the Port of Oakland have continued to***	The concern is related to noise due to truck idling. Several actions in the Plan could help reduce idling: Action T&M 1.3 involves better managing trucks in East Oakland, which could include changes to reduce idling; Action T&M 1.5 is designed to identify locations to install no idling signs; and Action T&M 3.4 will offer grants to owners of heavy-duty diesel trucks to help eliminate harmful diesel engine idling.

Name	Organization	Comment	Response
		apply the 65 DNL threshold in reaching findings of no significant impact. This approach disregards the FAA's own scientific record and fails to meet NEPA's requirement for using the best available information. Noise data and methods need to reflect actual community response to aircraft noise.	Also, as noted on page 108 of the Plan, since 2010, the Federal Aviation Administration (FAA) has been leading the Continuous Lower Energy, Emissions (CLEE), and Noise (CLEEN) Program with U.S. EPA and engine manufacturers to develop aircraft engines that are quieter, more fuel efficient and lower emitting.
Aaron Reaven, Stop OAK Admin	Stop Oak Airport Expansion Coalition	Technical Concern 2) Ultra-fine Particles Considerations: Suggestion for Appendix D regarding air monitoring methodology regarding ultra-fine particles (UFP). From this study of the Seattle-Tacoma Airport (Sea-Tac), we see that UFP are particularly associated with landing airplanes, and that they are much more widely dispersed than UFP from roadways. The air monitoring efforts of the Air District should follow methods described in this study.	As noted in the Plan, the Air District, CBE, and UC Berkeley are conducting an air monitoring project in East Oakland, referred to in *Public Health Action 3.1* and *Transportation and Mobile Sources Action 7.3*. One component of this project is to use the Air District's air monitoring van to measure concentrations of key pollutants including multiple VOCs, PM, UFP, black carbon, NOx, and CO. This monitoring is focused on pollution sources prioritized by community, one of which is the airport. Data collected from the East Oakland air monitoring project will be leveraged to the extent possible to help inform air quality issues that may be related to the airport. The Air District reviews and considers existing scientific research and data analysis methodologies to inform our data assessments.
Aaron Reaven, Stop OAK Admin	Stop Oak Airport Expansion Coalition	Technical Concern 3) Pollution Inventory Accuracy: The Emissions Inventories listed in Tables 5-7 (Pg.92), 5-8 (Pg.94), and 5-10 (Pg. 111) are based almost exclusively on modelling using AERMOD. The projections presented represent annual amounts. These results should be confirmed with local monitoring before	Regarding the Emissions Inventory: the three tables cited by the commenter do summarize emissions inventory data, but the inventory was not developed using AERMOD and cannot be directly compared to monitoring data. AERMOD is a dispersion model that combines

Name	Organization	Comment	Response
		large-scale industrial changes (like the expansion of the airport) are approved. **Hourly data** is needed to reveal emission spikes that may exceed National Ambient Air Quality Standards. The data for East Oakland in figures 5-3, 5-4, and 5-6 come from a single monitor. Having one monitor limits the confidence in these data. The Bay Area Air District admits that East Oakland is in many ways an air quality "data desert."(1) Communities for a Better Environment has partnered with the University of California, Berkeley and the Bay Area Air District Air District to greatly improve the numbers and distribution of pollution sensors in East Oakland. The data from these sensors is needed ASAP to establish a credible baseline of community air quality before predicting or curtailing future pollution. The sensors should be sensitive to all classes of particulate matter, NOx, SOx and VOCs and operate for at least a year. The data from this study would inform a Health Impact Assessment to enhance our understanding of the current emissions and improve future projections. 1. https://www.baaqmd.gov/~/media/files/technical-services/east-oakland-monitoring-project/eo_amp_sensor_network_monitoring_plan-pdf.pdf?rev=9aaeca8a11a24f7485bfb0d74e05448e&sc_lang=en	emissions data with meteorological data and other inputs to simulate pollutant concentrations from specific sources. The Air District did apply AERMOD for selected sources, but even then, it is difficult to make comparisons with monitoring data, which reflects impacts from all sources, not just those modeled in AERMOD. Regarding the second part of the comment, starting with "The data for East Oakland in figures 5-3, 5-4, and 5-6…", the response is as follows: The data for East Oakland shown in Figures 5-3, 5-4, and 5-6 are from the Air District's Oakland – East multipollutant monitoring site. Data from the Air District's monitoring sites are validated according to rigorous quality control and quality assurance requirements from the U.S. EPA to ensure that the air quality data are consistent and accurate, providing high confidence in the collected data. As noted in the Plan, the Air District, CBE, and UC Berkeley are conducting an air monitoring project in East Oakland, referred to in Action PH *3.1* and *Transportation and Mobile Sources Action T&M 7.3*, to provide more types of air monitoring data in more places. One component of this project is to use the Air District's air monitoring van to measure concentrations of key pollutants including multiple VOCs, PM, UFP, black carbon, NOx, and CO. This monitoring is focused on pollution sources prioritized by community. While

Name	Organization	Comment	Response
			mobile monitoring will provide measurements of multiple key pollutants in many locations in East Oakland, the short snapshots of data do not provide information to estimate health risks. A second component of the East Oakland air monitoring project is deployment of a PM2.5 sensor network, which is making hourly and even sub-hourly real-time PM2.5 data available in more locations in East Oakland. Both components of this project were previously scoped and are already underway, and this project is funded in part by a U.S. EPA grant that ends in June 2026. Data and findings from the East Oakland air monitoring project will be made publicly available for other uses.
Paul English	Public	However, I urge you to reject this plan as insufficient to protect the public health of those living in East Oakland, as the plan does not document the health impacts of the Oakland Airport expansion. As you note in the report, the Oakland airport is the "largest contributor[s] to NOx emissions in East Oakland at 36%, and aircraft is the largest sulfur oxides (SOx) source in the community at 80%." Although you propose two strategies: "Strategy 6. Emission Reductions at the Oakland International Airport" and "Strategy 7. Collaboration With and Accountability to Community on Airport Impacts," both of these strategies will fail to adequately address the increased pollution from building a new terminal and new gates. Strategy 6, which "may" include electrification of airport ground support equipment and leaded aviation gas, sounds weak and lacks any enforcement mechanism. Strategy 7, which	See response **Stop OAK Expansion Response 1** and **Response 3.**

Name	Organization	Comment	Response
		requires the Port of Oakland to install air monitoring equipment "no later than one year after the opening of the new terminal," will only document the increase in air pollution after the fact. The questions which this report fails to address include, "how many new cases of asthma and cardiovascular disease will occur due to the airport expansion?" and "what are the external social costs in public health due to the expansion in terms of emergency department visits, missed school days, and medication costs?" These questions could be answered by conducting a thorough Health Impactment Assessment, which has already been recommended by the Alameda County Health Department. Such an assessment is necessary for the community to understand the complete burden on public health of the airport expansion, and should be a strategy proposed in the Plan.	
Jack Fleck	350 East Bay and Stop OAK Airport Expansion Coalition	Here is specific wording we are suggesting: Draft Amendment to the AB617 Community Steering Committee "Right to Breathe: East Oakland Community Air Quality Justice Plan" report From the Stop OAK Expansion Coalition The Community Steering Committee requests that **plans for expanding operations** or facilities at the establishments listed in the East Oakland Air Monitoring Project (Section 3.2), including the **Oakland airport**, that would potentially increase air pollution, **be suspended until the health impacts on East Oakland residents are better understood through the conduct of a Health Impact Assessment study**. Such a Health	See response **Stop OAK Expansion Response 1** and **Response 3.**

Name	Organization	Comment	Response
		Impact Assessment (HIA) should include accounting for the well-documented pre-existing health inequities in East Oakland communities.	
Stop OAK Admin	Stop Oak Airport Expansion Coalition	Address health threats from proposed expansion of Oakland San Francisco Bay Airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should compel the City of Oakland to exercise its authority to suspend the Oakland San Francisco Bay Airport expansion if air quality in East Oakland would be further worsened. This action would be consistent with the Environmental Justice Element of its General Plan. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the new terminal will be completed.	See response **Stop OAK Expansion Response 1.**
Stop OAK Admin	Stop Oak Airport Expansion Coalition	The report should call on the Port of Oakland to perform a comprehensive Health Impact Assessment (HIA) of the airport expansion on East Oakland residents. This assessment would include accounting for the well-documented pre-existing health inequities in East Oakland communities and analyze any cumulative effects of increased pollution on this population. The Alameda County Health Department	The Air District submitted a comment letter on the airport expansion CEQA project, which suggested that the Port of Oakland (Port) implement Environmental Justice principles including evaluation of cumulative impacts, disaggregated by race and that the Port implement all feasible measures to reduce nitrogen oxides (NOx) for construction.

Name	Organization	Comment	Response
		has called on the port to perform this same assessment.	A project-level HIA is outside the scope of a Community Emissions Reduction Plan.
Stop OAK Admin	Stop Oak Airport Expansion Coalition	The Air Quality Justice Plan should recommend suspension of all activity related to expanding operations and facilities listed in the Monitoring Project until a Health Impact Assessment (HIA) is completed. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.	See response **Stop OAK Expansion Response 2.**
Stop OAK Admin	Stop Oak Airport Expansion Coalition	Increase and geographically expand the number of pollution monitors including airport fenceline monitors. Initiate monitoring ASAP, as the Community Steering Committee (CSC) prefers. Such monitoring is needed now to provide baseline data for future comparison and modeling. Include ultrafine particles and measure hourly fluctuations over the course of at least one year to indicate peak levels of pollution and seasonal variations.	See response **Stop OAK Expansion Response 2.**
Stop OAK Admin	Stop Oak Airport Expansion Coalition	Adopt monitoring methodology for ultra-fine particles based on airport, not roadway, studies. In Appendix D regarding air monitoring methodology for ultra-fine particles (UFP): From a study of the Seattle-Tacoma Airport (Sea-Tac), UFP are particularly associated with landing airplanes, and are much more widely dispersed than UFP from roadways. This is because descending jets fly lower, and for longer periods of time, compared to takeoffs. The air monitoring efforts of the Air District should follow methods described in this study.	Data collected from the East Oakland air monitoring project will be leveraged to the extent possible to help inform air quality issues that may be related to the airport. The Air District reviews and considers existing scientific research and data analysis methodologies to inform our data assessments.

Name	Organization	Comment	Response
Stop OAK Admin	Stop Oak Airport Expansion Coalition	Use updated threshold on annoyance to address noise pollution in report. Although noise is mentioned as a community concern (Pg. 178), there are no action items to address this issue. A starting point would be to collect data recognizing that 65 decibels Day-Night average Level (DNL) is an outdated standard. The FAA's continued reliance on the 65 DNL threshold is no longer defensible for evaluating the noise impacts of airport expansion projects such as those proposed at Oakland San Francisco Bay Airport. The FAA's own 2021 Neighborhood Environmental Survey (NES) demonstrated that substantial community annoyance occurs well below 65 DNL, with its regression model indicating an equivalent response near 46 DNL. Despite this, both the FAA and the Port of Oakland have continued to apply the 65 DNL threshold in reaching findings of no significant impact. This approach disregards the FAA's own scientific record and fails to meet NEPA's requirement for using the best available information. Noise data and methods need to reflect actual community response to aircraft noise. Add this threshold to capture noise pollution and annoyance to Appendix D.	The concern is related to noise due to truck idling. Several actions in the Draft Plan could help reduce idling: Action T&M 1.3 involves better managing trucks in East Oakland, which could include changes to reduce idling; Action T&M 1.5 is designed to identify locations to install no idling signs; and Action T&M 3.4 will offer grants to owners of heavy-duty diesel trucks to help eliminate harmful diesel engine idling. Also, as noted on page 108 of the Plan, Since 2010, the Federal Aviation Administration (FAA) has been leading the Continuous Lower Energy, Emissions (CLEE), and Noise (CLEEN) Program with U.S. EPA and engine manufacturers to develop aircraft engines that are quieter, more fuel efficient and lower emitting.

Attachment 2 Redacted Comment Letters

From: Aaron Reaven
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Saturday, November 15, 2025 12:01:53 PM

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CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Bay Area Air District Planning Department,

I write to urge you to incorporate the following three points into your **Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan**.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Note: The Air District also has no authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

2. A larger grid of pollution monitors is needed, including fenceline monitors. This monitoring should be initiated now, as the Community Steering Committee (CSC) prefers, to provide a baseline of data for future comparison and modeling. Include ultrafine particles and hourly fluctuations to indicate peak levels of pollution.

3. The report should call for any plans for expanding operations or facilities at the establishments listed in the East Oakland Air Monitoring Project, including the Oakland airport, (Section 3.2) that would increase pollution to be suspended until the health impacts on East Oakland residents are better understood. A specific Health Impact Assessment(HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

There are numerous locations in the report where these points should be included. A number

of these locations are identified in this document.

I appreciate the effort that the Air District and Community Steering Committee have put into this report. I look forward to continuing to work with you to improve air quality in Oakland and the health of adjoining communities.

Respectfully submitted,
Aaron Reaven

From: AJ cho
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 8:39:18 PM

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CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1) The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Note: The Air District also has no authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

2) A larger grid of pollution monitors is needed, including fenceline monitors. This monitoring should be initiated now, as the Community Steering Committee (CSC) prefers, to provide a baseline of data for future comparison and modeling. Include ultrafine particles and hourly fluctuations to indicate peak levels of pollution.

3) The report should call for any plans for expanding operations or facilities at the establishments listed in the East Oakland Air Monitoring Project, including the Oakland airport, (Section 3.2) that would increase pollution to be suspended until the health impacts on East Oakland residents are better understood. A specific Health Impact Assessment(HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

AJ
California

From: Ariella Granett
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 9:17:05 PM

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CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
I'm concerned that all efforts to reduce emissions will be negated by an increase in flights at OAK airport with the planned expansion. Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Ariella
California

From: Alvaro Ramos
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 12:44:00 PM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,

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Respectfully submitted,

Alvaro
California

From: Brandon Svec
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 9:33:29 AM

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Respectfully submitted,

Brandon
California

From: Beth Weinberger
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 9:18:47 AM

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Respectfully submitted,

Beth
California

From: Charles Bret
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 3:59:41 PM

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While East Oakland has the most serious problem, we in the City of Alameda are similarly

impacted. Not only is OAK physically located here, therefore we have more overflights with attended noise and air pollution. This is an unneeded expansion when most major airlines have left, a hopeful "if we build it they will come", regardless of consequences for the people. Definitely a NO!!!!

Respectfully submitted,
Charles A. Bret, Alameda

Charles
California

From: Carol Hirth
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 9:20:01 AM

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Respectfully submitted,

Carol
California

From: Eric Pash
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 10:48:07 AM

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Respectfully submitted,

Eric
Pennsylvania

From: Gregory Stevens
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 9:12:33 AM

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Respectfully submitted,

Gregory
California

From: Irene Hilgers
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 10:18:51 AM

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Respectfully submitted,

Irene
California

From: John Carrese
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 10:29:45 AM

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Respectfully submitted,

John
California

From: Jordan Jackson
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 7:42:35 PM

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Respectfully submitted,

Jordan
California

From: Jean Tepperman
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 12:43:42 PM

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Respectfully submitted,

Jean
California

From: Kay Guinane
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 9:13:19 AM

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Respectfully submitted,

Kay
California

From: Laura Bernstein
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 1:47:13 PM

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Respectfully submitted,

Laura
California

From: Laura Gibbons
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 6:08:33 PM

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1) The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Note: The Air District also has no authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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3) The report should call for any plans for expanding operations or facilities at the establishments listed in the East Oakland Air Monitoring Project, including the Oakland airport, (Section 3.2) that would increase pollution to be suspended until the health impacts on East Oakland residents are better understood. A specific Health Impact Assessment(HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Laura
Washington

From: Leanne GROSSMAN
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 6:51:59 PM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Leanne
California

From: Leah Redwood
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 5:25:46 PM

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Bay Area Air District,

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Respectfully submitted,

Leah
California

From: [redacted]
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 7:23:43 PM

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Bay Area Air District,

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

California

From: Marcia ? Flannery
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 2:35:42 PM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Marcia ?
California

From: Martin Horwitz
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 10:46:27 AM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Martin
California

From: [redacted]
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 6:02:31 PM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,

you will see by my address that I don't live in Oakland but our daughter lives quite close to the airport, and we have concerns about the air she breathes.

Please incorporate the following three points into your Public Review Draft "Right to Breathe: East Oakland Community Air Quality Justice Plan."

1) the report needs to address the threat to the health of East Oakland residents from the proposed expansion of the Oakland airport.

2) A larger grid of pollution monitors is needed, including fenceline monitors. This monitoring should be initiated now, as the Community Steering Committee (CSC) prefers, to provide a baseline of data for future comparison and modeling. Include ultrafine particles and hourly fluctuations to indicate peak levels of pollution.

3) The report should include the well-documented pre-existing health inequities in East Oakland.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward decisions which do not further degredate Oakland's air quality, particularly the health of the adjoining communities.

Respectfully submitted,

California

From: Ron Kamangar
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 3:27:57 PM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Ron
California

From: Scott Hochberg
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, November 18, 2025 10:14:27 AM

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Bay Area Air District,

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Scott
California

From: Flora Tso
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Wednesday, November 19, 2025 9:08:13 PM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

Additionally, with changes in weather patterns, there is noticeable gas fumes when planes are landing from the North going Southward. Not only is there noise, but those gas fumes are extremely concentrated. There is a noticeable difference even without monitors, which only speaks to the amount of pollution that Alameda Bay Farm residence experience. One time I walked out the front door to walk my dog in the afternoon, and the smell was so strong it did not dissipate until I had finished walking around the block--which takes 20 minutes to do!

1) The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Note: The Air District also has no authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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Respectfully submitted,

Flora
California

From: Kimberly Ryan
To: BAAQMD Planning
Cc: Adele Watts; Carly Cabral
Subject: EO CERP Public Comments - K.Ryan
Date: Wednesday, November 19, 2025 1:45:24 PM
Attachments: EO CERP_Public Comment_KRyan.pdf

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CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon, and thank you for the opportunity to submit public comment on the Bay Area Air District's East Oakland Draft Community Emissions Reduction Plan.

Please find my attached comments for consideration.

Additionally, sending a well-deserved kudos to the Air District and CBE teams and to the CSC for all the hard work in getting the project to this point. Well done!

Kim

Kimberly Ryan (she/her)
Environmental Scientist & Advocate

Let the path become where I choose to walk, and not otherwise established - Mary Oliver

EO CERP Public Comment/Review
K. Ryan
11/19/2025

General

- Consider adding chapter numbers in addition to page numbers to assist with tracking while reviewing the document

Chapter 5

- Figures 5-18 and 5-21: these figures seem to compare similar modeled risks (cancer risk per million) but show two very different results. Understanding the nuanced differences may be difficult for a reader who lacks the expertise to distinguish between the two. Suggest using more detailed or clarifying language in place of the “key local sources” referenced in Figure 5-18 “and the “permitted facilities” in Figure 5-21.

- Community Concern Statement 4 (page 186): The first statement referring to diesel trucks seems random - is that intentional? If so, suggest tying-in to why the diesel truck traffic is specifically relevant to Oakland Airport activities here.
    - The term “health stakeholder” is confusing and one that I have never heard. Following an internet search, nothing popped-up. Suggest adding “public” in front of “health” or using the term “public health officials” if that clarifies the intended usage.
-

Appendix F-1

- - Consider starting a new page for each of the different facilities in order to facilitate review of the associated community concerns and avoid confusion

- - If possible, create hyperlinks to the associated CERP strategies/actions so that readers can easily move between the documents

- - If Argent Materials continues to operate in at least two different locations, as indicated on Figure F-1b, suggest including the address of both facilities in the "Facility & Pollutants Summary", as well as a summary of activities for the 85th Ave site.

- An additional and primary concern for the Argent Materials property has historically been the expansion of operations with little to no oversight for years due to regulatory delay and inconsiderate land-use policy decisions made by Planning Commission/ City Council. Consider including any associated strategies/actions for agency commitment to faster and more community-oriented decisionmaking and permitting reviews (e.g. C&I Strategy 3).

From: Leana Zang-Rosetti
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Thursday, November 20, 2025 7:22:49 AM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Leana

California

From: Nishanga Bliss
To: BAAQMD Planning
Subject: A Mother"s East Oakland CERP Public Comments
Date: Wednesday, November 19, 2025 6:37:41 AM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,

I live near the shoreline and OAK flight path, and I'm very concerned about environmental and health impacts of the proposed airport expansion. Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1) The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Note: The Air District also has no authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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the health of the adjoining communities.

Respectfully submitted,

Nishanga
California

From: Paul English
To: BAAQMD Planning
Subject: East Oakland CERP public comments
Date: Friday, November 21, 2025 1:11:29 PM
Attachments: public comment_PE.docx

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CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear BAAQMD:
Please find attached a public comment on the East Oakland CERP.

thank you,
Paul English

Paul English, PhD, MPH [redacted] [redacted]

11/21/2025

RE: East Oakland CERP Public Comments

Dear Community Steering Committee, Air District Board of Directors, and California Air Resources Board:

Thank you for the opportunity to review the public review draft of the East Oakland Community Air Quality Justice Plan (November 2025). I applaud the CSC and BAAQMD staff for preparing a comprehensive analysis of the existing air quality emissions sources and impacts, and the current state of public health in the East Oakland area.

However, I urge you to **reject** this plan as insufficient to protect the public health of those living in East Oakland, as the plan does not document the health impacts of the Oakland Airport expansion. As you note in the report, the Oakland airport is the "largest contributor[s] to NOx emissions in East Oakland at 36%, and aircraft is the largest sulfur oxides (SOx) source in the community at 80%." Although you propose two strategies: "Strategy 6. Emission Reductions at the Oakland International Airport" and "Strategy 7. Collaboration With and Accountability to Community on Airport Impacts," both of these strategies will fail to adequately address the increased pollution from building a new terminal and new gates. Strategy 6, which "may" include electrification of airport ground support equipment and leaded aviation gas, sounds weak and lacks any enforcement mechanism. Strategy 7, which requires the Port of Oakland to install air monitoring equipment "no later than one year after the opening of the new terminal," will only document the increase in air pollution after the fact.

The questions which this report fails to address include, "how many new cases of asthma and cardiovascular disease will occur due to the airport expansion?" and "what are the external social costs in public health due to the expansion in terms of emergency department visits, missed school days, and medication costs?" These questions could be answered by conducting a thorough Health Impactment Assessment, which has already been recommended by the Alameda County Health Department. Such an assessment is necessary for the community to understand the complete burden on public health of the airport expansion, and should be a strategy proposed in the Plan.

I am a retired environmental epidemiologist with 20 years experience in the CA Department of Public Health and was the principal investigator of the Imperial County Community Air

Monitoring Project (English, et al 2017). This project was the inspiration for AB 617, as stated by the co-author of the legislation, Eduardo Garcia (D-Coachella). As such, I have extensive knowledge of the intent of this legislation, and believe that, in the spirit of the bill, the scoping plan should include evaluating near future impacts. Again, I urge you to reject this plan until it properly addresses the public health impacts of the proposed airport expansion.

Respectfully yours,



Paul B. English, PhD, MPH

English PB, Olmedo L, Bejarano E, Lugo H, Murillo E, Seto E, Wong M, King G, Wilkie A, Meltzer D, Carvlin G, Jerrett M, Northcross A. The Imperial County Community Air Monitoring Network: A Model for Community-based Environmental Monitoring for Public Health Action. Environ Health Perspect. 2017 Jul 31;125(7):074501. doi: 10.1289/EHP1772. PMID: 28886604; PMCID: PMC5744720.

From: Tamara Haw
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Saturday, November 22, 2025 2:28:41 PM

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

2. A larger grid of pollution monitors, including fenceline monitors, is needed now, as the Community Steering Committee (CSC) prefers, to provide baseline data for future comparison and modeling. Include ultrafine particles and measure hourly fluctuations over the course of at least one year to indicate peak levels of pollution and seasonal variations.

3. The Community Steering Committee requests that any establishment listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, suspend any plans for expanding operations or facilities that would potentially increase air pollution until the health impacts on East Oakland residents are better understood. A specific Health Impact Analysis (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,
Tamara Haw

Tamara
California

Outlook

Fw: follow up to meeting Nov 13; request for CSC agenda item [EO AB 617 related]

[redacted]

Date Mon 12/1/2025 8:51 AM
To BAAQMD Planning <planning@baaqmd.gov>

Alicia Parker
Principal Planner
Bay Area Air District
375 Beale St., Suite 600, San Francisco, CA 94105
Teams: 1 415-749-5039
[redacted] www.BAAQMD.gov

Bay Area Air District
CLEAN AIR FOR ALL

[redacted]

Sent: Monday, November 24, 2025 7:31 AM

[redacted]

Subject: Re: follow up to meeting Nov 13; request for CSC agenda item [EO AB 617 related]

Thanks. Most of the public coming in that I have seen are from the Stop OAK coalition.

Wendy Goodfriend (she/her)
Director, Planning and Climate Protection
Bay Area Air District
375 Beale St., Suite 600, San Francisco, CA 94105
Phone: 415-308-6518
[redacted] | www.BAAQMD.gov

Bay Area Air District
CLEAN AIR FOR ALL

[redacted]

Sent: Friday, November 21, 2025 6:17 PM

[redacted]

Subject: FW: follow up to meeting Nov 13; request for CSC agenda item [EO AB 617 related]

Sharing as I just received this. Scroll to the bottom I believe John Fleck who attended the CSC meeting (11/13) sent a follow up communication to Arsenio on 11/17. And Arsenio responded today see message copied below.

-Diana

[redacted]

Sent: Friday, November 21, 2025 6:11 PM

[redacted]

Subject: Re: follow up to meeting Nov 13; request for CSC agenda item

Apologies for the delayed response. Thanks again for attending the meeting.

As I mentioned during our discussion, the CSC meetings are currently focused on drafting the Community Emission Reduction Plan. We need to get the plan completed.

It's my understanding that you would like the CERP to reflect the request you shared below. To ensure your concern is considered, please submit your comments by emailing planning@baaqmd.gov with the subject line: **East Oakland CERP Public Comments**.

All comments must be submitted by December 7, 2025, at 11:59 PM. If you have additional questions, please email ab617info@baaqmd.gov.

Warmly,

Arsenio

[redacted]

Sent: Friday, November 21, 2025 4:07:59 PM

[redacted]

Subject: Re: follow up to meeting Nov 13; request for CSC agenda item

[redacted]

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Arsenio,

This is a nudge to see if you are able to put this item on the CSC agenda?

We think it's important for people in East Oakland to know if the airport expansion will worsen their air quality.

Please let us know what you think.

Thanks for your assistance,

Jack Lucero Fleck
350 East Bay and Stop OAK Airport Expansion Coalition
(also a resident of the AB617 CERP Community Boundary)

PS: Here is specific wording we are suggesting:

Draft Amendment to the AB617 Community Steering Committee
"Right to Breathe: East Oakland Community Air Quality Justice Plan" report
From the Stop OAK Expansion Coalition

The Community Steering Committee requests that plans for expanding operations or facilities at the establishments listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, that would potentially increase air pollution, be suspended until the health impacts on East Oakland residents are better understood through the conduct of a Health Impact Assessment study. Such a Health Impact Assessment (HIA) should include accounting for the well-documented pre-existing health inequities in East Oakland communities.

On Mon, Nov 17, 2025 at 2:06 PM Jack Lucero Fleck [redacted]

> Thank you Mr. Charles! We really appreciate your support and encouragement!
>
> We agree that ultimately, Mr. Fine and the Air District board need to take responsibility for ultrafine particles and health impacts. To encourage them, we feel it would be very helpful if the East Oakland AB 617 CSC added its voice to our request for a Health Impact Assessment of the airport expansion.
>
> My understanding is that Arsenio can put this on the CSC agenda. So, Arsenio, can you do this?
>
> Thanks again,
>
> --Jack
>
> On Mon, Nov 17, 2025 at 1:36 PM Charles Reed [redacted]
>
> > Thank you Mr. Fleck for your passionate advocation for the health, safety, and quality of life in our East Oakland Community.
> >
> > As a Community Co-chair it is my responsibility to share with you who I think would be the appropriate people within the agency who could support your concerns. I would suggest that you and The Stop Oak Expansion Group reach out to BAAD Director Phil Fine [redacted] and the BAAD Board of Directors with your concerns of the ultra-fine air particles associated with the Airport Expansion (Ambient Air Quality is BAAD's jurisdiction).
> >
> > From my experience, if the Board of Directors doesn't hear about your issues of concern from you, no one else is going to tell them. So use this moment in time to deluge the BAAD

Directors and the BAAD Board of Directors with both individual Letters of Concern and Community based organizations letters of Concerns that outline your fears.

I am happy to assist your right to have your voices heard, so please feel free to call on me when needed.

Sincerely; Mr. Charles Founding Director Lifers Leaving A Legacy/ Co-chair East Oakland CERP

On Mon, Nov 17, 2025 at 8:01 AM Jack Lucero Fleck [redacted]

> Hello Arsenio,
>
> It was very nice to meet you at the AB617 workshop on November 13. We very much appreciate your work.
>
> We discussed the idea of bringing an item to the CSC recommending that the AB617 report be amended to add a request that the Port conduct a Health Impact Assessment of the proposed airport expansion before moving forward on that project.
>
> As you probably know, the Port's EIR did a Human Health Risk Assessment, conducted not by a public health agency but by an engineering firm, which is a less comprehensive study. The Health Risk Assessment did not consider existing health conditions in East Oakland and how air pollution from increased air traffic might worsen those health conditions. It also did not look at Ultrafine Particle air pollution, which is known to be a significant health problem in communities near airports, including being associated with high rates of asthma.
>
> The Alameda County Health Department requested, in bold type, that a Health Impact Assessment be conducted, in their Public Comment letter response to the Port's Draft EIR which references both Ultrafine Particle air pollution and existing health conditions in East Oakland, e.g. the fact that East Oakland residents have the highest rates of asthma hospitalizations in all of Alameda County. Remarkably, the Port ignored the County Health Department's request, and published the FEIR without the Health Impact Assessment study that they requested.
>
> We ask you to add a proposal to add such an amendment to the AB617 report to the next CSC agenda. Here is some sample language for such an amendment.
>
> *The CSC requests that plans for expanding operations or facilities at the establishments listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, that would potentially increase air pollution, be suspended until the health impacts on East Oakland residents are better understood through the conduct of a Health Impact Assessment study. Such a Health Impact Assessment (HIA) should include accounting for the well-documented pre-existing health inequities in East Oakland communities.*
>
> We understand that you are concerned that the CSC is behind on the AB617 timetable, but we don't think this item will take much time. From the conversations I had with CSC members at the workshop, I think it will be a fairly non-controversial request–of course the community would like to be assured that the proposed airport expansion would not negatively impact their health through worsened air quality. This request would only add a few sentences to the SB 617 report.
>
> Thanks again for your work!

Jack Lucero Fleck
350 East Bay and Stop OAK Airport Expansion Coalition

Cc: Lin Griffith
Mr. Charles Reed
Carly Cabral – [redacted]

--
Mr. Charles Founding Director of Lifers Leaving A Legacy , where WE BELIEVE that the Power to change belongs to those who BELIEVE that they can!
If you're interested in learning more about Lifers Leaving A Legacy: www.liferlegacy.org
[redacted]

Outlook

East Oakland CERP Public Comments

From Margaret Steppe [redacted]
Date Sun 11/23/2025 11:58 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

2. A larger grid of pollution monitors, including fenceline monitors, is needed now, as the Community Steering Committee (CSC) prefers, to provide baseline data for future comparison and modeling. Include ultrafine particles and measure hourly fluctuations over the course of at least one year to indicate peak levels of pollution and seasonal variations.

3. The Community Steering Committee requests that any establishment listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, suspend any plans for expanding operations or facilities that would potentially increase air pollution until the health impacts on East Oakland residents are better understood. A specific Health Impact Analysis (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,
Margaret Steppe

Margaret
California

Outlook

East Oakland CERP Public Comments

From AJ cho [redacted]
Date Mon 11/24/2025 11:10 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

2. A larger grid of pollution monitors, including fenceline monitors, is needed now, as the Community Steering Committee (CSC) prefers, to provide baseline data for future comparison and modeling. Include ultrafine particles and measure hourly fluctuations over the course of at least one year to indicate peak levels of pollution and seasonal variations.

3. The Community Steering Committee requests that any establishment listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, suspend any plans for expanding operations or facilities that would potentially increase air pollution until the health impacts on East Oakland residents are better understood. A specific Health Impact Analysis (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

AJ
California

Outlook

East Oakland CERP Public Comments

From Ann Harvey [redacted]
Date Mon 11/24/2025 8:21 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,

I appreciate the great effort that the Air District and Community Steering Committee have put into this report. I ask you to please also consider incorporating the following three points related to the potential expansion of the Oakland airport into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The threat to the health of East Oakland residents from the proposed expansion of the Oakland airport.

There is an implicit argument that the study can't address emissions from OAK-based flights. However, the report can and I hope will: (1) explain that the reason flight emissions are omitted from the analysis is that the Air District has no authority to control emissions from flights and (2) call on the Port NOT to expand the airport before completion of a thorough Health Impact Assessment of the proposed expansion. The County Department of Public Health strongly urged the Port to commission a HIA and incorporated it into the Environmental Impact Report, but the Port did not do so.

The Human Health Risk Assessment (HHRA) appended to the EIR is a constrained analysis of likely increases in a specific list of Toxic Air Contaminants for which quantitative dose-response data is available. It does not analyze the impacts of increases in other harmful air pollutants (for example, NOx or ozone) or noise, and critically it does not take into account pre-existing health disparities in East Oakland which can magnify negative health impacts.

As the EPA explains (https://www.epa.gov/healthresearch/health-impact-assessments):

"Health Impact Assessment (HIA) is a decision-support tool being utilized by EPA to promote sustainable and healthy communities. The foundation of a healthy community is strongest when built upon a decision-making process that balances environmental, social, and economic factors to promote the health and well-being of its members. HIA is a tool designed to investigate how a proposed program, project, policy, or plan may impact health and well-being and inform decision-makers of these potential outcomes before the decision is made.

"HIAs:
-determine the potential effects of a proposed decision on the health of a population and the distribution of those effects within the population;
-consider input from stakeholders, including those impacted by the decision;
-use different types of qualitative and quantitative evidence and analytical methods;
-are flexible based on available time and resources; and
-provide evidence and recommendations to decision-makers in a timely manner.

"HIAs consider the full range of potential impacts of the proposed decision — both positive and negative — on health and those factors known to directly and indirectly affect human health (known as health determinants). HIAs provide recommendations for maximizing the potential positive health impacts and minimizing and/or avoiding the potential negative health impacts of the decision. In addition to promoting human health considerations, HIAs also encourage democracy, health equity, a comprehensive approach to individual and community health, and sustainability in decision-making."

This is clearly a very different endeavor from the HHRA.

2. A larger grid of airport-related pollution monitors to provide baseline data in operation for at least a year before any potential OAK expansion project begins.
These should include fenceline, non-down-wind, and down-wind monitors, should include ultrafine particle measurements, and should measure hourly as well as seasonal fluctuations to provide baseline data for future comparison and modeling.

3. The suspension of any plans for expanding operations or facilities that would potentially increase air pollution until the health impacts on East Oakland residents are better understood. The Community Steering Committee requests that this suspension apply to all establishments listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

Respectfully submitted,

Ann
California

Outlook

East Oakland CERP Public Comments

From andrew jordan [redacted]
Date Mon 11/24/2025 9:52 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

2. A larger grid of pollution monitors, including fenceline monitors, is needed now, as the Community Steering Committee (CSC) prefers, to provide baseline data for future comparison and modeling. Include ultrafine particles and measure hourly fluctuations over the course of at least one year to indicate peak levels of pollution and seasonal variations.

3. The Community Steering Committee requests that any establishment listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, suspend any plans for expanding operations or facilities that would potentially increase air pollution until the health impacts on East Oakland residents are better understood. A specific Health Impact Analysis (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

andrew
California

Outlook

East Oakland CERP Public Comments

From Collin Shea Casey [redacted]
Date Mon 11/24/2025 11:21 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Collin Shea
California

Outlook

East Oakland CERP Public Comments

From Cate Leger [redacted]
via email.actionnetwork.org
Date Mon 11/24/2025 8:40 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Cate
California

Outlook

East Oakland CERP Public Comments

From carol schaffer [redacted]
Date Mon 11/24/2025 10:40 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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the health of the adjoining communities.

Respectfully submitted,

carol
California

Outlook

East Oakland CERP Public Comments

From Dan Ouellet [redacted]
Date Mon 11/24/2025 8:32 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Dan
California

Outlook

East Oakland CERP Public Comments

From Eric Pash [redacted]
via email.actionnetwork.org
Date Mon 11/24/2025 2:31 PM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Eric
Pennsylvania

Outlook

East Oakland CERP Public Comments

From Jack Fleck [redacted]
Date Mon 11/24/2025 10:19 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
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the health of the adjoining communities.

Respectfully submitted,

Jack
California

Outlook

East Oakland CERP Public Comments

From Joan Starr [redacted]
Date Mon 11/24/2025 8:44 AM
To BAAQMD Planning <planning@baaqmd.gov>

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the health of the adjoining communities.

Respectfully submitted,

Joan
California

Outlook

East Oakland CERP Public Comments

From M Kathleen Archambeau [redacted]
Date Mon 11/24/2025 8:52 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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Respectfully submitted,
M. Kathleen Archambeau

M Kathleen
California

Outlook

East Oakland CERP Public Comments

From Karen Beck [redacted]
Date Mon 11/24/2025 8:30 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Karen
California

Outlook

East Oakland CERP Public Comments

From Karen Kirschling [redacted]
Date Mon 11/24/2025 1:37 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Karen
California

Outlook

East Oakland CERP Public Comments

From Karen and Keith Miller [redacted]
Date Mon 11/24/2025 12:19 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Karen and Keith
California

Outlook

East Oakland CERP Public Comments

From Linda Jordan [redacted]
Date Mon 11/24/2025 12:49 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Linda
California

Outlook

East Oakland CERP Public Comments

From Leah Redwood [redacted]
Date Mon 11/24/2025 3:39 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Leah
California

Outlook

East Oakland CERP Public Comments

From Martha Booz [redacted]
via email.actionnetwork.org
Date Mon 11/24/2025 9:03 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

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Respectfully submitted,

Martha
California

Outlook

East Oakland CERP Public Comments

From Matt Courter [redacted]
Date Mon 11/24/2025 8:27 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted

,

Matt
Washington

Outlook

East Oakland CERP Public Comments

From Martin Horwitz [redacted]
Date Mon 11/24/2025 10:28 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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Respectfully submitted,

Martin
California

Outlook

East Oakland CERP Public Comments

From Meggie Kang [redacted]
Date Mon 11/24/2025 8:32 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Meggie
California

Outlook

East Oakland CERP Public Comments

From Rena Palloff [redacted]
Date Mon 11/24/2025 8:23 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Rena
California

Outlook

East Oakland CERP Public Comments

From Suzanne Baker [redacted]
Date Mon 11/24/2025 10:46 AM
To BAAQMD Planning <planning@baaqmd.gov>

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Suzanne
California

Outlook

East Oakland CERP Public Comments

From Scott Roth [redacted]
via email.actionnetwork.org
Date Mon 11/24/2025 9:02 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

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Respectfully submitted,

Scott
California

Outlook

East Oakland CERP Public Comments

From [redacted]
Date Mon 11/24/2025 4:02 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

California

Outlook

East Oakland CERP Public Comments

From [redacted]
Date Mon 11/24/2025 7:21 PM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

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Respectfully submitted,

California

Outlook

East Oakland CERP Public Comments

From Yuan Xu [redacted]
Date Mon 11/24/2025 9:14 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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the health of the adjoining communities.

Respectfully submitted,
Yuan Xu

[redacted]

Yuan
California

Outlook

East Oakland CERP Public Comments

From Ann Brook [redacted]
Date Tue 11/25/2025 10:25 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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the health of the adjoining communities.

Respectfully submitted,

Ann
California

Outlook

East Oakland CERP Public Comments

From Anita Watkins [redacted]
Date Tue 11/25/2025 5:41 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities. PLEASE take the health and well-being of your neighbors into consideration when making these plans.

Respectfully submitted,

Anita
California

Outlook

East Oakland CERP Public Comments

From Barbara Benzwi [redacted]
via email.actionnetwork.org
Date Tue 11/25/2025 8:11 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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Respectfully submitted,

Barbara
California

Outlook

East Oakland CERP Public Comments

From Becca Schonberg [redacted]
Date Tue 11/25/2025 9:31 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

It is so important that we protect the quality of our air and do whatever we can locally to stop burning fossil fuels. We cannot afford to wait or put this issue off.

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Respectfully submitted,

Becca
California

Outlook

East Oakland CERP Public Comments

From Connie Cronin [redacted]
via email.actionnetwork.org
Date Tue 11/25/2025 9:26 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

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Respectfully submitted,

Connie
California

Outlook

East Oakland CERP Public Comments

From Carol Kuelper [redacted]
Date Tue 11/25/2025 8:15 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Carol
California

Outlook

East Oakland CERP Public Comments

From David Baca [redacted]
Date Tue 11/25/2025 8:40 AM
To BAAQMD Planning <planning@baaqmd.gov>

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the health of the adjoining communities.

Respectfully submitted,

David
California

Outlook

Protect East Oakland's Air Quality-- East Oakland CERP Public Comments

From Deborah Jung [redacted]
Date Tue 11/25/2025 5:58 PM
To BAAQMD Planning <planning@baaqmd.gov>

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the health of the adjoining communities.

Respectfully submitted,

Deborah
California

Outlook

East Oakland CERP Public Comments

From Esther Lerman [redacted]
Date Tue 11/25/2025 8:15 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Esther
California

Outlook

East Oakland CERP Public Comments

From Gregory Fite [redacted]
Date Tue 11/25/2025 12:44 PM
To BAAQMD Planning <planning@baaqmd.gov>

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Gregory
California

Outlook

East Oakland CERP Public Comments

From Greg Hom [redacted]
Date Tue 11/25/2025 3:43 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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the health of the adjoining communities.

Respectfully submitted,
Greg Hom, Oakland resident

Greg
California

Outlook

East Oakland CERP Public Comments

From Julia Dashe [redacted]
Date Tue 11/25/2025 8:47 PM
To BAAQMD Planning <planning@baaqmd.gov>

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the health of the adjoining communities.

Respectfully submitted,

Julia
California

Outlook

East Oakland CERP Public Comments

From Jackie Feazell [redacted]
Date Tue 11/25/2025 12:05 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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the health of the adjoining communities.

I'd like to add that I've always preferred flying out of Oakland because it felt manageable and gave the actual exciting pleasure travel gives exactly because it was smallish. I very much noticed the difference when I had to use San Francisco instead.

Respectfully submitted,

Jackie
California

Outlook

East Oakland CERP Public Comments

From Jane Maxwell [redacted]
via email.actionnetwork.org
Date Tue 11/25/2025 10:11 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

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Respectfully submitted,

Jane
California

Outlook

East Oakland CERP Public Comments

From Judith Smith [redacted]
Date Tue 11/25/2025 10:26 AM
To BAAQMD Planning <planning@baaqmd.gov>

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the health of the adjoining communities.

Respectfully submitted,

Judith
California

Outlook

East Oakland CERP Public Comments

From Janet Stromberg [redacted]
Date Tue 11/25/2025 8:33 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,

As an engineer at the Bay Area Air Quality Management District for 25 years, I worked collaboratively with engineers, planners, attorneys, scientists, meteorologists, and other technical experts, as well as hundreds of applicants for projects large and small. The Air District is the only regional entity positioned to ensure that all the health and environmental impacts of significant projects are evaluated thoroughly. Air District staff have the capacity, expertise and responsibility to hold applicants accountable. I have every expectation Air District staff will step up to meet its obligation. If that doesn't happen, the public will rightfully insist that Air District Board take ownership of this effort and make sure the work is done to the people's satisfaction.

Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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Respectfully submitted,

Janet
California

Outlook

East Oakland CERP Public Comments

From Jean Tepperman [redacted]
Date Tue 11/25/2025 3:40 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Jean
California

Outlook

East Oakland CERP Public Comments

From Jeff White [redacted]
Date Tue 11/25/2025 8:20 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,
Jeff White

Jeff
California

Outlook

East Oakland CERP Public Comments

From Kristen Okorn [redacted]
Date Tue 11/25/2025 6:10 PM
To BAAQMD Planning <planning@baaqmd.gov>

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the health of the adjoining communities.

Respectfully submitted,

Kristen
California

Outlook

East Oakland CERP Public Comments

From Kathleen Richards [redacted]
Date Tue 11/25/2025 8:05 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Kathleen
California

Outlook

East Oakland CERP Public Comments

From Liam Hroziencik [redacted]
Date Tue 11/25/2025 6:00 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Liam
California

Outlook

East Oakland CERP Public Comments

From Laura Leipzig [redacted]
Date Tue 11/25/2025 9:17 AM
To BAAQMD Planning <planning@baaqmd.gov>

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the health of the adjoining communities.

Respectfully submitted,

Laura
California

Outlook

East Oakland CERP Public Comments

From Leana Zang-Rosetti [redacted]
Date Tue 11/25/2025 8:23 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Bay Area Air District,

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Respectfully submitted,

Leana
California

Outlook

East Oakland CERP - Public Comments

From Marcia Edelen [redacted]
Date Tue 11/25/2025 8:13 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
I'm writing to request that you add the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights; the report should call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) As is, the report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport.

2. A larger grid of pollution monitors, including fenceline monitors, is needed now, as the Community Steering Committee (CSC) prefers, to provide baseline data for future comparison and modeling. Include ultrafine particles and measure hourly fluctuations over the course of at least one year to indicate peak levels of pollution and seasonal variations.

3. Until the health impacts on East Oakland residents are better understood, any establishment listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, any plans for expanding operations or facilities that would potentially increase air pollution should be suspended.
A specific Health Impact Analysis (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Marcia
California

Outlook

East Oakland CERP Public Comments

From Mary Flanagan [redacted]
Date Tue 11/25/2025 7:47 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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3. The Community Steering Committee requests that any establishment listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, suspend any plans for expanding operations or facilities that would potentially increase air pollution until the health impacts on East Oakland residents are better understood. A specific Health Impact Analysis (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Mary
California

Outlook

East Oakland CERP Public Comments

From Mary Gamson [redacted]
Date Tue 11/25/2025 8:37 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Bay Area Air District,

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3. The Community Steering Committee requests that any establishment listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, suspend any plans for expanding operations or facilities that would potentially increase air pollution until the health impacts on East Oakland residents are better understood. A specific Health Impact Analysis (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Mary
California

Outlook

East Oakland CERP Public Comments

From Marjory Keenan [redacted]
Date Tue 11/25/2025 9:44 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Bay Area Air District,

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Marjory
California

Outlook

We Need to Breathe-East Oakland CERP Public Comments

From Melissa Mandel [redacted]
Date Tue 11/25/2025 9:31 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Dear Bay Area Air District Planning Department,
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I appreciate the effort that the Air District and Community Steering Committee have put into this report. I fully expect you and support your work to improve air quality in Oakland and the health

of the adjoining communities.

Respectfully submitted,

Melissa
California

Outlook

East Oakland CERP Public Comments

From [redacted]
Date Tue 11/25/2025 4:03 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

California

Outlook

East Oakland CERP Public Comments

From Nima Sherpa [redacted]
via email.actionnetwork.org
Date Tue 11/25/2025 6:00 PM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,
Nima Sherpa

Nima
California

Outlook

East Oakland CERP Public Comments

From Patrice Haan [redacted]
Date Tue 11/25/2025 9:56 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Bay Area Air District,

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Patrice
California

Outlook

East Oakland CERP Public Comments

From Ruby MacDonald [redacted]
via email.actionnetwork.org
Date Tue 11/25/2025 9:03 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Ruby
California

Outlook

East Oakland CERP Public Comments

From Rashid Patch [redacted]
Date Tue 11/25/2025 8:57 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Rashid
California

Outlook

East Oakland CERP Public Comments

From Susan Harris [redacted]
Date Tue 11/25/2025 12:47 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
As a (former) Oakland resident of more than 45 years, I am writing to ask you to incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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Respectfully submitted,

Susan
California

Outlook

East Oakland CERP Public Comments

From Susanne La Faver [redacted]
Date Tue 11/25/2025 3:32 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Bay Area Air District,

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Susanne
California

Outlook

East Oakland CERP Public Comments

From Dr. Tony Marks-Block [redacted]
Date Tue 11/25/2025 10:36 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Bay Area Air District,

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Dr. Tony
California

Outlook

East Oakland CERP Public Comments

From [redacted]
via email.actionnetwork.org
Date Tue 11/25/2025 12:39 PM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

California

Outlook

East Oakland CERP Public Comments

From Ben Keller [redacted]
via email.actionnetwork.org
Date Wed 11/26/2025 9:39 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Ben
California

Outlook

East Oakland CERP Public Comments

From Claire Broome [redacted]
Date Wed 11/26/2025 8:03 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

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the health of the adjoining communities.

Respectfully submitted,

Claire
California

Outlook

East Oakland CERP Public Comments

From Dee Dee Kramer [redacted]
Date Wed 11/26/2025 7:01 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Dee Dee
California

Outlook

East Oakland CERP Public Comments

From Eileen Chieco [redacted]
Date Wed 11/26/2025 12:21 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Eileen
California

Outlook

East Oakland CERP Public Comments

From Ellen McClure [redacted]
Date Wed 11/26/2025 12:03 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Ellen
California

Outlook

East Oakland CERP Public Comments

From Jim Wilson [redacted]
Date Wed 11/26/2025 7:42 AM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,
Jim Wilson

Jim
California

Outlook

East Oakland CERP Public Comments

From Katherine Dillon [redacted]
Date Wed 11/26/2025 5:14 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

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the health of the adjoining communities.

Respectfully submitted,

Katherine

Outlook

East Oakland CERP Public Comments

From Lynne Baker [redacted]
Date Wed 11/26/2025 6:43 PM
To BAAQMD Planning <planning@baaqmd.gov>
[redacted]

1 attachment (348 KB)
Letter of Support-Stop Oakland Airport Expansion-NCN 251126.pdf;

[redacted]

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November 26, 2025

To: planning@baaqmd.gov

From: Napa Climate NOW!/350 Bay Area Group
Lynne Baker, Co-chair

Subject: East Oakland CERP Public Comments

Dear Bay Area Air District Planning Department,

The Stop Oak Airport Expansion Coalition Steering Committee and the undersigned organizations submit these comments to the **Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.** Napa Climate NOW! has signed on as an organization for this critical matter.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) **The report should not assume that the Oakland Airport new terminal will be completed.**

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There are numerous locations in the report where these points should be included. See the attached Appendix A that indicates the specific suggestions and specific locations.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Lynne Baker, Co-chair, Napa Climate NOW!/350 Bay Area Group

Addendum included in attached letter.

~~~~~~~~~~~~~~~~~~~~~~~~~

Lynne Baker, RN,MS
[redacted]

CONFIDENTIAL OR PRIVILEGED: This communication contains information intended only for the use of the individuals to whom it is addressed. If you have received this in error, please notify the sender immediately by returning it by reply email and then permanently deleting the communication from your system. Thank you.
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Outlook

East Oakland CERP Public Comments

From Margaret Steppe [redacted]
Date Wed 11/26/2025 2:42 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
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Respectfully submitted,
M Steppe

Margaret
California

Outlook

East Oakland CERP Public Comments

From Rafael J. González [redacted]
via email.actionnetwork.org
Date Wed 11/26/2025 5:00 PM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department, IT IS URGENT THAT WE HAVE A HEALTH-IMPACT ASSESSMENT EXPANSION IN THE AB617 EAST OAKLAND REPORT.

Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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Respectfully submitted,

Rafael J.
California

Outlook

East Oakland CERP Public Comments

From Victor Chieco [redacted]
Date Wed 11/26/2025 12:26 PM
To BAAQMD Planning <planning@baaqmd.gov>

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Respectfully submitted,

Victor
California

Outlook

East Oakland CERP Public Comments

From Alfreda Wright [redacted]
Date Thu 11/27/2025 7:42 AM
To BAAQMD Planning <planning@baaqmd.gov>

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the health of the adjoining communities.

Respectfully submitted,

Alfreda
California

Outlook

East Oakland CERP Public Comments

From beth weinberger [redacted]
via email.actionnetwork.org
Date Thu 11/27/2025 6:34 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

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Respectfully submitted,

beth
California

Outlook

East Oakland CERP Public Comments

From Frances Aubrey [redacted]
Date Thu 11/27/2025 11:51 AM
To BAAQMD Planning <planning@baaqmd.gov>

[redacted]

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There are numerous locations in the report where these points should be included. See the attached Appendix A that indicates the specific suggestions and specific locations.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Alameda County Interfaith Climate Action Network

The Stop OAK Expansion Coalition Steering Committee

350 East Bay

San Francisco Bay Physicians for Social Responsibility

Sunflower Alliance

Xochipilli, Chicano/Latino Men's Circle

Appendix A: There are numerous specific locations in the **Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan** where the points outlined in the letter above should be included. Proposed added text is shown in ***bold italics.***

1) Transportation and Mobile Environment – Oakland International Airport (pg 108).

Add a concluding paragraph stating, ***"Given the air quality impacts of the airport, prior to any expansion of the facility, a comprehensive Health Impact Assessment should be conducted. Both the City of Oakland and the Port of Oakland have authority to require such a pause and a study–See Chapter 9***." (see items 8 & 9 below)

2) Built Environment– add as action BE 3.7 (Pg. 145):

"***Pause expansion of the airport, which will attract additional aircraft daily thus necessarily bringing increased NOx, SOx, PM 2.5 and PM 0.1 ultrafine particles to homes and to gathering places of vulnerable populations, until the airport performs a Health Impact Assessment and recirculates a revised FEIR for the Modernization and Development Project with a plan for full mitigation of the increased air pollution its development will cause***."

Lead: Port of Oakland

Timeframe: Medium term (2-3 years)

3) Public Health– add as action 3.5 (Pg. 171):

"***Any plans for expansion of operations or facilities at the establishments listed in the East Oakland Air Monitoring Project Section (3.2) that would increase pollution should be suspended until such time as a thorough assessment is conducted of the potential impact on the health of East Oakland residents. Such health impact assessments shall include accounting for the well-documented pre-existing health inequities in East Oakland communities***."

4) T&M 6.1 (Pg. 187) To this section's description of the Port Emissions Reduction Plan, add the following:

"***The Port of Oakland will pause the Modernization and Development Plan, which would increase emissions, until after it performs a Health Impact Assessment, incorporates data from that assessment into the project EIR, and recirculates the EIR***."

5) Transportation & Mobility–T&M 7.3 (Pg. 189) – add specifics designated below in bold italics:

The East Oakland Air Monitoring Project (see PH 3.1) will include exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM) (including ultrafine particles (UFPs), a key aviation-related pollutant) around specific facilities and air quality concerns identified and prioritized by community members. Oakland International Airport is one of the identified facilities. ***Communities for a Better Environment (CBE) has partnered with the University of California, Berkeley and the Bay Area Air District to greatly improve the numbers and distribution of pollution sensors in East Oakland. The new sensor grid shall operate with hourly resolution to identify peak concentrations of pollutants, and operate for at least a year.*** Using information collected from this project, the Air District will analyze and evaluate data and summarize and report findings with attention to occurrences of unusually high levels of different pollutants, including UFPs, that may be associated with airport-related emissions. ***Findings from the overall project are expected to inform a specific Health Impact Analysis, improve efforts to reduce pollution emissions, and reveal any need for additional information. Expansion of the airport should be paused until these findings are analyzed and discussed.***

6) Transportation & Mobility T&M 7.4 – (Pgs. 189-199)

This focus area action states, "The Port of Oakland shall install fence line air quality monitor(s) no later than **one year after the opening of the new terminal** as described in the 2024 Oakland International Airport Terminal Modernization and Development Project Final Environmental Impact Report. . ." This assumes that the Airport expansion will be implemented. But there are currently three lawsuits challenging the FEIR, and, as noted above, the City and the Port still have to make decisions about whether to proceed with the project. It's also important to understand that the FEIR projected significant increases in flights, but these have not materialized. In fact, total passengers using the airport have declined recently and have not reached pre-Covid levels as shown in the graph below.

Reference to the "opening of the new terminal" should be deleted from this report.

7) T&M 7.4 (Pgs. 189-190)

This action recommends delaying fenceline air quality monitoring. Since emissions from the Airport have already been identified as a problem, there is no excuse for waiting. The report notes that the “CSC prefers” not waiting. This action item should be modified to read ***“Fenceline air quality monitoring that includes hourly sampling for VOCs, fine PM and Ultra-Fine PM should be installed immediately.” (see PH 3.1)***

8) Chapter 9 Implementation and Reporting – Government Collaboration and Agency roles – City of Oakland pg 208. add:

”The City of Oakland, through its General Plan, has the authority to rule that the airport expansion can only proceed if it shows that air quality in East Oakland will not be further damaged.” This would be consistent with the Environmental Justice Element of the General Plan.

9) Chapter 9 Implementation and Reporting – Government Collaboration and Agency roles – Port of Oakland pg 209. Add sentence:

“Notwithstanding the findings of the Environmental Impact Report pursuant to the airport expansion, the Port should pause the project to better determine the health impacts on East Oakland Residents as well as other considerations.”

– Three additional technical concerns –

1) Noise Pollution

Add this to Appendix D regarding noise measurement thresholds:

Although noise is mentioned as a community concern (Pg. 178), there are no action items to address this issue. A starting point would be to collect data recognizing that 65 decibels Day-Night average Level (DNL) is an outdated standard. The FAA's continued reliance on the 65 DNL threshold is no longer defensible for evaluating the noise impacts of airport expansion projects such as those proposed at Oakland Airport. The FAA's own 2021 Neighborhood Environmental Survey (NES) demonstrated that substantial community annoyance occurs well below 65 DNL, with its regression model indicating an equivalent response near 46 DNL. Despite this, both the FAA and the Port of Oakland have continued to apply the 65 DNL threshold in reaching findings of no significant impact. This approach disregards the FAA's own scientific record and fails to meet NEPA's requirement for using the best available information. Noise data and methods need to reflect actual community response to aircraft noise.

2) Ultra-fine Particles Considerations

Suggestion for Appendix D regarding air monitoring methodology regarding ultra-fine particles (UFP). From this study of the Seattle-Tacoma Airport (Sea-Tac), we see that UFP are particularly associated with landing airplanes, and that they are much more widely dispersed than UFP from roadways. The air monitoring efforts of the Air District should follow methods described in this study.

3. Pollution Inventory Accuracy

The Emissions Inventories listed in Tables 5-7 (Pg.92), 5-8 (Pg.94), and 5-10 (Pg. 111) are based almost exclusively on modelling using AERMOD. The projections presented represent annual amounts. These results should be confirmed with local monitoring before large-scale industrial changes (like the expansion of the airport) are approved. **Hourly data** is needed to reveal emission spikes that may exceed National Ambient Air Quality Standards.

The data for East Oakland in figures 5-3, 5-4, and 5-6 come from a single monitor. Having one monitor limits the confidence in these data. The Bay Area Air District admits that East Oakland is in many ways an air quality “data desert.”(1) Communities for a Better Environment has partnered with the University of California, Berkeley and the Bay Area Air District Air District to greatly improve the numbers and distribution of pollution sensors in East Oakland. The data from these sensors is needed ASAP to establish a credible baseline of community air quality before predicting or curtailing future pollution. The sensors should be sensitive to all classes of particulate matter, NO_x, SO_x and VOCs and operate for at least a year. This would capture any variations related to seasonal shifts in temperature and wind

direction. The data from this study would inform a Health Impact Assessment to enhance our understanding of the current emissions and improve future projections.

1. https://www.baaqmd.gov/~/media/files/technical-services/east-oakland-monitoring-project/eo_amp_sensor_network_monitoring_plan-pdf.pdf?rev=9aaeca8a11a24f7485bfb0d74e05448e&sc_lang=en

END OF APPENDIX A

Outlook

East Oakland CERP Public Comments

From Heather MacLeod [redacted]
Date Thu 11/27/2025 8:35 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,

Here are my comments about the Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

The report omits flight emission from the analysis - that omission should be made clear in the report. It should also be made clear that 99% of the emissions at airports stem from flights. Just because you don't have the authority to solve that problem, you need to make it clear that you're not solving it, so that somebody somewhere else can attempt to solve it. (and frankly, it sounds kind of fraudulent if you say, "I'm helping solve the problem of air quality - well, one percent of the problem anyway.")

Given that the vast majority of emissions come from flights, the report should call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed.

There is a precedent for Air District reports pointing out issues you can't control - the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.

Furthermore, the report should not assume that the Oakland Airport new terminal will be completed. In fact, maybe you could include a comparison scenario in which the new terminal IS completed, and a scenario in which the terminal is NOT completed, and describe the difference in emissions (even the ones you don't regulate). People deserve to know the difference in emissions that will come from having a new terminal, and even though you can't regulate it, you can inform people of the problem. And you can mention emissions from the construction as well - are you able to include emissions related to concrete, for example?

I appreciate your work - air quality matters!

thank you,

Heather
California

Outlook

East Oakland CERP Public Comments

From Janice Cecil [redacted]
Date Fri 11/28/2025 10:26 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

2. A larger grid of pollution monitors, including fenceline monitors, is needed now, as the Community Steering Committee (CSC) prefers, to provide baseline data for future comparison and modeling. Include ultrafine particles and measure hourly fluctuations over the course of at least one year to indicate peak levels of pollution and seasonal variations.

3. The Community Steering Committee requests that any establishment listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, suspend any plans for expanding operations or facilities that would potentially increase air pollution until the health impacts on East Oakland residents are better understood. A specific Health Impact Analysis (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Janice
California

Outlook

East Oakland CERP Public Comments

From [redacted]
Date Thu 11/27/2025 9:16 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

California

Outlook

East Oakland CERP Public Comments

From Lynn Powe [redacted]
Date Thu 11/27/2025 7:02 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,
Lynn A Powe

Lynn
California

Outlook

East Oakland CERP Public Comments

From Marion Grau [redacted]
Date Thu 11/27/2025 10:28 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Marion Grau

Marion

Outlook

East Oakland CERP Public Comments

From Christopher Lutz [redacted]
Date Fri 11/28/2025 8:24 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

Christopher
California

Outlook

East Oakland CERP Public Comments

From Berta Gelber [redacted]
Date Sat 11/29/2025 12:58 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.
One final thought, NOISE. Constant, and when commercial lines stop flying in the middle of the night, then FedEx takes over. It's draining for those us who live close to the airport.

Respectfully submitted,

Berta Gelbr

Berta
California

Outlook

East Oakland CERP Public Comments

From Veronica Oberholzer [redacted]
Date Sat 11/29/2025 9:27 AM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

To the Bay Area Air District Planning Department,

As a lifelong Oakland resident, I hope you will incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Thank you,

Veronica
California

Outlook

East Oakland CERP Public Comments

From Stefanie Pruegel [redacted]
Date Sun 11/30/2025 1:39 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,

I am writing from San Leandro, another community with a high density of already disadvantaged and pollution-burdened residents that will be impacted by a possible expansion of the Oakland airport. My own home is super close to the airport - I hear and smell it often and am concerned about helath impacts from plane exhaust and the fact that their health impact to East Oakland and San Leandro residents seem insufficiently assessed or taken into account.

Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Stefanie
California

From: Ara Bicakci
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Monday, December 1, 2025 6:03:56 PM

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Ara
California

Outlook

East Oakland CERP Public Comments

From David Gassman [redacted]
Date Mon 12/1/2025 3:29 PM
To BAAQMD Planning <planning@baaqmd.gov>

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

2. A larger grid of pollution monitors, including fenceline monitors, is needed now, as the Community Steering Committee (CSC) prefers, to provide baseline data for future comparison and modeling. Include ultrafine particles and measure hourly fluctuations over the course of at least one year to indicate peak levels of pollution and seasonal variations.

3. The Community Steering Committee requests that any establishment listed in the East Oakland Air Monitoring Project (Section 3.2), including the Oakland airport, suspend any plans for expanding operations or facilities that would potentially increase air pollution until the health impacts on East Oakland residents are better understood. A specific Health Impact Analysis (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and

the health of the adjoining communities.

Respectfully submitted,

David
California

From: Stephen Ongerth
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Monday, December 1, 2025 3:52:02 PM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Thank you very much,

Stephen
California

From: Margaret O"Halloran
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Tuesday, December 2, 2025 7:46:35 AM

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Bay Area Air District,

Dear Bay Area Air District Planning Department,
Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1. The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port NOT to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

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We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

Margaret
California

From: Charles Reed
To: BAAQMD Planning
Subject: Atten: "East Oakland CERP Public Comments"
Date: Wednesday, December 3, 2025 7:44:02 PM
Attachments: Illegal_Dumping_Health_Impacts (1).pptx
Illegal Dumping Fact Sheet (2).pdf

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Dear CSC Members,

As a Co-chair of the East Oakland CERP and a staunch advocate of studying the legitimate health impacts of 'Unaccounted for Surface Source Pollutants' in regards to Illegal Dumpsites and Burned out Abandoned Vehicles; Lifers Leaving A Legacy submits its Public Opinion on The BAAD Air Districts responsibility and accountability of mitigating and eliminating ANY and ALL "Emissions negatively impacting the health and quality of life in Communities of Concern".

While the BAAD Air District claims to absolve itself of Illegal Dumping Emissions and Burned out Vehicles impact on Public Health they can NO Longer ignore the cumulative impacts on Air Quality that these 'Unaccounted For Surface source Pollutants' have on our health and quality of life. These are polluted emissions that can be mitigated and eliminated through a Focused and Intentional Instant Response and Removal process that protects our already vulnerable communities through the containment of an inevitable air contamination source.

I ask that we as a united CSC stand together in the fact that these two cumulative causes of negative health impacts be prioritized in the CERP process as a Public Health and Safety Issue in regards to our CSC Community Emissions draft and our Oakland General Plan.

Sincerely and with ALL respect; Mr. Charles Founding Director Lifers Leaving A Legacy/Co-chair East Oakland CERP

Mr. Charles Founding Director of Lifers Leaving A Legacy , where WE BELIEVE that the Power to change belongs to those who BELIEVE that they can!
If you're interested in learning more about Lifers Leaving A Legacy: www.liferlegacy.org
[redacted]

Burned_Vehicle_Health_Risk_Presentation.pptx

Illegal Dumping & Health: New Evidence of Direct Community Impacts

- East Oakland Community Emissions Reduction Plan (CERP)

Why This Matters

- - Illegal dumping has long been a top community concern.
- - New evidence shows it directly contributes to harmful pollutant exposure.
- - Elevates illegal dumping from a blight issue to a public-health priority.

Key Health Findings

- - Dumped materials often contain or generate:
- • Mold spores
- • Volatile Organic Compounds (VOCs)
- • Particulate matter from decomposition
- • Chemical residues and toxins
- - These pollutants can become airborne and spread into residential areas.

Health Impacts on East Oakland Residents

- - Increased asthma triggers
- - Respiratory irritation and chronic inflammation
- - Higher exposure risks for children, elders, and medically vulnerable residents
- - Exacerbation of existing cumulative environmental burdens

Environmental Pathways

- - Mold growth on wet or deteriorating materials
- - VOC release from broken furniture, paints, adhesives, plastics
- - Contaminated dust and particulates blowing into homes
- - Stagnant waste attracting pests and pathogens

Why This Is Urgent

- - East Oakland is already overburdened by emissions and pollution.
- - Illegal dumping amplifies these risks.
- - Immediate action can prevent avoidable health harms.

What We Need to Do

- - Strengthen removal and cleanup timelines
- - Increase prevention resources
- - Improve enforcement coordination
- - Integrate public-health data into dumping strategies
- - Mobilize community partners and agencies

Call to Action

- Illegal dumping must be recognized and addressed as a serious environmental-health threat requiring urgent, coordinated intervention.

FACT SHEET

Illegal Dump Sites as Unaccounted-For Surface Source Pollutants

Air Quality • Health • Environmental Justice • Harm Reduction

---

What Are Unaccounted-For Surface Source Pollutants?

Illegal dump sites function as **unmonitored, unregulated air pollution sources**. They are not included in emissions inventories or air quality models, yet they emit: - Mold spores & fine particulate matter (PM2.5 / PM1.5) - Volatile Organic Compounds (VOCs) - Microplastics & toxic dusts - Gases from decomposing waste

These emissions occur **at ground level**, directly where people live, walk, and breathe.

How Mold Grows in Illegal Dump Sites

Trash left outdoors for weeks or months goes through **wet–dry–wet cycles**, creating ideal conditions for mold growth on: - Mattresses, carpets, furniture - Food waste & yard debris - Cardboard, textiles, paper

As mold dries, breaks, and fragments, it releases **fine particles small enough to enter deep into the lungs**.

Why This Is an Air Quality Issue

- Mold fragments fall into the **PM2.5 and PM1.x range**.
- These particles stay airborne longer and travel farther.
- VOCs from decaying trash add to the toxic load.
- None of this is captured by traditional air monitoring networks.

Illegal dumps are **active emission sources**, not just trash problems.

Health Impacts on Nearby Residents

Exposure to mold spores, particulates, and VOCs from illegal dump sites increases the risk of: - Asthma attacks and ER visits - Chronic coughing and bronchitis - Wheezing, shortness of breath - Worsened COPD - Eye, nose, and throat irritation

Children, elders, and people with asthma face the **highest risks**.

Environmental Justice Concerns

Illegal dumping is disproportionately concentrated in **Black, Latino, and Indigenous neighborhoods**, which already experience: - Higher PM2.5 exposure - Higher asthma rates and hospitalizations - Fewer air quality monitors

Dump sites add **another uncounted pollutant source** on top of existing inequalities.

Mental Health Impacts

Living near illegal dumping is linked to: - Stress, anxiety, and community fatigue - Feelings of abandonment and neglect - Lower overall quality of life

Environmental conditions shape mental well-being as much as physical health.

Harm Reduction: The Power of Community-Led Cleanup

Immediate cleanup before mold matures is a harm reduction strategy.

Community-supported cleanup: - Eliminates the source before spores and toxins become airborne - Reduces PM2.5 and VOC exposure - Prevents long-term contamination - Restores community pride and safety

Faster cleanup = lower exposure = healthier neighborhoods.

Key Message

Illegal dump sites are unaccounted-for surface source pollutants.
They pollute the air, threaten respiratory health, and disproportionately harm communities of color.
Community-led cleanup is an essential harm reduction tool.

From: Patrick Messac
To: BAAQMD Planning
Cc: Sejal Babaria; Margaret Gordon; Gabrielle Sloane Law
Subject: East Oakland CERP Feedback
Date: Thursday, December 4, 2025 10:34:06 PM

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CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Air District Planning Team,

Thank you for the opportunity to provide feedback on the draft *Right to Breathe East Oakland Community Air Quality Justice Plan*.

The community process documented in Chapter 2 and the Vision and Principles in Chapter 3 reflect meaningful resident collaboration and leadership. The emissions inventory and dispersion modeling in Chapter 5 provide a strong technical foundation. The Plan clearly documents the cumulative burdens facing East Oakland communities. Thank you for contextualizing the crisis facing East Oakland through the lens of frontline residents.

As written, however, the Plan does not yet function as an emissions reduction plan. It describes conditions but does not require results at the sources responsible for the most significant harm. The comments below identify where the Plan should be strengthened to produce measurable public health outcomes.

1. Measurable air quality and health outcome targets

The Plan lacks quantifiable emission reduction targets, baseline years, or timelines in either Chapter 7 or Chapter 9. Without defined objectives, the public cannot evaluate whether conditions are improving.

Other AB 617 communities have adopted enforceable performance standards. For example, the West Oakland Community Action Plan established numeric targets for diesel particulate, PM 2.5, and cancer risk in Chapter 4, identified a baseline year, and set 2025 and 2030 goals. It also modeled pollution levels with and without implementation in Chapter 6 and established a tracking framework in Chapter 8.

East Oakland should meet the same standard.

Chapter 9 should be revised to include specific targets for reductions in PM2.5, diesel particulate matter, and toxic air contaminants; identification of a baseline year; interim and long-term target years; annual public reporting; and inclusion of health indicators such as asthma-related emergency room visits and hospitalizations.

2. Prioritize stationary sources responsible for the most significant exposure

The emissions inventory shows that just 11 permitted facilities account for 98% of PM 2.5 emissions from the permitted source sector. Permitted sources are also the primary emitters of mercury, dioxins and furans, and hydrogen sulfide in the community

Chapter 5 identifies major contributors, including:

- Davis Street Transfer Station
- Miller Milling Company
- Peet's Coffee and Tea

The Plan also identifies facilities identified by the community in Appendix F-1, including:

- AB&I Foundry (now Prologis redevelopment)
- Argent Materials
- Crematorium on 98th Avenue (SE Combined Services of California)
- Sterling Environmental

These facilities represent the types of operations that should be designated as Priority Facilities for immediate action. Chapter 7 should be revised to explicitly identify high-risk facilities and focus regulatory action on those sources first. Without prioritization, resources will be diluted across actions that do not materially reduce risk.

3. Enforcement defined by meaningful deterrence, not paperwork

Chapter 6 reviews past enforcement activity but establishes no forward-looking commitments. A Notice of Violation alone does not reduce exposure. The analysis of East Oakland NOVs excluded consideration of whether the NOVs included a financial penalty and the amount of that penalty.

Meaningful enforcement must include financial penalties that deter repeat behavior, cease and desist orders for ongoing harm, mandatory compliance deadlines, permit restrictions when necessary, and escalation for chronic violators.

The Plan itself describes a case where enforcement produced outcomes. AB&I Foundry emitted hexavalent chromium until CARB and the District secured a $2.5M settlement, and the facility ceased operations. This is what effective enforcement looks like.

Chapter 6 should include inspection frequency commitments, penalty thresholds, compliance timelines, and escalation standards. Without these elements, enforcement remains discretionary in practice.

4. Required controls at high-polluting facilities

Chapter 7 identifies industrial risk, but does not require the installation of modern control technology at the facilities driving emissions.

Facilities responsible for disproportionate burdens should be required to install Best Available Retrofit Control Technology or equivalent controls on a defined timeline. The Plan should specify which classes of facilities are subject to this requirement and how compliance will be enforced.

5. Authority and transparency

The Plan lists implementing partners but does not distinguish which actions the Air District controls and which rely on other agencies.

Chapter 7 should classify each strategy by authority so the public can see where regulatory responsibility lies.

All permits for East Oakland facilities should also be posted online in one searchable system. Accountability is not possible without access to operating conditions, emission limits, and compliance history.

This Plan reflects real community work and strong technical analysis. To function as an emissions reduction plan, it must include numeric targets, prioritization of major sources, enforceable consequences, technology mandates where needed, and clarity regarding authority. Without these changes, the Plan will describe harm more effectively than it reduces it.

With gratitude,

Patrick

From: Maurissa Brown
To: BAAQMD Planning
Subject: East Oakland CERP Public Comments
Date: Friday, December 5, 2025 3:24:56 PM
Attachments: The Greenlining Institute East Oakland Community Emissions Reduction Plan (CERP) Public Comments.pdf

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CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello,

Please find The Greenlining Institute's public comments on the East Oakland CERP attached.

Please confirm the receipt of this submission. Thank you.

Warmly,

Maurissa Brown
Transportation Equity Senior Program Manager
Email [redacted]
Pronouns: she, her, hers
[redacted]

LEARN MORE: GREENLINING THE BLOCK CALLS TO END THE LEGACY OF REDLINING & SYSTEMATIC DISINVESTMENT IN OUR COMMUNITIES!

THE GREENLINING INSTITUTE

The Greenlining Institute
[redacted]
www.greenlining.org

December 5, 2025

Bay Area Air Quality Management District
375 Beale Street
Suite 600
San Francisco, CA 94105

Re: East Oakland Community Emissions Reduction Plan (CERP) Public Comments

Dear BAAQMD and Communities for a Better Environment,

Thank you both for your tireless work on the draft East Oakland Community Emissions Reduction Plan. It is inspiring to see public agency commitment and community-led action coming together to address long-standing air quality and environmental justice issues in East Oakland. The public review draft clearly reflects deep efforts to listen to community concerns, document emissions sources, and propose meaningful strategies to improve air quality and health outcomes.

We strongly believe that meaningful change requires ongoing collaboration, and we would welcome the opportunity to work together with you as the plan moves toward finalization and implementation. Please count on us as a partner committed to helping ensure the CERP's success and bringing cleaner air and environmental justice to Oakland.

Founded in 1993, Greenlining is committed to building a just economy that is inclusive, cooperative, sustainable, participatory, fair, and healthy. We work towards a future where communities of color can build wealth, live in healthy places filled with economic opportunity, and are ready to meet the challenges posed by climate change.

Here is a summary of general recommendations for the Air District and specific recommendations for the CERP within this letter:

1. The ISR policy package should build on the South Coast Air Quality Management District Rule 2305, or the WAIRE program, to be more health-protective.
2. Take early action to support Assembly Bill 914 (Garcia) in the 2026 legislative cycle. Oppose any future anti-ISR bills.
3. Ensure that no new general-purpose lanes, or any project that would expand the physical footprint of a highway, are funded or advanced in East Oakland.
4. Add stronger language in the CERP that commits to truck re-routing. Add a "Truck Re-routing Study" as a separate, individual action.
5. Use current, or soon appropriated funding, to start incentivizing owners of older heavy-duty diesel trucks, buses, and off-road equipment to transition to zero emission solutions.

6. Metrics for "Strategy 3. Transition to Zero Emission Vehicles and Related Funding" should include: number of vehicles and types of vehicle replaced.
7. Ensure the Caltrans Office of Racial Equity & Tribal Affairs, and potentially the Interagency Equity Advisory Committee (EAC), are a study partner on the Interstate 580 Truck Access Study.
8. Include execution of the forthcoming recommendations from I-580 Truck Access Study as an individual, separate action.

The summary of recommendations are expanded, below:

Strategy 1. Address Trucking Near Neighborhoods through Proactive Truck Management and Enforcement

Action T&M 1.1 Indirect Source Policy Package

We strongly support the Indirect Source (Magnet Source) Policy Package as a key strategy. Studying the feasibility of a Bay Area wide approach to address the cumulative impacts of large warehouses and other magnet facilities is an essential step toward reducing diesel pollution and protecting the health of frontline communities.

We recommend that BAAQMD structure the ISR policy package to build on and go even further than the South Coast Air Quality Management District Rule 2305, adopted in 2021. Rule 2305 requires owners and operators of large warehouses to reduce emissions by choosing from a menu of compliance options, such as installing or using zero-emission charging infrastructure, installing and using onsite solar panels, and visits from zero-emission trucks. Owners and operators may also develop a custom compliance plan or pay a mitigation fee.[1] We would like to see the ISR policy package be more health-protective than Rule 2305. We also recommend careful consideration for the mitigation fee for use to fund further zero emission transportation programs and restorative justice actions in East Oakland.

We also urge the Air District to take early action to support Assembly Bill 914 (Garcia), Air Pollution: Indirect Sources,[2] in the upcoming legislative cycle, which would strengthen statewide efforts to regulate indirect sources and provide much-needed protections for communities most impacted by freight and goods-movement pollution. Aligning regional action with statewide policy will ensure a more comprehensive and effective approach.

We thank BAAQMD for its opposition to Senate Bill 34 (Richardson), Mobile Sources: Ports of Long Beach and Los Angeles, a bill that would have undermined California's ability to adopt

[1]South Coast Air Quality Management District, "Rule 2305. Warehouse Indirect Source Rule – Warehouse Actions And Investments To Reduce Emissions (Waire) Program," accessed December 2025, https://www.aqmd.gov/docs/default-source/rule-book/reg-xxiii/r2305.pdf

[2] California Air Resources Board, "2025 – Assembly Bill 914 (Garcia, Robert), Air Pollution: Indirect Sources (2-Year)," accessed December 2025, https://ww2.arb.ca.gov/2025-assembly-bill-914-garcia-robert-air-pollution-indirect-sources-2-year

stronger air quality rules and protect vulnerable communities, and we urge the Air District to continue to oppose anti-ISR bills in the future.

Action T&M 1.3 Truck Management Update

We strongly recommend deeper collaboration with regional Caltrans leadership to ensure that no new general-purpose lanes are funded or advanced; East Oaklanders are already facing high cumulative pollution burdens. We recommend feedback to the City of Oakland Department of Transportation (OakDOT) be in alignment with Greenlining's previously run 2024 bill Assembly Bill 2535 (Bonta), Trade Corridor Enhancement Program,[3] which originally aimed to prohibit the allocation of state transportation funds to highway projects that add general-purpose lanes or expand highway capacity in communities facing significant pollution impacts as evidenced by CalEnviroScreen.

We strongly support OakDOT engaging with the Community Steering Committee (CSC) to get feedback on truck routing and other management strategies in East Oakland, and also, we believe there should be stronger language in the CERP that commits to truck re-routing. We recommend adding a "Truck Re-routing Study" as a separate, individual action within this section. This study could be similar to the Truck Re-route Study that occurred in South Fresno.[4] Truck routes must be updated to better reduce truck idling and prevent truck routes from cutting through residential areas.

Strategy 3. Transition to Zero Emission Vehicles and Related Funding

Action T&M 3.4 Replacement of Heavy-Duty Vehicles and Equipment:

We appreciate the strong language in Action T&M 3.4 to provide grants for owners of older heavy-duty diesel trucks, buses, and off-road equipment. Greenlining has advocated for the replacement of older, high-polluting diesel trucks from California's roads, and targeted retirement of heavy-duty diesel trucks after 13 years of service rather than the current 18-year threshold.

As the Air District continues to look for that "10 million over 5 years" multi-year funding to advance this action, we recommend the District use the 2026 AB 617 funds to execute this action in order to make it even more near-term and urgent, as well as coordinate with CARB's incentive programs for medium-heavy duty and off-road equipment.

Additionally, we recommend the CERP Strategy 3 metrics should include the number of vehicles and types of vehicle replaced. This data is useful for identifying the impact of incentive dollars.

---

[3] LegiScan, "Bill Text: CA AB2535 | 2023-2024 | Regular Session | Introduced," accessed December 2025, https://legiscan.com/CA/text/AB2535/id/2927266

[4] City of Fresno, "South Central Fresno AB617 Community Truck Reroute Study and related Health Assessment," accessed December 2025, https://www.fresno.gov/publicworks/south-central-truck-re-route-study/

Strategy 4. Restorative Justice Guides Decisions about the Future of the I-580 Truck Ban

T&M 4.1 Study Impacts of I-580 Truck Ban

We strongly support the commitment to study the impacts of the I-580 truck ban and to consider future decision-making grounded in racial equity. To ensure this work is done with the depth and collaboration it deserves, we urge the Air District to also ensure that a partner on this analysis within Caltrans, is the Caltrans Office of Racial Equity & Tribal Affairs, as well as to the Interagency Equity Advisory Committee (EAC).[5] Based on the Interstate 580 Truck Access Study website,[6] it does not seem like the Caltrans Office of Racial Equity & Tribal Affairs or the EAC are a study partner for the project. Their leadership, assistance, and frameworks can help evaluate historic harm, identify disproportionate impacts, and guide just and community-centered solutions.

T&M 4.2 Consider Racial Equity in Future Decision-making Related to the I-580 Truck Ban

We are excited about this action, and that the recommendations for restorative policy will be based on the Memo findings and engagement with impacted communities, including the East Oakland CSC. Although, we find that within the CERP action there is not clear, strong language to actually *execute* the forthcoming recommendations for restorative justice. Execution of the forthcoming recommendations should be included as an individual, separate action.

Conclusion

Thank you again for your leadership and care. Greenlining is happy to serve as a resource and partner as these efforts move forward.

Sincerely,

Maurissa Brown
Transportation Equity Senior Program Manager

Email: [redacted]
Pronouns: she/her

[5] California Transportation Commission, “Interagency Equity Advisory Committee,” accessed December 2025, https://catc.ca.gov/programs/interagency-equity-advisory-committee
[6] Caltrans, “Interstate 580 Truck Access Study,” accessed December 2025, https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/d4-580-truck-access-study

From: Stratte, Martin
To: BAAQMD Planning
Cc: Bill Crotinger; Joe Capriola; Peter Knuth; Aneesh Rana; [redacted]; Anna Lee
Subject: East Oakland CERP Public Comments - Letter from Argent Materials [December 5, 2025]
Date: Friday, December 5, 2025 4:18:19 PM
Attachments: East Oakland CERP Public Comments - Letter from Argent Materials [12.5.25].pdf

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Please place a copy of the attached letter in the administrative record for the matter referenced above.

Your confirmation of receipt is greatly appreciated.

Thank you.

Martin Stratte
Partner
[redacted]

Hunton Andrews Kurth LLP
[redacted]

Hunton.com

This communication is confidential. If you are not an intended recipient, please advise by return email immediately and then delete this message, including all copies and backups.

ARGENT MATERIALS
[redacted]

December 5, 2025

Bay Area Air District
375 Beale Street, Suite 600
San Francisco, CA 94105
planning@baaqmd.gov

Re: East Oakland CERP Public Comments

To Whom It May Concern:

Please place a copy of this letter in the administrative record for the above referenced matter.

On September 4, 2025, I submitted comments on the July 2025 draft "East Oakland Community Emissions Reduction Plan" (CERP). My comments were submitted to the CERP co-leads: the Air District and Communities for a Better Environment (CBE). My comments identified multiple inaccuracies and mischaracterizations regarding the operations of Argent Materials, Inc. (Argent). I asked for these statements to be corrected or otherwise revised prior to publication of a final draft. Upon reviewing the November 2025 version of the plan, I am disappointed to see that none of my comments were addressed in the revised plan currently available for public review.

On behalf of Argent Materials, I again request that the following inaccuracies and mischaracterizations be revised:

- In chapter 6: Enforcement Overview & Findings, the Plan incorrectly lists Argent as having received two NOVs in 2022 and two NOVs in 2023, and on that basis identifies Argent as the second biggest "offender" for the period of 2021 to 2024.[1] This is incorrect. Argent was issued one NOV for its 8300 Baldwin site on November 16, 2022, and one NOV for its 8501 San Leandro site on July 26, 2023. Please edit Page 2 of Appendix E to reference only two NOV's total.

- In chapter 5: Air Quality Overview, Argent is characterized as a "facility of concern" for PM exposure from fugitive dust.[2] The Plan provides no justification for this characterization. The Plan names 11 facilities that account for 98% of local PM 2.5

[1] Plan at 123.
[2] Plan at 67.

emissions.[3] Argent is not included on the list. Please remove Argent as a "facility of concern" as its listing is unjustified and unsubstantiated.

- In chapter 5: Air Quality Overview, Argent is characterized as a facility of concern for toxic exposure from toxic emissions.[4] However, Argent is not listed as a top 10 emitter of toxic air emissions for cancer-related toxic emissions or chronic-related toxic emissions. The Plan provides no justification for why Argent would be identified as a facility of concern. Please remove Argent as a "facility of concern" for toxic emissions as its listing is unjustified and unsubstantiated.

- In Appendix F-1, Argent is listed as one of four facilities for which CBE developed "Problem Statements."[5] Characterizing Argent as a "problem" appears to be based on the misstatements noted above and is inappropriate. Please remove Argent as a "facility of concern" in the Problem Statements of Appendix F-1 as its listing is unjustified and unsubstantiated.

Argent is a proud member of the East Oakland Community. Enclosed is an overview of our community involvement.

Thank you for your attention to this matter. Please feel free to email me at [redacted] or call me at [redacted] if you would like to discuss this further.

Sincerely,

Bill Crotinger

William Crotinger
Member, Community Steering Committee
President, Argent Materials

cc: Community Steering Committee

Enclosure

[3] Plan at 97.
[4] Plan at 67.
[5] Appendix E-2 at 1, 4.

As context for our operations and ongoing commitment to responsible practices, Argent would like to highlight our longstanding focus on sustainability and community engagement. For over a decade, Argent has relentlessly pursued innovation in our practices, transforming our fleet and internal processes to achieve carbon neutrality and re-imagining our business to prioritize both environmental and community impact.

In East Oakland, our team contributes daily to the neighborhood by cleaning up illegally dumped trash along more than three miles of nearby streets. We support and donate to over a dozen local nonprofits, host holiday giveaways throughout the year, and prioritize local hiring - more than 10% of our workforce are returning family members, reflecting our investment in long-term community relationships.

As a unique recycler, we process end-of-life concrete and asphalt from Oakland and the East Bay locally, returning 99.998% of materials to the community for reuse. By recycling Oakland materials in Oakland, we help eliminate nearly 15 million truck miles from East Bay roads, significantly reducing emissions and roadway impacts. These efforts are part of our broader commitment to a "Green Industrial Revolution," grounded in the goal of maximizing positive impacts while minimizing environmental harm.

Argent continues to implement operational improvements to minimize emissions, fugitive dust, and track out that set the industry standard. For example, a clean interface design has been incorporated at the Site allowing trucks to offload material into the processing area without entering it. The clean interface keeps customer truck tires clean by not allowing them to come into contact with facility operations keeping trucks on clean, paved haul roads. This helps prevent tire contamination and reduces the potential for particulate emissions, supporting more efficient and cleaner site operations.

Below is a summary of how Argent Materials helps the community:

- Argent is the only carbon neutral concrete, asphalt, and aggregate recycler in the U.S.
    - Achieved through the use of electric equipment, conversion to renewable diesel, and purchase of carbon free electricity from East Bay Community Energy
- Argent's operations support AB2953, which requires local agencies to use recycled aggregate materials in the repair and construction of roadways reducing costs and greenhouse gases. Argent is one of the few local sources of recycled aggregate.
- Recycled aggregate production in the Bay Area reduces vehicle miles traveled by providing materials locally. Currently a large amount of construction aggregate used in the Bay Area comes from Canada.
- Argent's operations also support BAAQMD Best Management Practices for Construction Related GHG Emissions measures:[1]
    - Recycle or salvage nonhazardous construction and demolition debris, with a goal of recycling at least 15% more by weight than the diversion requirement in Title 24.
    - Use locally sourced or recycled materials for construction materials (goal of at least 20% based on costs for building materials and based on volume for roadway, parking lot, sidewalk and curb materials).

[1] BAAQMD. 2023. CEQA Air Quality Guidelines. Chapter 6, Table 6-1. Available online at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-6-project-climate-impacts_final-pdf.pdf?rev=ce3ba3fe9d39448f9c15bbabd8c36c7f&sc_lang=en.

- Argent's San Leandro Street site produces high quality aggregates locally in an emission free wash plant
- Argent hires local, minority, and returning family members.
- Argent organizes neighborhood clean ups and has picked up 5 million pounds of trash in the neighborhood using its own labor and equipment.
- Argent provides opportunities to community members to serve their court mandated community service hours.
- Argent unilaterally repaved the adjacent city street.
- Argent is very involved in the neighborhood, participating in neighborhood groups, SPCA events and cleanup activities of illegally dumped trash.
- Argent is an innovator in this market, creating clean high quality recycled products and redefining aggregate facility operations to reduce roadway dust.
- Argent will provide the dust cake produced from its wash plant’s filter press to green tech business who will use the product to make carbon negative concrete aggregate.
- Argent is a leader in clean tech, such that Caterpillar chose Argent to test their first fully electric loader at our yard.

From: Nikita Pavlenko
To: BAAQMD Planning
Cc: Jayant Mukhopadhaya
Subject: ICCT Comments on East Oakland Community Emissions Reduction Plan
Date: Friday, December 5, 2025 12:26:53 PM
Attachments: image001[52].png
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East Oakland CERP Comments_12_5.pdf

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Hello,

The International Council on Clean Transportation (ICCT) welcomes the opportunity to comment on the Proposal to provide input on the Bay Area Air Quality Management District's (BAAQMD) East Oakland Community Emissions Reduction Plan (CERP). The ICCT is an independent non-profit organization founded to provide unbiased technical and scientific analysis to environmental regulators. The ICCT works to improve policies to reduce air pollution and greenhouse gases from road, marine, and air transportation, in order to benefit public health and mitigate climate change.

ICCT's aviation program conducts research on the potential technological and policy routes for aviation decarbonization, including efficiency standards, non-CO_2 emissions, and alternative fuels. The ICCT co-leads The Real Urban Emissions (TRUE) Initiative, to use real-world vehicle data and remote sensing to inform policy makers, manufacturers, and consumers of the real impact of vehicle emissions on air quality. ICCT has developed multiple analyses of the air pollution and health related impacts of road, aviation and maritime emissions across multiple jurisdictions.

We thank the BAAQMD for the opportunity to comment on this important initiative. The attached comments below offer several technical observations and recommendations for the BAAQMD to consider for its CERP for East Oakland. Please feel free to reach out to me or my colleague Jayant (CC'd) if you have any questions.

Kind Regards,
Nik

Nikita Pavlenko (he/him)
Program Director, Aviation and Fuels
[redacted]


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THE INTERNATIONAL COUNCIL
ON CLEAN TRANSPORTATION

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THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

International Council on Clean Transportation consultation response on the
Bay Area Air Quality Management District's
East Oakland Community Emissions Reduction Plan

December 5th, 2025

The International Council on Clean Transportation (ICCT) welcomes the opportunity to comment on the Proposal to provide input on the Bay Area Air Quality Management District's (BAAQMD) East Oakland Community Emissions Reduction Plan (CERP). The ICCT is an independent non-profit organization founded to provide unbiased technical and scientific analysis to environmental regulators. The ICCT works to improve policies to reduce air pollution and greenhouse gases from road, marine, and air transportation, in order to benefit public health and mitigate climate change.

ICCT's aviation program conducts research on the potential technological and policy routes for aviation decarbonization, including efficiency standards, non-CO_2 emissions, and alternative fuels. The ICCT co-leads The Real Urban Emissions (TRUE) Initiative, to use real-world vehicle data and remote sensing to inform policy makers, manufacturers, and consumers of the real impact of vehicle emissions on air quality. ICCT has developed multiple analyses of the air pollution and health related impacts of road, aviation and maritime emissions across multiple jurisdictions.

We thank the BAAQMD for the opportunity to comment on this important initiative. The comments below offer several technical observations and recommendations for the BAAQMD to consider for its CERP for East Oakland. Staff may contact Nikita Pavlenko [redacted] or Jayant Mukhopadhaya[redacted] with any questions.

Nikita Pavlenko
Fuels and Aviation Program Director
International Council on Clean Transportation

Summary of Comments

The International Council on Clean Transportation (ICCT) commends the BAAQMD on their draft of the East Oakland CERP. The document provides a detailed description of the East Oakland community, their air quality concerns, and the six focus areas for strategy development. Of the six focus areas, our comments focus on two areas, the **Public Health and Community Wellness** (PH) and **Transportation and Mobile Sources** (T&M), specifically as they relate to aircraft emissions. Based on our review of the strategies and recommendations offered in the report, we make the following recommendations:

- **Implement comprehensive air quality monitoring at Oakland Airport.** Transparent pollutant measurements will enable East Oakland communities and policymakers to monitor existing pollutant levels, improve transparency for affected communities, and allow BAAQMD to track progress towards air quality goals.
- **Accelerate zero-emission ground support equipment deployment.** Recent research demonstrates that ground support equipment (GSE) can be electrified without disruption to existing operations or significant increase in fleet size, making this timeline both feasible and effective for reducing local air pollutants.
- **Phase out leaded aviation gasoline before 2030 through STC reimbursements, infrastructure investments, and financial incentives.** With approximately 120 kg of lead emitted annually near the airport and prevailing winds dispersing emissions toward East Oakland where children face elevated blood lead exposure risks, rapid adoption of certified unleaded alternatives like G100UL is both urgent and achievable ahead of the 2031 statewide deadline.
- **Expand the Transportation and Mobile Source strategy to address aircraft landing and takeoff emissions through an Indirect Source Rule and operational measures.** Aircraft operations account for 71-99% of airport emissions depending on the pollutant (including 87% of NOx and 75% of PM2.5), making it challenging to achieve substantial air quality improvements without addressing these emissions. There are multiple technologies and changes in practice that can be deployed to reduce aircraft engine emissions, such as blending lower-aromatic fuels, zero-emission or single-engine taxiing, and the use of learn burn engines.

We provide additional information and justification for each of these recommendations below. ICCT is also developing more detailed analysis of local air quality impacts of aviation to supplement our recent global aviation emissions inventory and aircraft local impact footprint tool and are grateful for the opportunity to support BAAQMD in its efforts to reduce emissions in East Oakland. [1]

[1] Sitompul, Daniel, and Dan Rutherford. "AIRLIFT - Aircraft Local Impact Footprint Tool." November 6, 2025. https://theicct.org/airlift-aircraft-local-impact-footprint-tool-nov25/.

Implement Comprehensive Air Quality Monitoring and Transparency

Increased data collection and transparency as detailed in PH Strategies 3 and T&M Strategy 7, is necessary to develop effective emissions reductions measures. These elements, in combination with tangible emissions reduction measures at the airport (T&M Strategy 6), can facilitate effective action to reduce the air pollution burden faced by the East Oakland residents and to improve air quality in the community. The ICCT supports the proposals (PH 3.1-3.4) to take more measurements of air pollutants at major facilities posing air quality concerns, including at Oakland International Airport, and to make this data transparent and publicly accessible. This will enable communities and policymakers to monitor and report existing pollutant levels and to collaboratively define mitigation strategies.

Measurement of pollutant concentrations is an important first step to take inventory of the airport's emissions and how they are affecting local air quality. Likewise, we are also supportive of measures T&M 7.3 and 7.4 to evaluate local air quality impacts using experimental data and install fence line air quality monitoring at the airport.

Deploy Zero-Emission Airport Ground Support Equipment

Concerning measures to reduce emissions at Oakland Airport (T&M Strategy 6), electrification of ground support equipment (T&M 6.2) and regulation to require zero-emissions ground operations (T&M 6.6) are important steps to reduce emissions of local air pollutants at the airport. In 2019, GSE at Oakland International Airport emitted 451 tons of carbon monoxide, 53 tons of NOx, 8.2 tons of reactive organic gases (ROG), and 3 tons of particulate matter.[2] Recent research on the electrification of ground support equipment (GSE) suggests that they can be electrified without disruption to existing operations or significant increase in fleet size.[3] Some examples of existing commercial technologies include electric baggage tractors, cargo tugs, and belt loaders. The National Renewable Energy Laboratory (NREL) has published a fact sheet including common GSE with numerous electric variants available in the US and the relevant manufacturers.[4]

As part of the HERON project in the European Union, hybrid-electric aircraft tugs called the Taxibot, are being tested across several airports (JFK, AMS, CDG, DEL, BRU). These can

[2] Port of Oakland. San Francisco Bay Oakland International Airport Terminal Modernization and Development Project Final Environmental Impact Report. 2024. https://www.iflyoak.com/wp-content/uploads/2024/10/241017_FEIR_OAK-Terminal-Development.pdf.
[3] Timmermans, Koen, Paul Roling, Gautham Ram Chandra Mouli, and Bilge Atasoy. "The Impact of Transitioning to Electric Ground Support Equipment on the Fleet Capacity and Energy Demand at Airports." Case Studies on Transport Policy 21 (September 2025): 101498. https://doi.org/10.1016/j.cstp.2025.101498.
[4] Johnson, Caley. 2017. "Electric Ground Support Equipment at Airports." NREL. https://research-hub.nrel.gov/en/publications/electric-ground-support-equipment-at-airports/.

provide significant reductions in fuel burn, engine emissions, and noise, as they reduce or eliminates the need for the aircraft engine to be operation during the taxi phase. The product is expected to be expanded to include widebody aircraft, as well as a fully electric option. [5]As such the T&M 6.2's goal to support and drive the transition of fossil-fueled GSE to electric GSE where available by 2030 is well-supported.

Accelerate the Phase Out Leaded Aviation Gasoline

We support T&M 6.5's goal to accelerate the phase out of leaded aviation gasoline (Avgas). The most commonly used Avgas in the US is the 100LL grade which emits 2.12 grams of lead per gallon of fuel burned.[6] While Oakland airport primarily services larger aircraft using kerosene, it also serves a small number of smaller, piston-powered aircraft fueled by avgas. In 2021, approximately 120 kilograms of lead were emitted from LTO operations of piston-powered aircraft at the airport.[7] Children living within 1000 meters of an airport that uses leaded avgas have shown higher blood lead levels than children living further away.[8] The Center for Disease Control (CDC) maintains that even low levels of lead in blood can be harmful.[9] While the Oakland airport is a large area, the smaller runways of the Oakland airport that are used by general aviation aircraft that burn avgas are closer to the East Oakland community. Additionally, the prevailing wind direction at the airport, as noted by Appendix D of the CERP, is from the west and west-northwest, is likely to disperse the impact of the lead emissions further into the East Oakland community.[10]

While the Federal government has confirmed that leaded avgas poses a risk to human health, the FAA's Eliminate Aviation Gasoline Lead Emissions" (EAGLE) program has made halting progress due to a combination of cost concerns and uncertainty about which competing fuel to use absent ASTM certification.[11] The Federal Aviation Administration has already certified multiple grades of unleaded avgas for use in piston engines.[12] One of

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[5] Taxibots spool up as project HERON winds down. Airbus.2025. https://www.airbus.com/en/newsroom/stories/2025-07-taxibots-spool-up-as-project-heron-winds-down

[6] Yang, Wenli. PM Speciation Profiles for Piston-Engine Aircraft (Running Aviation Gasoline). December 12, 2019. https://ww2.arb.ca.gov/sites/default/files/2021-06/PM%20Speciation%20Profiles%20for%20Piston.pdf.

[7] U.S. Environmental Protection Agency, 2021 NEI Point Facility Summary. https://www.epa.gov/air-emissions-inventories/2021-air-emissions-data

[8] Miranda, Marie Lynn, Rebecca Anthopolos, and Douglas Hastings. "A Geospatial Analysis of the Effects of Aviation Gasoline on Childhood Blood Lead Levels." Environmental Health Perspectives 119, no. 10 (2011): 1513–16. https://doi.org/10.1289/ehp.1003231.

[9] CDC. "Preventing Childhood Lead Poisoning." Childhood Lead Poisoning Prevention, January 31, 2025. https://www.cdc.gov/lead-prevention/prevention/index.html.

[10] Zahran, Sammy, Christopher Keyes, and Bruce Lanphear. "Leaded Aviation Gasoline Exposure Risk and Child Blood Lead Levels." PNAS Nexus 2, no. 1 (2023). https://doi.org/10.1093/pnasnexus/pgac285.

[11] "Slowly But Surely, GA Moves To Unleaded Avgas | Aviation Week Network." Accessed December 3, 2025. https://aviationweek.com/business-aviation/safety-ops-regulation/slowly-surely-ga-moves-unleaded-avgas.

[12] Federal Aviation Administration (FAA). "Building an Unleaded Future by 2030." Accessed December 2, 2025. https://www.faa.gov/unleaded.

these, the G100UL, has been certified for use in all piston aircraft in use in the US and is even available at a nearby general aviation airport, Reid-Hillview Airport.[13] Other California airports such as Long Beach airport have begun to offer unleaded UL94 fuel as well as incentives to pump G100LL; further, Long Beach airport has implemented a fuel flow fee waiver and its airport subsidizes Supplemental Type Certificate (STC) purchases for aircraft to utilize G100UL fuel.[14] This suggests that the phase out of leaded avgas at Oakland airport can indeed be achieved before the planned statewide ban in 2031.[15] We therefore recommend that the Port of Oakland consider offering reimbursements for STC's in the near-term, invest in compatible fueling infrastructure, and consider further incentives to support the uptake of leaded avgas alternatives before 2030.

Reducing Emissions from Aircraft Operations

With respect to T&M Strategy 6, we recommend expanding the scope of the emissions reduction plan. While the current approach in T&M Strategy 6 focuses on ground support equipment, ground access equipment, and leaded avgas, this strategy does not address the biggest source of air pollution at the Oakland airport, fuel burned during aircraft landing and takeoff (LTO) cycles. In the Port of Oakland's environmental review of the terminal modernization plan at Oakland airport, 2019 emissions from Oakland International Airport's aircraft LTO operations, ground support equipment, and stationary source emissions are reported.[16] These are presented in Table 1. Across all measured air pollutants, Carbon monoxide (CO), Reactive Organic Gases (ROG), Nitrogen oxides (NOx), Sulfur dioxide (SO_2), and particulate matter (PM10 and PM2.5), emissions from aircraft operations make up the majority of emissions attributable to the airport's activity. Aircraft NOx emissions, which lead to the formation of ground-level ozone, are of particular concern in California, given the steep cuts needed to meet 2015 federal ozone standards.

Table 1: Breakdown of emissions at Oakland International Airport by pollutant and source in 2019

Pollutant	Share of emissions from aircraft activity	Share of emissions from GSE and stationary sources
CO	71%	29%
ROG	92%	8%
NOx	93%	7%

[13] General Aviation Modifications Inc (GAMI). "G100UL Availability Map." Accessed December 2, 2025. https://g100ul.com.

[14] https://www.longbeach.gov/lgb/news/3-28-25-long-beach-airport-subsidizes-more-than-3000-gallons-of-unleaded-aviation-fuel/

[15] California. "Bill Text - SB 1193 Airports: Leaded Aviation Gasoline." Accessed December 2, 2025. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB1193.

[16] Port of Oakland. San Francisco Bay Oakland International Airport Terminal Modernization and Development Project Final Environmental Impact Report. 2024. https://www.iflyoak.com/wp-content/uploads/2024/10/241017_FEIR_OAK-Terminal-Development.pdf.

SO_2	99%	1%
PM10	79%	21%
PM2.5	80%	20%

While emissions reductions from airport ground and stationary sources are valid priorities, large-scale improvements in criteria air pollutant concentrations will only be possible with aircraft LTO emissions reductions. Emissions from commercial aircraft taxiing across the state already exceeds statewide bus emissions (including all school, coach, and city buses). This, along with other LTO-phase emissions, will continue to increase in future years, particularly as the airport expands, in contrast to the projected decrease in bus emissions over that same time period.[17]

One potential long-term strategy for achieving reductions in emissions from an aircraft's LTO operations could be through an Indirect Source Rule (ISR). In T&M Strategy 1, an Indirect Source Rule Policy Package is proposed as a measure (T&M 1.1) to address the local air quality impacts of large warehouses that draw traffic from heavy-duty vehicles. An ISR would hold warehouses responsible for meeting certain emissions standards due to the mobile source pollution coming from it. Similarly, an airport is the hub for aviation activity. Therefore, we recommend the BAAQMD explore the feasibility of using an ISR to regulate emissions from aircraft LTO cycles.

In addition to adding a mitigation measure for T&M Strategy 6, we also propose the following strategy metrics be adopted to measure progress:

1) Set annual emission reduction goals for air pollutants and track progress towards achieving those quantitative targets.
2) Report annual progress relative to the national and state ambient air quality standards (NAAQS and CAAQS) requirements. This would involve reporting current levels of each pollutant's concentration over the relevant time average in East Oakland, the national requirement, and the California state requirement.
3) Quantify and report contribution of each implemented measure to reducing pollutant concentrations.

There are numerous technologies available to reduce aircraft engine emissions that the Oakland Airport can potentially deploy for maximum air quality benefits. Operational tactics like zero-emission taxiing, single-engine taxiing, and reduced APU use can reduce NOx emissions on the ground during the taxi phase. Improving fuel composition to reduce aromatics and sulfur content can reduce emissions throughout the LTO cycle. While the CERP notes that sustainable aviation fuel (SAF) can make a significant impact on GHG and local air quality emissions, the current and projected volumes of SAF are unlikely to make a significant contribution in the near to medium term. Quarterly LCFS data suggests that

[17] California Air Resources Board (CARB). Commercial Aircraft Taxiing Emissions. n.d. https://ww2.arb.ca.gov/sites/default/files/2025-07/AircraftTaxiing-FS-Final.pdf.

California is on track to consume approximately 100 million gallons of SAF's in 2025—significant progress towards the state's voluntary 2035 goal of 200 million gallons.[18] However, this comprises a relatively small share of the state's overall jet kerosene consumption. At low blend percentages, SAF can only provide minimal air quality improvements, as the majority of the fossil jet fuel will still have high levels of aromatics and sulfur. As an interim measure, additional hydrotreating of fossil jet fuel can help to reduce aromatic content from the non-SAF share of fuel and eliminate sulfur, providing significant reductions in PM and SOx emissions.[19] Additionally, the deployment of advanced engine technologies, such lean burn combustors, can reduce both NOx and particulate matter emissions during the LTO cycle.

[18] "Low Carbon Fuel Standard Reporting Tool Quarterly Summaries | California Air Resources Board." Accessed December 4, 2025. https://ww2.arb.ca.gov/resources/documents/low-carbon-fuel-standard-reporting-tool-quarterly-summaries.

[19] Kumar, Supraja. 2025. "Cloudy with a Chance of Soot: The Role of Fuel Composition in Aviation's Non-CO2 Impact." *ICCT Staff Blog*, October 6. https://theicct.org/role-of-fuel-composition-in-aviations-non-co2-impact-sept25/.

From: Adele Watts She/Her
To: BAAQMD Planning
Cc: Carly Cabral They/He/She; Sarah Chen Small
Subject: East Oakland CERP Public Comments
Date: Sunday, December 7, 2025 1:47:54 PM
Attachments: Outlook-iwvevcrk.png
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Hello,

On behalf of Communities for a Better Environment, I am submitting the attached public comment letter regarding the draft East Oakland CERP. As a co-leading community-based organizations in this process, we appreciate the opportunity to provide feedback and to help ensure that the final plan reflects the priorities and lived experiences of East Oakland residents most impacted by air pollution.

Thank you for your continued partnership and commitment to environmental justice in East Oakland.

Best,

Adele Watts, (she/her/hers)
NorCal Program Co-Director (East Oakland)
Communities for a Better Environment
and CBE Action, a project of Tides Advocacy
[redacted]

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December 5, 2025

Bay Area Air Quality Management District
375 Beale Street
Suite 600
San Francisco, CA 94105

Submitted via email to planning@baaqmd.gov

Subject: East Oakland CERP Public Comments

To Whom it May Concern,

Communities for a Better Environment ("CBE") writes to submit comments on the East Oakland Draft Community Emission Reduction Plan ("CERP"). Our work is deeply rooted in the lived experiences, priorities and expertise of East Oakland residents who bear the disproportionate environmental and public health burdens. We submit these comments with the shared goal of strengthening the plan so that it truly responds to community-identified needs, advances environmental justice and delivers tangible, measurable improvements in air quality and quality of life for the East Oakland community. We thank the air district for its continued partnership and for the opportunity to help guide the development of a CERP that reflects the priorities and vision of East Oakland residents. Our below comments include recommendations for further strengthening actions to reduce the disproportionate pollution burden in East Oakland, as well as insight to support the implementation.

Link to CERP draft:
https://www.baaqmd.gov/~/media/files/ab617-community-health/east-oakland/east-oakland-cerp/public-review-draft-plan-pdf.pdf?rev=cfb24df74c0e44deb861a2d3707dce46

Recommendations for Community Engagement in Implementation

CBE supports the strong emphasis on proactive community engagement throughout the CERP. To facilitate strong participation and build trust in East Oakland, it is crucial to conduct early education and outreach to build literacy on air quality issues, recognizing that community cannot identify issues and participate without access to information on air quality issues and Air District procedures. To that end, we recommend scheduling workshops and meetings in collaboration with trusted local organizations, at accessible locations and times in East Oakland, and with a strong emphasis on language access and justice (including outreach, education, and proceedings). Board meetings should also be more accessible to community members for Board members to be fully informed.

Commercial and Industrial (C&I)

[redacted]

C&I 1.1: Rule Amendments to Address Fugitive Dust

CBE strongly supports timely amendments to Regulation 6 to address fugitive dust emissions. CBE urges the Air District to adopt the most progressive dust control options available, including the whitepaper recommendations to require, among other things, minimum moisture content and stabilization testing of stockpiles. Facilities in East Oakland often purport to follow moisture content requirements despite continual community observations that stockpiles are leading to fugitive dust and track-out (e.g. Argent Materials). We also urge the Air District to consider the impact of fugitive dust on unhoused people near facilities, and to incorporate health protective measures and outreach and noticing procedures that include unhoused people's needs.

C&I 1.3: Review and Comment on California Environmental Quality Act (CEQA) Analysis of Proposed Projects

CBE strongly supports this action and thanks the Air District for its early implementation, as providing notice of CEQA projects in East Oakland CERP boundaries provided CBE the opportunity to review and notice community of an upcoming metal scrap facility expansion. From the perspective of community lawyers, the Air District's expert comments on major CEQA projects is invaluable. Under CEQA guidelines and case law, expert agencies are afforded a higher deference than impacted community members. Without expert comments, particularly on issues of methodology and cumulative health risks, community and organizations have few options to understand and challenge highly consequential projects.

C&I 2.2 Rule Amendments to Improve Implementation of Rule 11-18

While CBE supports improving Rule 11-18 implementation, we have several concerns about proposed changes, as detailed in a comment letter submitted by Kaitlin Alcontin on October 10, 2025, to Rule Development. Amendments should ensure that Health Risk Assessments are conducted by neutral parties, ensure that overburdened communities are still prioritized for early action, and include foreseeable emissions beyond "routine" emissions that underestimate real emissions.

C&I 3.4 Reduce Industrial Pollution on Unhealthy Air Quality Days

CBE strongly supports this action and appreciates the Air District's collaboration to address this longstanding community concern. Going back at least five years, CBE members have raised concerns that commercial and industrial sources are contributing emissions on poor air quality days in East Oakland (e.g. Spare the Air days and wildfire smoke events). Community observed industrial sources increasing their operations on severe air quality days, presumably hoping to hide the added pollution in the wildfire smoke in 2020. An unhealthy air quality day is more frequent and more impactful to health in East Oakland than in less polluted communities



given the existing pollution and health burdens. While Spare the Air Day is an excellent communication tool, community feels that industrial sources, not just individuals, should be required to curb emissions. As wildfire events increase due to the climate crisis, it is becoming increasingly urgent to improve emergency air quality event procedures. We look forward to continued discussion on this matter.

C&I 4.1 Evaluate Opportunities to Reduce Localized Emissions and Address Impacts from BUGs

CBE strongly supports timely attention to the issue of diesel back-up generators, particularly given the alarming national growth of data centers that frequently rely on toxic diesel generators. Additionally, the City of Oakland is updating the Oakland General Plan, and early information on the land use element suggests a turn towards sectors that may rely on generators in East Oakland.

Public Health (PH)

PH 1.1 Develop Methods for Understanding Cumulative Impacts

CBE strongly supports this action as there is an urgent need for scientific methodology, regulation, and the law to more accurately reflect the real health burdens in environmental justice communities. This methodology would improve all aspects of the Air District's work. CEQA guidelines currently require project sponsors to assess and disclose the health impacts of emissions. However, the most used current methodology is severely lacking and prevents decisionmakers and the public from being fully informed about impacts as required by CEQA.

Take for example the proposed Oakland Airport Expansion Project environmental impact report ("EIR"), which relied on a health risk assessment ("HRA") that only included toxic air contaminants ("TACs", completely excluded criteria air pollutants ("CAPs") (despite disclosing significant raw criteria pollutant emissions, including a 63% increase in NOx emissions)[1], and only modeled impacts based on generic "sensitive receptors." Based on this HRA, the Port claimed the massive project would have no health impacts on neighboring communities that are already in the 99th percentile of asthma hospital visits and have life expectancies up to 15 years shorter than the healthiest parts of Alameda County. Not only does this mislead the public and decisionmakers of potentially deadly project impacts, but it also absolved the project sponsor of the legal obligation under CEQA to mitigate project impacts. Cumulative impacts methodology must account for the full scope of project emissions (CAPs and TACs), local background air quality conditions, and community-specific health risks. This work is critical to protecting

[1] Port of Oakland, *Oakland International Airport Terminal Modernization and Development Project Draft Environmental Impact Report* (July 2023), Table 3.3-12.

community health, potentially lead to developers funding more mitigation, and overall aid the Air District in reaching its air quality goals.

Transportation and Mobile (T&M)

T&M 1.1: Indirect Source Policy Package

CBE thanks Dr. Fine and Air District staff for their work to move an urgently needed Indirect Source Rule ("ISR") forward. In recent months, it has become increasingly clear that Air Districts must use all available tools to protect community health against a rising wave of federal attacks on the Clean Air Act. While the state was forced to roll back critical truck emission standards that long promised to reduce deadly diesel pollution in environmental justice communities, Air Districts retain clear authority to regulate indirect sources. CBE suggests early education and outreach in communities impacted by indirect source pollution magnets to inform rule concepts and allow balanced participation in the rulemaking process. As Air District staff heard at the CBE East Oakland community workshop on the CERP, residents are deeply concerned with diesel truck pollution and want to know what the Air District can do.

T&M Strategy 6: Emission Reductions at the Oakland International Airport

CBE appreciates the Air District's thoughtful engagement on airport issues through the CERP process. While the Port ultimately has the most local authority over airport operations, we strongly encourage the Air District to proactively engage in opportunities to reduce airport emissions as much as possible. The Oakland Airport is one of the single largest pollution sources in the Bay Area, with 2019 airport-related NOx emissions exceeding the NOx emissions of the Chevron Richmond Refinery,[2] and reducing airport emissions will be critical to reaching air quality and climate goals throughout the region.

As discussed above, the airport has significant cumulative impacts that are not fully captured under existing regulations and policies. While the airport is not a Rule 11-18 facility under current rules (the majority of emissions coming from indirect sources such as aircraft, trucks and passenger vehicles, ground support equipment), the combined emissions contributed to a significant portion of East Oakland's toxicity weighted emissions. CBE urges the Air District to consider health risk assessments or other health-protective considerations of cumulative impacts prior to granting any permits related to ongoing or expanded airport operations.

[2] CBE & SEIU-USWW, *Pollution for Airline Profit* (September 2024), at 16, https://www.cbecal.org/wp-content/uploads/2024/09/Final_Pollution-for-Airline-Profit-Report_English.pdf.

CBE appreciates the opportunity to uplift these comments and looks forward to continued collaboration with the Air District. As a co-leading organization, we remain committed to working collaboratively to ensure that implementation is transparent, adequately resourced, and centered on community voices at every stage. With the revisions recommended in this letter, we believe the CERP will be better equipped to deliver real, lasting reductions in pollution and to advance health and equity for the East Oakland community. We look forward to continued dialog and to working together toward a cleaner, healthier and more just East Oakland.

Sincerely,

Communities for a Better Environment
Adele Watts
NorCal Program Co-Director



From: Chris Lish
To: BAAQMD Planning
Subject: Improve air quality in Oakland and the health of the adjoining communities --East Oakland CERP Public Comments
Date: Sunday, December 7, 2025 6:54:19 AM

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Sunday, December 7, 2025

Subject: Improve air quality in Oakland and the health of the adjoining communities -- East Oakland CERP Public Comments

Dear Bay Area Air Quality Management District Planning Department,

As you hopefully are aware, East Oakland is one of the most heavily impacted communities in the Bay Area due to longstanding air quality challenges, environmental justice issues, and health inequities. Yet the Port of Oakland has been pushing through plans to expand the Oakland International Airport (OAK) that will increase local pollution and exacerbate health inequities. The Port's inadequate Final Environmental Impact Report for the proposed OAK airport expansion ignored East Oakland pollution inequities by not including a thorough Health Impact Assessment.

I strongly urge the Bay Area Air Quality Management District to rectify this injustice by calling, in the AB617 report, for a thorough Health Impact Assessment of the proposed OAK airport expansion, as the Alameda County Health Department has requested.

Please incorporate the following three points into your Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan.

1) The report fails to address the potential threat to the health of East Oakland residents from the proposed expansion of the Oakland airport. There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, the report should still call on the Port **NOT** to expand the airport until such time as the health impact from increased air pollution from the proposed expansion is analyzed. (Note: The Air District also has no authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the Oakland Airport new terminal will be completed.

2) A larger grid of pollution monitors is needed, including fenceline monitors. This monitoring should be initiated now, as the Community Steering Committee (CSC)

prefers, to provide a baseline of data for future comparison and modeling. Include ultrafine particles and hourly fluctuations to indicate peak levels of pollution.

3) The report should call for any plans for expanding operations or facilities at the establishments listed in the East Oakland Air Monitoring Project, including the Oakland airport, (Section 3.2) that would increase pollution to be suspended until the health impacts on East Oakland residents are better understood. A specific Health Impact Assessment (HIA) would include accounting for the well-documented pre-existing health inequities in East Oakland communities. Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

I appreciate the effort that the Air District and Community Steering Committee have put into this report. I look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Thank you for your consideration of my comments. Please do NOT add my name to your mailing list. I will learn about future developments on this issue from other sources.

Sincerely,
Christopher Lish
San Rafael, CA

From: Jacob Klein
To: BAAQMD Planning
Cc: Vanessa Rivas Villanueva; Sarah Chen Small
Subject: East Oakland CERP Public Comments
Date: Sunday, December 7, 2025 1:31:38 PM
Attachments: East Oakland CERP Public Comments.pdf

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Hi,

Please find attached comments from Industrious Labs and Earthjustice on the East Oakland CERP. Thank you for this opportunity to support and comment on this important work.

Jacob

--

JACOB KLEIN

SENIOR FIELD STRATEGIST

They/Them

[redacted]

www.Industriouslabs.org

Bay Area Air District
375 Beale Street, Suite 600
San Francisco, CA 94105
planning@baaqmd.gov

December 7, 2025

Dear BAAD Planning Staff,

Thank you for the opportunity to comment on "Right to Breathe: East Oakland Community Air Quality Justice Plan," the Community Emissions Reduction Plan (CERP) developed by and for the East Oakland community, including community co-convenor Communities for a Better Environment. East Oakland is a community that experiences historical and ongoing environmental burden and injustice. Community members and residents face worse health outcomes, higher medical bills, and lower life expectancies than more affluent neighboring communities. "Right to Breathe" works to address the disproportionate burden that East Oakland residents face, from individual sources of pollution to the cumulative impacts of many sources.

"Right to Breathe" is an important step to cleaner air, more community agency, and better public health in East Oakland. We look forward to seeing the proposals become a reality. One plan, however, will not be able to address every issue in East Oakland. This community will need continued support and additional measures to cover all the sources of emissions negatively impacting residents and address the cumulative impacts. It is also incumbent upon the Bay Area Air District (BAAD) to act with urgency to meet the CERP's strategies so that people's lives will see substantial and material improvement quickly.

The legacy of industrial zoning and ongoing industrial operations have saddled East Oakland with a variety of harmful emissions sources. Industry is a driver of the economy and creator of jobs, but often still relies on burning fossil fuels for heat and energy. Industrial heating processes, like those from burning methane gas in industrial boilers, produce nitrous oxide (NOx), particulate matter 2.5 (PM 2.5), volatile organic compounds (VOCs), and other air pollutants that contribute to the health disparities that East Oakland residents experience.

Currently, BAAD regulates emissions from industrial boilers, steam generators, and process heaters above 2 MM BTU per hour through Regulation 9 Rule 7. Unfortunately, the rule has not been updated since 2011, allowing boilers to continue emitting health-harming pollutants. A strengthened Rule 9-7 with a zero emissions standard would address these emissions, reducing the air pollution burden that East Oakland faces.

Currently, the CERP only makes passing mention of Rule 9-7, leaving a key opportunity on the table. According to Industrious Labs analysis of Rule 9-7 permitted facilities data, 16 facilities operate 44 industrial boilers emitting nearly 18 tons of NOx, 1.4 tons of PM 2.5, and 1.7 tons of VOCs in East Oakland. Therefore, strengthening the rule would be consistent with the CERP's goals.

Including additional language in the CERP for a zero-emission update to Rule 9-7 would also address two of the facilities that "Right to Breathe" identified as key facilities of concern. In 2023, Peet's Coffee and Tea had 6 units permitted under Rule 9-7 that reported emitting 3 tons of NOx and Gallagher & Burk had 1 unit that emitted approximately 0.5 tons. While both facilities also have emissions from sources other than boilers, strengthening Rule 9-7 would help alleviate the burden from these key facilities. Other industrial facilities in the East Oakland region would also be implicated, contributing to the cumulative benefits of a stronger Rule 9-7.

Under the focus of Public Health, the first strategy (PH 1.1) calls for BAAD to develop methods for understanding cumulative impacts and integrating into rulemaking and other analyses, a critical strategy that must be expedited. Environmental justice communities have long called for greater attention to how cumulative impacts of air pollution burden communities. A methodology that takes into account the full ecosystem of air pollution levels and the specific health risks that communities face must be developed to better compare how communities like East Oakland differ from non-environmental justice communities, with pollution burdens having situational disparities.

By advancing Rule 11-18 to build cumulative impacts into the health risk methodology, BAAD can address air quality issues more holistically. Furthermore, as part of amending Rule 11-18, meeting health risk assessments and risk reduction strategies should require kickstarting other rule updates and amendments.

We appreciate this opportunity to comment on the East Oakland CERP "Right to Breathe." By moving urgently to meet the CERP's calls to action, prioritizing a zero emissions amendment to Rule 9-7, and developing a more equitable health risk methodology, we can begin to address the systemic harm that East Oakland and other environmental justice communities face.

Sincerely,

Jacob Klein, Senior Field Strategist
Industrious Labs

Vanessa Rivas Villanueva, Senior Policy and Research Analyst
Earthjustice

From: Stop OAK Admin
To: BAAQMD Planning
Cc: [redacted]; Lin Griffith
Subject: East Oakland CERP Public Comments.
Date: Sunday, December 7, 2025 7:21:18 AM
Attachments: CERP comments from Stop OAK expansion.pdf

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Dear Bay Area Air District Planning & Climate Protection Division,

The Stop OAK Airport Expansion Coalition submits the attached comments to the Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan. Also included in these comments the Coalition is submitting proposed text to include in specific sections of the report to address these concerns.

These comments are co-signed by the following organizations:

Alameda County Interfaith Climate Action Network

350 East Bay

San Francisco Bay Physicians for Social Responsibility

Sunflower Alliance

Xochipilli, Chicano/Latino Men's Circle

Bay Area-System Change not Climate Change

Youth Vs. Apocalypse

Scientist Rebellion Turtle Island

Please confirm you have received the attached letter, and for further information about these comments, please contact [redacted]

Sincerely,

Stop OAK Expansion steering committee



Dear Bay Area Air District Planning and Climate Protection Division,

The Stop Oak Airport Expansion Coalition submits these comments to the Public Review Draft Right to Breathe: East Oakland Community Air Quality Justice Plan. Additionally, the Coalition is submitting proposed text below to include in specific sections of the report to address these concerns.

1. **Address health threats from proposed expansion of Oakland San Francisco Bay Airport.** There is an implicit argument that the study can't get involved with emissions from OAK-based flights, even though most airport emissions come from flights, not ground operations. The report should clearly state that flight emissions are omitted from the analysis because the Air District has no authority to control emissions from flights. However, ***the report should compel the City of Oakland to exercise its authority to suspend the Oakland San Francisco Bay Airport expansion if air quality in East Oakland would be further worsened.*** This action would be consistent with the Environmental Justice Element of its General Plan**.** (Similarly, the Air District may not have direct authority to control illegal dumping, yet the report makes recommendations to the City about how to address that issue.) The report should not assume that the new terminal will be completed.

2. **To facilitate #1 above, the report should call on the Port of Oakland to perform a comprehensive Health Impact Assessment (HIA) of the airport expansion on East Oakland residents.** This assessment would include accounting for the well-documented pre-existing health inequities in East Oakland communities and analyze any cumulative effects of increased pollution on this population. The Alameda County Health Department has called on the port to perform this same assessment.

3. **The Air Quality Justice Plan should recommend *suspension of all activity* related to expanding operations and facilities listed in the Monitoring Project until a Health Impact Assessment (HIA) is completed.** Similarly, the recent legal agreement between the Port and the City of Alameda, which would divert OAK flights away from Alameda and over East Oakland, should be suspended until such time that the health impacts on East Oakland residents can be analyzed.

4. **Increase and geographically expand the number of pollution monitors including airport fenceline monitors. Initiate monitoring ASAP,** as the Community Steering Committee (CSC) prefers. Such monitoring is needed now to provide baseline data for future comparison and modeling. Include ultrafine particles and measure hourly

fluctuations over the course of at least one year to indicate peak levels of pollution and seasonal variations.

5. **Adopt monitoring methodology for ultra-fine particles based on airport, not roadway, studies.** In Appendix D regarding air monitoring methodology for ultra-fine particles (UFP): From a study of the Seattle-Tacoma Airport (Sea-Tac), UFP are particularly associated with landing airplanes, and are much more widely dispersed than UFP from roadways. This is because descending jets fly lower, and for longer periods of time, compared to takeoffs. The air monitoring efforts of the Air District should follow methods described in this study.

6. **Use updated threshold on annoyance to address noise pollution in report.** Although noise is mentioned as a community concern (Pg. 178), there are no action items to address this issue. A starting point would be to collect data recognizing that 65 decibels Day-Night average Level (DNL) is an outdated standard. The FAA's continued reliance on the 65 DNL threshold is no longer defensible for evaluating the noise impacts of airport expansion projects such as those proposed at Oakland San Francisco Bay Airport. The FAA's own 2021 Neighborhood Environmental Survey (NES) demonstrated that substantial community annoyance occurs well below 65 DNL, with its regression model indicating an equivalent response near 46 DNL. Despite this, both the FAA and the Port of Oakland have continued to apply the 65 DNL threshold in reaching findings of no significant impact. This approach disregards the FAA's own scientific record and fails to meet NEPA's requirement for using the best available information. Noise data and methods need to reflect actual community response to aircraft noise. Add this threshold to capture noise pollution and annoyance to Appendix D.

There are numerous specific locations in the report where these points should be included. A number of these locations are identified below. Proposed added text is shown in bold italics.

I. Transportation and Mobile Sources – Oakland International Airport (pg 108). Add a concluding paragraph stating:

"Given the air quality impacts of the airport, prior to any expansion of the facility, a comprehensive Health Impact Assessment should be conducted. Both the City of Oakland and the Port of Oakland have authority to require such a pause and a study–See Chapter 9." (see items 8 & 9 below)

II. Built Environment– add as action BE 3.7 (Pg. 145):

"Pause expansion of the airport, which will attract additional aircraft daily thus necessarily bringing increased NOx, SOx, PM 2.5 and PM 0.1 ultrafine particles to homes and to gathering places of vulnerable populations, until the airport performs a Health Impact Assessment and recirculates a revised FEIR for the Modernization and Development Project with a plan for full mitigation of the increased air pollution its development will cause."

III. Public Health– add as action 3.5 (Pg. 171):

"Any plans for expansion of operations or facilities at the establishments listed in the East Oakland Air Monitoring Project Section (3.2) that would increase pollution should be suspended until such time as a thorough assessment is conducted of the potential impact on the health of East Oakland residents. Such health impact assessments shall include accounting for the well-documented pre-existing health inequities in East Oakland communities."

IV. Transportation & Mobility T&M 6.1 (Pg. 187) To this section's description of the Port Emissions Reduction Plan, add the following:

"The Port of Oakland will pause the Modernization and Development Plan, which would increase emissions, until after it performs a Health Impact Assessment, incorporates data from that assessment into the project EIR, and recirculates the EIR."

V. Transportation & Mobility–T&M 7.3 (Pg. 189) – add specifics designated below in bold italics:

The East Oakland Air Monitoring Project (see PH 3.1) will include exploratory measurements of volatile organic compounds (VOCs) and particulate matter (PM) (including ultrafine particles (UFPs), a key aviation-related pollutant) around specific facilities and air quality concerns identified and prioritized by community members. Oakland International Airport is one of the identified facilities. ***Communities for a Better Environment (CBE) has partnered with the University of California, Berkeley and the Bay Area Air District to greatly improve the numbers and distribution of pollution sensors in East Oakland. The new sensor grid shall operate with hourly resolution to identify peak concentrations of pollutants, and operate for at least a year.*** Using information collected from this project, the Air District will analyze and evaluate data and summarize and report findings with attention to occurrences of unusually high levels of different pollutants, including UFPs, that may be associated with airport-related emissions. ***Findings from the overall project are expected to inform a specific Health Impact Assessment, improve efforts to reduce pollution emissions, and reveal any need for additional information. Expansion of the airport should be paused until these findings are analyzed and discussed.***

VI. Transportation & Mobility T&M 7.4 – (Pgs. 189-190)

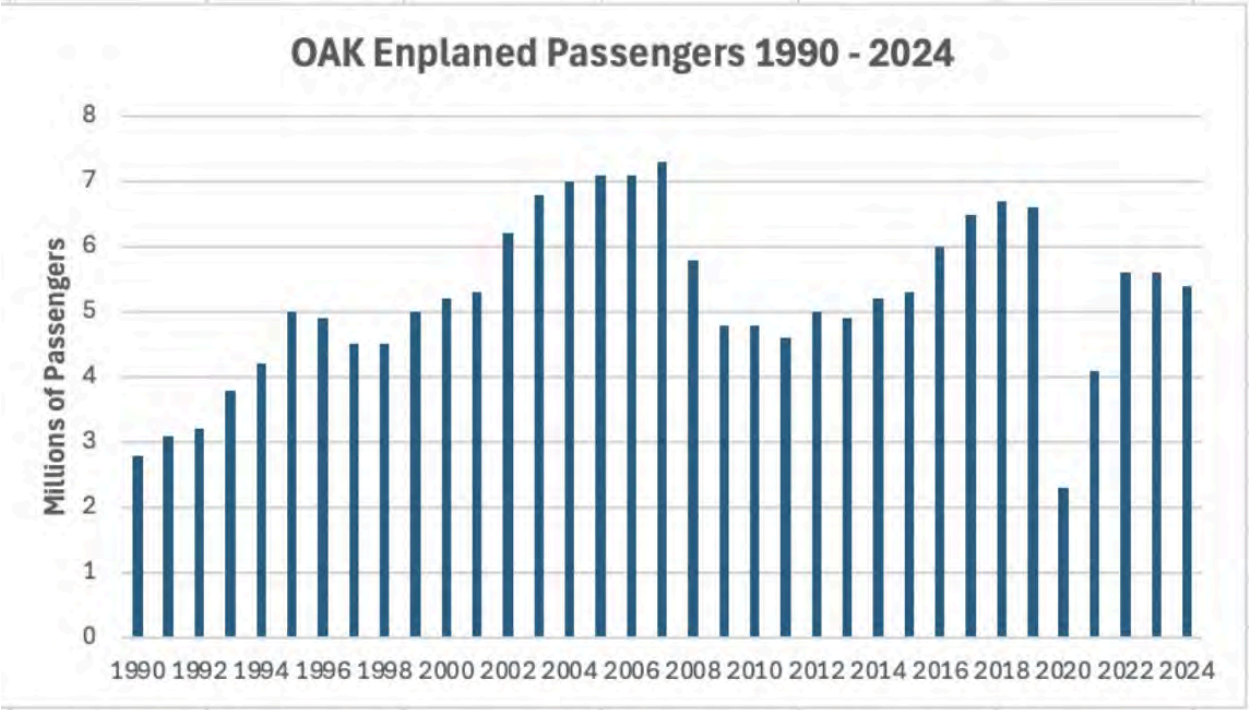
This focus area action states, "The Port of Oakland shall install fence line air quality monitor(s) no later than <u>one year after the opening of the new terminal</u> as described in the 2024 Oakland International Airport Terminal Modernization and Development Project Final Environmental Impact Report . . ."

This section has two problems. One is that the fenceline monitoring should begin immediately, and the other is that the report should not assume the opening of a new terminal.

Regarding the first problem, this action recommends delaying fenceline air quality monitoring. Since emissions from the Airport have already been identified as a problem, there is no excuse

for waiting. The report notes that the "CSC prefers" not waiting. This action item should be modified to read ***"Fenceline air quality monitoring that includes hourly sampling for VOCs, fine PM and Ultra-Fine PM should be installed immediately."*** (see PH 3.1)

Regarding the second problem, the report should not assume that the Airport expansion will be implemented. There are currently three lawsuits challenging the FEIR, and, as noted above, the City and the Port still have to make decisions about whether to proceed with the project. Regarding the Port's decision about expanding OAK, it is important to understand that the FEIR projected significant increases in flights, but these have not materialized. In fact, total passengers using the airport have declined recently and have not reached pre-Covid levels as shown in the graph below.



Reference to "one year after opening of the new terminal" (shown underlined above) should be deleted from this report.

VII. Chapter 9 Implementation and Reporting – Government Collaboration and Agency roles – City of Oakland pg 208. add:

"The City of Oakland, through its General Plan, has the authority to rule that the airport expansion can only proceed if it shows that air quality in East Oakland will not be further damaged." This would be consistent with the Environmental Justice Element of the General Plan.

VIII. Chapter 9 Implementation and Reporting – Government Collaboration and Agency roles – Port of Oakland pg 209. Add sentence:

"Notwithstanding the findings of the Environmental Impact Report pursuant to the airport expansion, the Port should pause the project to better determine the health impacts on East Oakland Residents as well as other considerations."

– Additional technical considerations –

1. Ultra-fine Particles

Suggestion for Appendix D regarding air monitoring methodology regarding ultra-fine particles (UFP). From this study of the Seattle-Tacoma Airport (Sea-Tac), we see that UFP are particularly associated with landing airplanes, This is because descending jets fly lower, and for longer periods of time compared to takeoffs. As a result, aircraft UFPs are much more widely dispersed than UFP from roadways. The air monitoring efforts of the Air District should follow methods described in this study. The Sea-Tac study as well as studies from LAX and Chicago Midway were also cited in the comment letter from the Alameda County Health Department.



2. Pollution Inventory Accuracy

The Emissions Inventories listed in Tables 5-7 (Pg.92), 5-8 (Pg.94), and 5-10 (Pg. 111) seem to be based almost exclusively on modelling using AERMOD. The projections presented represent annual amounts. These results should be confirmed with local monitoring before large-scale industrial changes (like the expansion of the airport) are approved. Hourly data is needed to reveal emission spikes that may exceed National Ambient Air Quality Standards.

The data for East Oakland in figures 5-3, 5-4, and 5-6 come from a single monitor. Having one monitor limits the confidence in these data. The Bay Area Air District admits that East Oakland is in many ways an air quality "data desert."(1) Communities for a Better Environment has partnered with the University of California, Berkeley and the Bay Area Air District Air District to greatly improve the numbers and distribution of pollution sensors in East Oakland. The data from these sensors is needed ASAP to establish a credible baseline of community air quality before predicting or curtailing future pollution. The sensors should be sensitive to all classes of particulate matter (including UFP), NOx, SOx and VOCs and operate for at least a year. This would capture any variations related to seasonal shifts in temperature and wind direction. The data from this study would inform a Health Impact Assessment to enhance our understanding of the current emissions and improve future projections.

(1) https://www.baaqmd.gov/~/media/files/technical-services/east-oakland-monitoring-project/eo_amp_sensor_network_monitoring_plan-pdf.pdf?rev=9aaeca8a11a24f7485bfb0d74e05448e&sc_lang=en

We appreciate the effort that the Air District and Community Steering Committee have put into this report. We look forward to continuing to work with you to improve air quality in Oakland and the health of the adjoining communities.

Respectfully submitted,

The Stop OAK Expansion Coalition Steering Committee

Including the following co-signers:

Alameda County Interfaith Climate Action Network

350 East Bay

San Francisco Bay Physicians for Social Responsibility

Sunflower Alliance

Xochipilli, Chicano/Latino Men’s Circle

Bay Area-System Change not Climate Change

Youth Vs. Apocalypse

Scientist Rebellion Turtle Island West

Outlook

AB 617 East Oakland CERP

From Colleen Liang [redacted] >
Date Mon 12/8/2025 8:24 AM
To Alicia Parker [redacted] >
Cc Joan Zatopek [redacted] >; Craig Simon [redacted]

1 attachment (170 KB)
2025.12.07 Port Letterhead AB 617 Final Draft Comments.pdf;

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Hi Alicia,

Please find attached the Port of Oakland's letter regarding the AB 617 East Oakland community emissions reduction plan: Right to Breathe: East Oakalnd Community Air Quality Justice Plan.

Thanks,
Colleen

Colleen Liang
Director of Env Programs and Planning
Port of Oakland - *Everyone's Port*
[redacted]
[redacted] www.portofoakland.com

PORT OF OAKLAND
Seaport. Airport. Everyone's Port.

PORT OF OAKLAND

December 7, 2025

Alicia Parker
Bay Area Air Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Re: AB 617 East Oakland Community Emissions Reduction Plan

Dear Ms. Parker:

Thank you for the opportunity to review the Public Review Draft of the community emissions reduction plan (CERP) - ***Right to Breathe: East Oakland Community Air Quality Justice Plan***. As described previously in the Port of Oakland's (Port) letter dated June 11, 2025, adjacent communities are a valuable partner to the Port in advancing zero-emission operations at the Port. The Port values engaging with the CSC as a non-voting member and participating in the process in the development of the strategies in the CERP.

The Port appreciated the opportunity to meet in June 25, 2025 and July 7, 2025 to discuss the draft strategies related to the Port, describe the limitations of the Port's authority, and discuss past, ongoing, and future initiatives in advancing zero emission airport operations. The Port will continue to engage and dialogue with CSC members on the proposed strategies.

Please note that Oakland San Francisco Bay Airport name change was approved by the Port of Board Commissioners at a July 2025 Board meeting. All references to *Oakland International Airport* in the final draft of the ***Right to Breathe: East Oakland Community Air Quality Justice Plan*** should be revised to *Oakland San Francisco Bay Airport.*

The Port looks forward to working towards a common goal of zero emissions operations at the Oakland San Francisco Bay Airport with CSC and neighboring communities.

Thank you,

Colleen Liang
Director of Environmental Programs and Planning

Cc: Craig Simon, Director of Aviation
Joan Zatopek, Aviation Planning and Development Manager

[redacted]

www.portofoakland.com

Public Comment

East Oakland CERP Public Review Draft

NAME: Njeri McGee-Tyner

COMMENT: Love the Urban Greening maps are well illustrated

CH:7 UGW 1.2 Funding sources are important to support Urban Greening workforce pathways and educational career pathways

Helpful tip: Please include page numbers whenever possible to help us track your input.

UGW 2.2 Urban Greening Funding (prefer short term)

November 13, 2025 East Oakland CERP Public Review Draft | Public Meeting

Glad to see the needle has moved in this focus Area. Looking forward to these actions rolling out the most.

Public Comment

East Oakland CERP Public Review Draft

NAME: SKY

↑ High fees on dumping at waste management ~~dep~~ dumping!!! actively encourages

COMMENT: Enforcement of illegal dumping? much worse!! crimes will go unpunished in Oakland. I feel encouraging people/companies to dump in proper locations would help more. More surveillance feels like a ~~[illegible]~~ Human rights violation on par with living next to trash piles. No Hate, thank you for your Hard work.

Helpful tip: Please include page numbers whenever possible to help us track your input.

November 13, 2025 East Oakland CERP Public Review Draft | Public Meeting

Outlook

Re: Final Draft East Oakland Community Emissions Reduction Plan Release!

From Armstrong, Erin, BOS Dist 4 [redacted]

Date Thu 2/5/2026 4:22 PM

To Alicia Parker [redacted]>; Bisseret Martinez, Mona <[redacted] Hillmon, John <[redacted]>; Houston, Ken [redacted]>; [redacted]>: Pomar, Jasmine [redacted]>: Wells, Ricki <[redacted]>; mwier <[redacted]>: Hathaway, Kristin [redacted]>: Navarro, Sofia [redacted]>; [redacted]>: Hirshfield-Gold, Shayna <[redacted]>; Rodriguez, Kelsey@DOT [redacted]>; Owen Goetze <[redacted]>; Jenkins, Kevin [redacted]>

Cc Haynes, Khalilha [redacted]>; Diana Perez-Domencich [redacted]>; Anna Lee <[redacted]>: Aneesh Rana <[redacted]>: Karissa White [redacted]>; Yami Henry [redacted]>; Colleen Liang <[redacted]>: Nguyen, Tram, Public Health, OOD <[redacted]>; Moore, Brian@ARB [redacted]>: Manuel Oliva [redacted]>; Henninger, Tona, BOS Dist4 <T[redacted]>

1 attachment (981 KB)

NM_LETTER_BAAQMD_CERP-CONCERNS_2026.02.05.pdf;

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Good afternoon,

Please see the attached letter of concern from Alameda County Supervisor Nate Miley, regarding the Final Draft Plan.

The Supervisor hopes the CSC will have an opportunity to review and address these concerns. He does plan to attend the CHEJ Subcommittee on 3/11 and Board of Directors meeting on 4/1.

Sincerely,

Erin Armstrong, MBA/MPP | Deputy Chief of Staff
Office of Alameda County Supervisor Nate Miley, District 4
Alameda County Board of Supervisors
[redacted]

[redacted]

Board of Supervisors

Nathan A. Miley
Supervisor, District 4

Oakland Office
[redacted]

Eden Area District Office
[redacted]

Pleasanton District Office
[redacted]

February 5th, 2026

To: Bay Area Air Quality Management District
AB 617 Community Steering Committee

CC: Alameda County Supervisor David Haubert, President, District 1
Alameda County Supervisor Lena Tam, District 3
Oakland City Council President Kevin Jenkins, President, District 6
Oakland City Councilmember Ken Houston, District 7

SUBJECT: Concerns Regarding Accuracy of the East Oakland Community Emissions Reduction Plan (CERP)

Dear Bay Area Air Quality Management District and Members of the East Oakland Community Steering Committee,

I am concerned about inaccuracies present in the Final Draft Plan for the Right to Breathe: East Oakland Community Air Quality Justice Plan as presented on the Air District's website, and am concerned that the criteria used to identify "Facilities of Concern" are not being applied consistently with the data presented in the Plan

One example is in *Chapter 5: Air Quality Overview* where Argent Materials is characterized as a "Facility of Concern" for toxic exposure from toxic emission, despite not listed among the top ten emitters of toxic air contaminants in East Oakland. The inclusion is based on community testimony during CSC meetings, rather than on quantitative emissions or exposure metrics. This designation is then carried forward into Appendix F-1, where Argent Materials is included among four facilities for which CBE developed a Problem Statement, with the justification for inclusion being their status as a "Facility of Concern.

This circular reasoning is concerning and creates the appearance that the conclusions of the CERP are not being driven by empirical analysis. This approach raises concern about the integrity of the CSC's work and the CERP as a whole, and about whether the resulting recommendations are adequately supported by the evidence.

I have seen the positive impact that Argent Materials has had on East Oakland, which is why I am particularly concerned that conclusions in the Plan accurately reflect the available data. I have seen their commitment to socially responsible business practices, cleaning and beautifying the neighborhood, and hiring local community members.

I humbly request that the CSC and BAAQMD review the Final Draft Plan for accuracy, and ensure that recommendations are supported by clearly articulated, data-driven criteria that are applied consistently across all facilities.

Sincerely,

Nate Miley

Nate Miley
Supervisor, District 4

Applicability Analysis for California Environmental Quality Act

The California Environmental Quality Act (CEQA) is a state law that requires public agencies to consider the environmental impacts of certain projects they undertake or approve. For projects that are subject to CEQA, the statute imposes specific legal requirements that agencies must follow before carrying out or approving the project. This appendix evaluates whether CEQA applies to this project – the Community Emissions Reduction Plan (CERP) for East Oakland. As explained in more detail later in this discussion, Bay Area Air Quality Management District (Air District) staff have reviewed all aspects of the CERP and determined that it is exempt from CEQA, for multiple reasons.

First, as an overall matter, the CERP is being adopted to benefit the environment and the health of residents of the East Oakland community, and all of the action items within the CERP support this goal. Therefore, adoption of the CERP is exempt from CEQA review under CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment. This exemption applies to actions taken by regulatory agencies, as authorized by law, to "assure the maintenance, restoration, enhancement, or protection of the environment." The Air District is a regulatory agency charged with the protection of air quality in its jurisdiction. Because the goal of the CERP is to protect air quality and public health, its adoption fits within the category of actions subject to this exemption. This same exemption would also apply to each of the individual strategies within the CERP that involve actions by the Air District.

Second, all of the individual strategies and actions set forth in the CERP would be exempt if they were implemented on their own, apart from adoption of the CERP. For example:

Strategies that would either not cause any physical changes to the environment or involve such minimal physical changes that it can be seen with certainty that there is no possibility that the proposed project may have a significant adverse effect on the environment fall within the common sense exemption in CEQA Guidelines section 15061(b)(3). Examples include actions that involve encouraging local governments to establish vegetative buffer zones (Urban Greening actions 1.1, 2.1 and 3.1), advocating for the City of Oakland to modify its zoning or land use regulations (Built Environment and Land Use actions 3.2 through 3.5), and developing model policies or ordinances for possible future adoption by other entities (Transportation and Mobile Sources action 1.1).

Strategies that call for feasibility and planning studies are exempt under Public Resources Code section 21150 and CEQA Guidelines section 15262 ("A project involving only feasibility or planning studies for possible future actions which the agency . . . has not approved, adopted, or funded does not require the preparation of an EIR or negative declaration but does require consideration of environmental factors."). Examples include exploring the feasibility of expanding the Air District's existing Air Filtration Program to supply air filtration units to Head Starts (Built Environment and Land Use action 1.1), studying the feasibility of policies to address the impacts of large warehouses and other types of business that are "magnets" for heavy duty truck trips (Transportation and Mobile Sources action 1.1), participating in the development of a planning study focusing on improving transit on Foothill Boulevard (Transportation and Mobile Sources action 2.2), and studying the efficacy of street sweeping to

evaluate the areas in greatest need for sweeping (Transportation and Mobile Sources action 5.1).

Strategies that would result only in the modification of existing facilities or the construction of new minor facilities are exempt under CEQA Guidelines sections 15301 (“Existing Facilities”; class 1) and 15303 (“New Construction or Conversion of Small Structures”; class 3). These strategies include the installation of air filters and monitoring equipment, and the installation of bus boarding islands or bus bulbs to improve rider boarding safety and access.

Strategies that call for information collection, inspections, enforcement, education, and workplace regulations are exempt under CEQA Guidelines sections 15306 (“Information Collection”; class 6), 15309 (“Inspections”; class 9), 15321 (“Enforcement Actions by Regulatory Agencies”; class 21), 15322 (“Educational or Training Programs Involving No Physical Changes”; class 22), and 15324 (“Regulations of Working Conditions”). These categorical exemptions would exempt CERP strategies that include activities like air quality monitoring or other data collection, performance inspections or compliance checks, certain enforcement actions involving permit enforcement or revocation, development of webpages or community outreach campaigns, gathering information about potential fundings sources, and changes to Air District staffing or coordination practices.

The Air District also considered the strategies included in the CERP that will involve undertaking rulemaking activities to address specific air quality concerns. These rulemakings include proceedings to further reduce public health impacts from fugitive dust, to improve implementation of rules to reduce toxic air emissions at existing facilities, and to reduce localized emissions from backup diesel generators. These rulemaking proceedings could potentially be subject to CEQA review when they occur, depending on the nature of any rules the Air District may propose to adopt in them. At this point, however, the CERP merely calls for these proceedings to be initiated in the future, generally following a period of study to determine how to approach a particular issue. The CERP has not identified, let alone committed to, any particular type of new or more stringent rule or regulation that would be developed or adopted in these rulemaking proceedings. Given that it is uncertain what the result of those regulatory proceedings would be, it is not possible at this stage to determine whether they could result in potentially significant environmental impacts. Therefore, CEQA review is not required because the nature and extent of any environmental impacts would be too speculative for evaluation at this point. When the Air District initiates a specific rulemaking process, it will determine whether and what level of CEQA review is required for that rulemaking at that time.

Bay Area Air District

Final Draft Community Emissions Reduction Plan for East Oakland

Board of Directors Meeting

April 1, 2026

Manuel Oliva, Manager, Planning and Climate Protection
Anna Lee, Manager, Environmental Justice Division

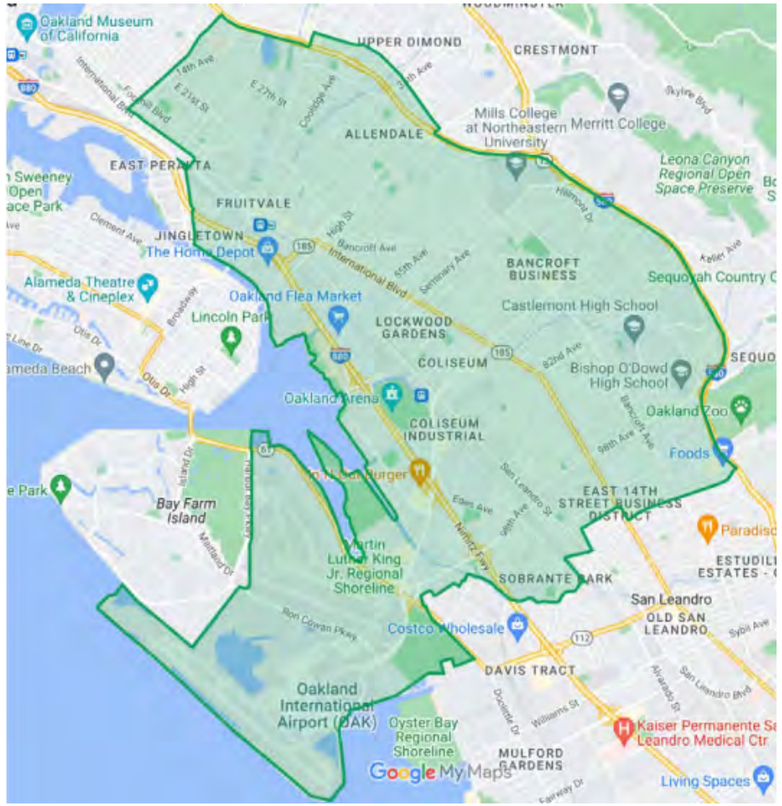
Recommended Action

(i) Adopt the Final Draft Community Emissions Reduction Plan and (ii) approve the determination that adoption of the Final Draft Community Emissions Reduction Plan is exempt from the California Environmental Quality Act.

The Community Equity, Health, and Justice Committee recommended this item at its meeting on March 11, 2026.

East Oakland Assembly Bill (AB) 617 Community

- Approved for a Community Emissions Reduction Plan (CERP) in February 2022
- Air District and Communities for a Better Environment (CBE) are Co-Leads
- East Oakland Community Steering Committee (CSC) convened in September 2022



AB 617 Planning Area for East Oakland

East Oakland Community Steering Committee

- CSC was recruited through an open application process led by Co-Leads and consists of 24 individuals who live or work within the East Oakland CERP project area
- Three Co-Chairs elected by the CSC and five youth members who form an unofficial Youth Committee supported by CBE
- Non-voting representatives from the City of Oakland Planning Department, Alameda County Public Health Department, and Port of Oakland

CERP Development Process

- The CSC and Co-Leads actively began working on CERP strategies and actions in September 2024
- The CSC and Co-leads held monthly meetings, follow up office hours, a special topic meeting and work sessions to iterate on the draft strategies and actions
- Surveys helped prioritize issues, evaluate draft strategies and actions, and crowd source the CERP name: “Right to Breathe: East Oakland Community Air Quality Justice Plan”
- In August 2025, the CSC reviewed the preliminary draft CERP and provided comments ahead of the release of the Public Review Draft CERP in November 2025

East Oakland Community Engagement

- Distributed $80,000 for community engagement to local Community-Based Organizations (CBOs): Community Mapping Project (2023) and Community Organizing Grants (2024)
- Tabled at 20 events in East Oakland to encourage community participation in the CERP process



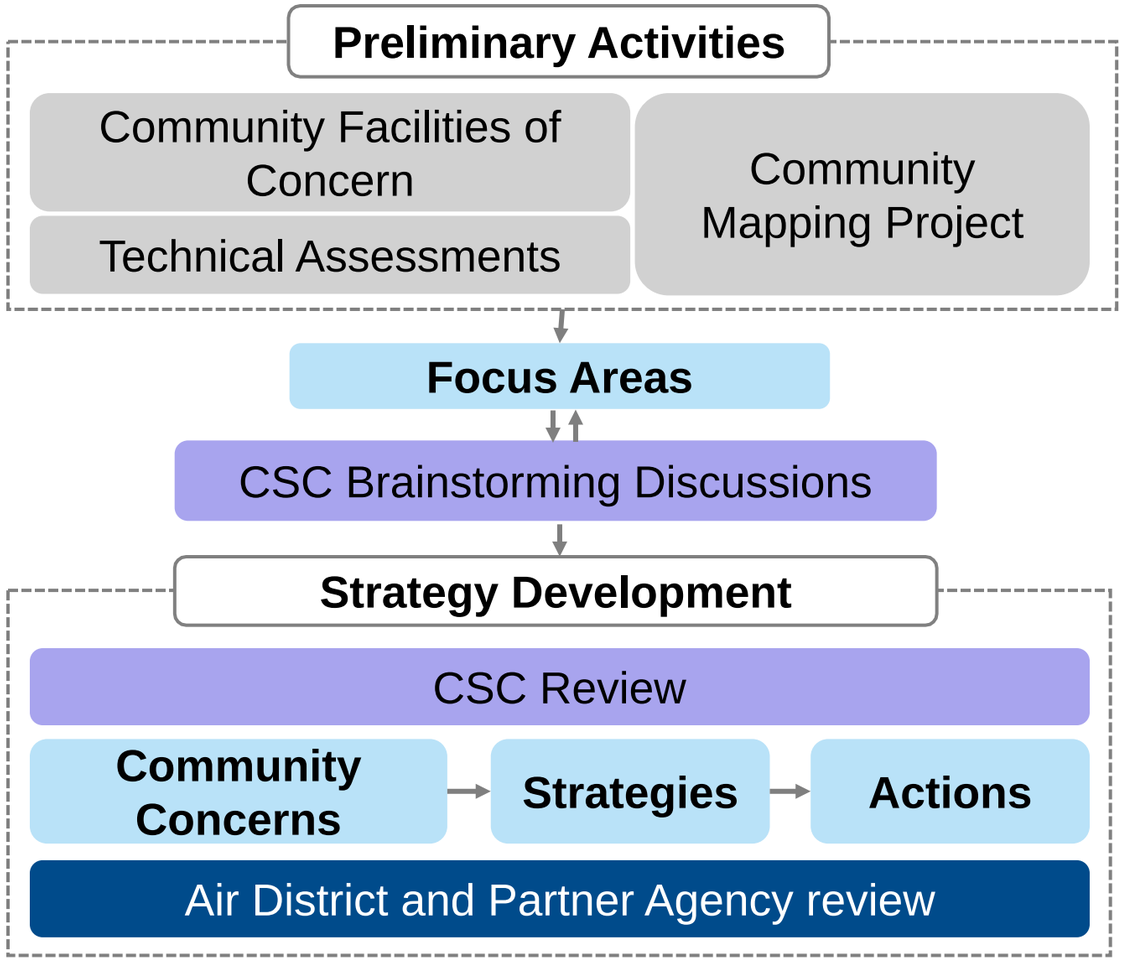
Community Events in East Oakland

Final Draft CERP Goals

Goal 1	Reduce East Oaklanders' exposure to air pollution by decreasing emissions from sources identified by the community as top concerns
Goal 2	Prioritize actions that have the opportunity to reduce disproportionately high health impacts associated with air pollution affecting East Oakland residents to achieve improvements in community health
Goal 3	Empower East Oakland residents to participate in holding polluters accountable by combining their local knowledge with an understanding of emission sources, health impacts, air pollution regulations and reporting mechanisms

Final Draft CERP Strategy Development

- **Preliminary Activities:**
  Data gathering and information sharing
- **Strategy Development:**
  Created strategies and actions as a collaboration between the CSC, Air District, and partner agencies



Final Draft CERP Focus Areas

1. **Built Environment and Land Use**
2. **Commercial and Industrial Sources**
3. **Illegal Dumping, Trash, and Odors**
4. **Public Health and Community Wellness**
5. **Transportation and Mobile Sources**
6. **Urban Greening and Workforce Development**

Community Concerns and Action Highlights

1 Focus Area: **Built Environment and Land Use**

Community Concerns

1. Reducing Air Pollution at Home
2. Vulnerable Populations in Proximity to Pollution Sources and Incompatible Zoning

Action Highlights

- Air Filtration for East Oakland Homes
- Access to Existing Clean Energy Home Retrofit and Weatherization Programs
- Air Filtration for East Oakland High-Priority Facilities

Community Concerns and Action Highlights (cont.)

2 Focus Area: **Commercial and Industrial Sources**

Community Concerns

1. Particulate Matter (PM) Exposure: Fugitive Dust, Material Handling, and Construction
2. Toxic Emissions & Hazardous Materials
3. Commercial and Smaller Industrial Facilities
4. Accountability of Polluting Industries and Businesses

Action Highlights

- Rule Amendments to Address Fugitive Dust
- Provide Clear and Accessible Air District Permitting Information
- Targeted Inspections to Address Repeat Violators
- Promote the Complaint Program Through a Public Information Campaign

Community Concerns and Action Highlights (cont.)

3 Focus Area: **Illegal Dumping, Trash, and Odors**

Community Concerns

1. Unsanitary Conditions, Inequitable Access to Waste Disposal Services, and Lack of Enforcement

Action Highlights

- Illegal Dumping Prevention Community Outreach
- Driving Local Clean Up and Beautification Activities

Community Concerns and Action Highlights (cont.)

4 Focus Area: **Public Health and Community Wellness**

Community Concerns

1. Contributions of Outdoor Air Pollution to Cumulative Health Impacts
2. Protecting Sensitive Populations and Mitigating Pollution Impacts
3. Raising Awareness about Health Impacts of Air Pollution

Action Highlights

- East Oakland Air Monitoring Project
- Make Air and Emissions Monitoring Data More Accessible
- Improve Air Pollution Awareness

Community Concerns and Action Highlights (cont.)

5 Focus Area: **Transportation and Mobile Sources**

Community Concerns

1. Trucks in the Community
2. Interstate-580 Truck Ban
3. Road Dust Near Freeways and High-Volume Roadways
4. Oakland International Airport

Action Highlights

- Indirect Source Policy Package
- Idling Prevention and Outreach
- Study Impacts of Interstate-580 Truck Ban
- Port Zero-Emissions Plan Airport-specific Elements

Community Concerns and Action Highlights (cont.)

6 Focus Area: **Urban Greening and Workforce Development**

Community Concerns

1. Lack of Trees, Limited Resources, and a Need for More Green Jobs

Action Highlights

- Create a Resource to Help Prioritize Installation of Vegetative Buffers
- Urban Greening Funding

CERP Public Review

- Public comment on the Public Review Draft CERP began on November 3, 2025, and concluded on December 7, 2025
- A total of 119 additional members of the public commented on behalf of the Stop Oakland Airport Expansion Coalition
- Posted a Response to Comments document and updated the CERP with clarifications, and added new actions and a new metric

CSC Approval and CEHJ Recommendation

- On February 5, 2026, the CSC voted to approve the Final Draft CERP with a majority of 14 yes votes and one objection
- On March 11, 2026, the Community Equity, Health, and Justice (CEHJ) Committee unanimously voted to recommend to the Board of Directors that the Board (i) adopt the Final Draft Community Emissions Reduction Plan and (ii) approve the determination that adoption of the Final Draft Community Emissions Reduction Plan is exempt from the California Environmental Quality Act (CEQA)

CEQA Compliance

- Legal staff with support from outside counsel determined the Final Draft CERP is exempt from CEQA
- Discussion regarding this determination is included in the Final Draft CERP in *Appendix G: Applicability Analysis for California Environmental Quality Act*

Recommended Action

(i) Adopt the Final Draft Community Emissions Reduction Plan and (ii) approve the determination that adoption of the Final Draft Community Emissions Reduction Plan is exempt from the California Environmental Quality Act.

The Community Equity, Health, and Justice Committee recommended this item at its meeting on March 11, 2026.

Bay Area Air District

CSC Reflections

Questions & Discussion

For more information:

Manuel Oliva | Manager and Climate Protection Division | moliva@baaqmd.gov
Anna Lee | Manager, Environmental Justice Division | alee@baaqmd.gov

BAY AREA AIR DISTRICT
Memorandum

To: Chairperson Lynda Hopkins and Members of the Board of Directors

From: Philip M. Fine
Executive Officer/APCO

Date: April 1, 2026

Re: Annual Report, Budget, and Director Appointments of the Bay Area Clean Air Foundation

RECOMMENDED ACTION

Recommend the Board of Directors:

- Approve the Foundation Board's adoption of the 2027 Budget; and
- Reappoint Arsenio Mataka and appoint Emi Wang to two-year terms as Directors of the Foundation.

BACKGROUND

The Board of Directors, at its July 9, 2008, meeting, approved the establishment of an Air District foundation. In September 2008, the Foundation was established. The purposes of the Foundation are to:

- Provide financial, administrative, programmatic, and other forms of support to the Air District; and
- Engage in activities that further such purposes.

The Foundation funds various air quality emissions reduction, educational, and service programs to support the mission of the Air District, which is “to protect public health, reduce historical and current environmental inequities, and mitigate climate change and its impacts.”

The Foundation Board met on February 17, 2026, to review the annual report and make recommendations to the Air District’s Board of Directors, as the Sole Member of the Foundation.

Pursuant to the Foundation’s Bylaws, the Air District’s Board of Directors must approve the Foundation Board’s adoption of the annual budget and Foundation Board members.

DISCUSSION

The Foundation's Board of Directors made the following recommendations to the Board of Directors to:

- Approve the Foundation's adoption of the 2027 budget by the Foundation; and
- Reappoint Foundation Board member Arsenio Mataka to his second two-year term and appoint Emi Wang to her first two-year term as Directors of the Foundation.

BUDGET CONSIDERATION/FINANCIAL IMPACT

The 2027 budget totaling $142,100 represents administrative program costs and the distribution of the remaining funds from the Reformulated Gasoline Settlement Fund.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Minda Berbeco
Reviewed by: Somerset Perry

ATTACHMENT(S):

1. Bay Area Clean Air Foundation 2025 Annual Report
2. Annual Report of the Bay Area Clean Air Foundation Presentation

BAY AREA CLEAN AIR FOUNDATION

2025 ANNUAL REPORT

1. Background

On July 9, 2008, the Bay Area Air District (Air District) Board of Directors approved the establishment of an Air District foundation. As a result of that action, the Bay Area Clean Air Foundation (Foundation) was established in September 2008. The purposes of the Foundation are as follows:

- To *provide* financial, administrative, programmatic, and other forms of support to the Air District; and
- To *engage* in activities that further serve such purposes.

The Foundation will serve to fund various air quality emissions reduction, and educational and service programs to support the mission of the Air District, which is to improve air quality *"to protect public health, reduce historical and current environmental inequities, and mitigate climate change and its impacts."*

Directors and Officers

The Directors of the Foundation in calendar year 2025 were as follows:

Arsenio Mataka
Regan Patterson, PhD
Karen Schkolnick

The Foundation's Officers in calendar year 2025 were as follows:

Dr. Philip Fine, President
Stephanie Osaze, CFO
Lisa Fasano, Secretary
Somerset Perry, General Counsel

2. Report on the Foundation's Activities

This report provides a summary of the proposed budget for the upcoming fiscal year, the financial report for the prior fiscal year, and the programmatic activities related to funds received.

Funding Programs Background

The Foundation currently has 3 unique funding sources: the CEQA Offsite Mitigation Program, the Reformulated Gas Settlement (RFG), and the Shoreline Terminals LLC Settlement. The CEQA Offsite Mitigation Program is an ongoing and open program designed to provide CEQA offsets for development projects. The RFG funds were the result of the settlement of 14 class action lawsuits against Union Oil Company of California and Unocal Corporation and provided financial incentives to support the adoption of zero and near-zero emission equipment and vehicles along the industrial Bay-side-corridor of the East Bay. The Shoreline Terminal funds were the result of a settlement against the company for improper loading of petroleum products. More details about the program activity are below.

Programmatic Update:

Status of Prior-year Revenue and Active Projects:

In 2025, the Foundation had two projects as part of the Foundation's CEQA Offsite Mitigation Program. There were no revenues or expenditures in 2025 related to these projects.

For the RFG program, as of December 31, 2025, there were 8 active projects totaling $1.71 million.

Table 1 below shows the status of the 8 active projects funded by the RFG.

Table 1. Summary of All Projects and Applications from RFG funding

Project Sponsor	RFG Funds Contracted/ Awarded	Description	Status	Location
Wyse Logistics	$40,200	3 forklifts and 1 terminal tractor	Contracted on 2/4/2019. Amended on 11/13/19 and 1/28/20.	Oakland
Hayward Unified School District	$94,000	45 electric vehicle charging stations for light duty vehicles	Contracted on 1/11/2019. Amended on 7/16/21 and 12/7/25.	Hayward
EVgo Services	$389,400	8 electric vehicle charging stations for light duty vehicles	Contracted on 10/10/2019. Amended on 11/2/20, 10/25/21,	Oakland

			6/8/22, 1/4/23, 5/15/23, 8/14/23 and 6/24/25.	
Oakland Maritime Services	$39,400	1 terminal tractor	Contracted on 8/13/19.	Oakland
GSC Logistics	$80,000	1 terminal tractor	Contracted on 9/24/19.	Oakland
Oakland Pallet Company	$80,000	1 terminal tractor	Contracted on 1/7/2020. Amended on 10/25/21. Equipment in service.	San Lorenzo
Alameda County	$25,286	4 electric vehicles	Contracted on 8/6/2020. Amended on 9/14/21. Equipment in service.	Oakland
Zūm Services, Inc.	$423,674	74 electric vehicle charging stations for electric school buses	Contracted on 12/8/2023.	Oakland
Total	**$ 1,171,960**			
CASS, Inc.	$102,390	Withdrawn		
Zūm Services, Inc.	$173,800	Withdrawn		
City of Berkeley	$67,214	Withdrawn		
Another Corporate ISP LLP (DBA Monkeybrains ISP)	$14,940	Withdrawn		

2026 Workplan:

In 2026, the Foundation will be paying and closing out RFG projects. In addition, there is approximately $257,000 from a settlement with Shoreline Terminals LLC available for award. The Foundation, in partnership with the Air District, will be working to identify projects that qualify for remaining Shoreline Terminal funds in 2026.

Additionally, the Foundation, in partnership with the Air District, will also be available to offer the option of offsets for offsite CEQA mitigation on a case-by-case basis for new development projects that may exceed Air District established CEQA thresholds that cannot be feasibly fully mitigated on-site. In these situations, the Foundation and the Air District work to determine the project(s) best suited based on criteria including air pollutants to be reduced, project site location, cost-effectiveness, and other considerations. Staff also work to identify projects that are closest to where emissions exceedances may be occurring and, whenever possible, to prioritize project funding to benefit communities with the highest rates of air pollution.

Emissions reductions from offset programs must be:

- ✓ Real and permanent
- ✓ Voluntary, surplus, and not otherwise required
- ✓ Quantifiable

An example of a recently completed offset project is the Related Santa Clara development that contracted with the Foundation to help offset up to one ton of potential excess unmitigable NOx emissions from construction of a mixed-use development in Santa Clara. On December 22, 2021, the developer transferred $50,000 to the Foundation, including $5,000 for administrative costs and up to $45,000 for direct project costs. This contract resulted in the dismantling of 32 1997-and-older-model year vehicles that were registered to residents of Santa Clara and San Mateo counties through the Air District's Vehicle Buy Back program.

3. Financials and Budget

2025 Financial Summary

As of December 31, 2025, the Foundation had a cash balance of $433,580. The following is an accounting of the Foundation's operations for the 2025 calendar year:

	Reformulated Gas Funds	Shoreline Terminal	Air District Subsidy	Total
January 1, 2025 Beginning Cash Balance	$ 671,346.47	$ 257,161.44	$ -	$ 928,507.91
Operating Revenues				
Interest Income	$ 115.63	$ 51.46	$ -	$ 167.09
Funds Received	$ -	$ -	$ 32,058.67	$ 32,058.67
Total Revenues	$ 115.63	$ 51.46	$ 32,058.67	$ 32,225.76
Operating Expenses				
Administrative Overhead/Support		$ -	$ 24,179.03	$ 24,179.03
Reformulated Gas Projects	$ 438,153.00	$ -	$ -	$ 438,153.00
Tax Filing Services	$ -	$ -	$ 4,900.00	$ 4,900.00
Insurance	$ -	$ -	$ 1,810.44	$ 1,810.44
Return of Mission Rock/Giants Funds	$ 56,941.30	$ -	$ 1,169.20	$ 58,110.50
Total Expenses	$ 495,094.30	$ -	$ 32,058.67	$ 527,152.97
December 31, 2025 Ending Cash Balance	$ 176,367.80	$ 257,212.90	$ -	$ 433,580.70

Calendar Year 2027 Proposed Budget

In 2027, the General Fund will cover the administrative costs of staff time to pay out the remaining RFG projects (i.e. program distribution), as well as tax filing services, insurance premiums, and other required activities.

	Proposed Calendar Year 2027 Budget	
Revenue/Sources		
Interest Income	$	100
General Fund Subsidy	$	32,000
Total Revenue	$	32,100
Transfer from/to Cash Balance	$	110,000
Total Revenue/Sources	**$**	**142,100**

Expenditure		
Administrative Overhead/Support	$	25,000
Program/Project Distributions	$	110,000
Tax Filing Services	$	5,000
Insurance Premium	$	2,000
Other Charges	$	100
Total Expenditures	**$**	**142,100**

Bay Area Air District

Annual Report, Budget, and Director Appointments for the Bay Area Clean Air Foundation

Board of Directors Meeting

April 1, 2026

Minda Berbeco, PhD
Consultant
Bay Area Clean Air Foundation

Recommended Action

- Approve the Foundation Board's adoption of the 2027 Budget; and
- Reappoint Arsenio Mataka and appoint Emi Wang to two-year terms as Directors of the Foundation.

Foundation Background

BAY AREA
CLEAN AIR
FOUNDATION

Created in 2008 to:

- Provide financial, administrative, programmatic, and other forms of support to the Air District; and
- Engage in activities that further such purpose

2025 Progress & Updates

- Off-site Mitigation Funds
  - No expenditures or revenues in 2025
- Reformulated Gas Settlement Fund (RFG)
  - $1.71 million funds awarded to date
  - Monitoring:
    - Eight projects funded from this cycle

2026 Workplan

- Continue to monitor active projects and award remaining prior year revenue:
  - ~$257,000 - Shoreline Terminals LLC settlement
- Oversee and administer currently funded projects
- Respond to new requests for Foundation to provide California Environmental Quality Act (CEQA) offsite mitigation support
- Continue to evaluate opportunities for donation and new funding
- Seek out new Board members and funding opportunities

2025 Financial Summary

Following is an accounting of the Foundation's operations for the 2025 calendar year:

	Reformulated Gas Funds	Shoreline Terminal	Air District Subsidy	Total
January 1, 2025 Beginning Cash Balance	$ 671,346.47	$ 257,161.44	$ -	**$ 928,507.91**
Operating Revenues				
Interest Income	$ 115.63	$ 51.46	$ -	**$ 167.09**
Funds Received	$ -	$ -	$ 32,058.67	**$ 32,058.67**
Total Revenues	**$ 115.63**	**$ 51.46**	**$ 32,058.67**	**$ 32,225.76**
Operating Expenses				
Administrative Overhead/Support		$ -	$ 24,179.03	**$ 24,179.03**
Reformulated Gas Projects	$ 438,153.00	$ -	$ -	**$ 438,153.00**
Tax Filing Services	$ -	$ -	$ 4,900.00	**$ 4,900.00**
Insurance	$ -	$ -	$ 1,810.44	**$ 1,810.44**
Return of Mission Rock/Giants Funds	$ 56,941.30	$ -	$ 1,169.20	**$ 58,110.50**
Total Expenses	**$ 495,094.30**	**$ -**	**$ 32,058.67**	**$ 527,152.97**
December 31, 2025 Ending Cash Balance	**$ 176,367.80**	**$ 257,212.90**	**$ -**	**$ 433,580.70**

2027 Proposed Budget

	Proposed Calendar Year 2027 Budget	
Revenue/Sources		
Interest Income	$	100
General Fund Subsidy	$	32,000
Total Revenue	$	32,100
Transfer from/to Cash Balance	$	110,000
Total Revenue/Sources	**$**	**142,100**

Expenditure		
Administrative Overhead/Support	$	25,000
Program/Project Distributions	$	110,000
Tax Filing Services	$	5,000
Insurance Premium	$	2,000
Other Charges	$	100
Total Expenditures	**$**	**142,100**

Foundation Officers and Directors 2025 & 2026

2025 Officers

- Dr. Philip M. Fine, President
- Stephanie Osaze, CFO
- Lisa Fasano, Secretary
- Somerset Perry, General Counsel

2025 Directors

- Arsenio Mataka
- Regan Patterson, PhD
- Karen Schkolnick

CFO: Chief Financial Officer

2026 Officers

- Dr. Philip M. Fine, President
- Stephanie Osaze, CFO
- Lisa Fasano, Secretary
- Somerset Perry, General Counsel

2026 Directors

- Arsenio Mataka*
- Regan Patterson, PhD
- Emi Wang*

* Pending appointment by the Bay Area Air District Board as sole member

Recommended Action

- Approve the Foundation Board's adoption of the 2027 Budget; and
- Reappoint Arsenio Mataka and appoint Emi Wang to two-year terms as Directors of the Foundation.

Questions & Discussion

For more information:

Minda Berbeco, PhD | Consultant | mberbeco@baaqmd.gov

BAY AREA AIR DISTRICT
Memorandum

To: Chairperson Lynda Hopkins and Members of the Board of Directors

From: Philip M. Fine
Executive Officer/APCO

Date: April 1, 2026

Re: Consideration of State Legislation

RECOMMENDED ACTION

Adopt positions on pending state legislative bills where appropriate, including, but not limited to the following bills:

As recommended by the Policy, Grants, and Technology Committee at its meeting on March 18, 2026:

SUPPORT	**OPPOSE**	**WATCH**
Assembly Bill 2313 (Berman)	Assembly Bill 1791 (Sanchez)	Assembly Bill 2752 (Ávila Farías)
Senate Bill 299 (Cabaldon)	Senate Bill 1392 (Cortese)	
Senate Bill 954 (Blakespear)		

As recommended Air District staff based on amended bill language:

OPPOSE
Assembly Bill 2752
(Ávila Farías)

BACKGROUND

The Policy, Grants, and Technology Committee (Committee) met on March 18, 2026, to discuss and consider Air District staff recommendations for six (6) bills – Assembly Bill (AB) 1791 (Sanchez), AB 2752 (Ávila Farías), AB 2313 (Berman), Senate Bill (SB) 299 (Cabaldon), SB 954 (Blakespear), and SB 1392 Cortese. The Committee recommended that the Board of Directors adopt the Air District staff recommendations for all the identified bills except for AB 2752 (Ávila Farías). For AB 2752, the Committee voted to recommend a position of "Watch" rather than "Oppose" for the Board's consideration.

After the Committee met on March 18, 2026, AB 2752 (Ávila Farías) was amended and Air District staff is again recommending an "Oppose" position for the Board's consideration.

DISCUSSION

The Board will consider adopting positions on pending state legislative bills where appropriate, including, but not limited to the following bills, as presented to the Policy, Grants, and Technology Committee on March 18, 2026. In addition, there noted updates below for AB 2752 (Ávila Farías) and SB 954 (Blakespear).

- *AB 1791 (Sanchez) – State Air Resources Board: South Coast Air Quality Management District: Regulations: Prohibition: Costs*

  This bill would prohibit the South Coast Air Quality Management District (South Coast AQMD) from adopting any regulation or rule that would add more than $0.02 to the cost of a gallon of gasoline, add $2,000 or more to the cost to build any home, or add $5,000 or more to the cost to build a nonresidential building. The bill would require the South Coast AQMD to submit data to the relevant policy committees of the Legislature that demonstrates how a proposed regulation is compliant with this prohibition. The bill does not establish a process for what the legislative policy committee does upon data submission, or at what point in the district's rulemaking process this action occurs. Air District staff recommends opposing this bill because while it currently only applies to the South Coast AQMD, it sets a precedent that other large air districts could be subject to similar future requirements.

  Committee Recommendation: Oppose

- *AB 2313 (Berman) – Gas Corporations: Gas Distribution Service Line Replacements: Alternatives*

  This bill, the Home Energy Choice Act, would require the California Public Utilities Commission (CPUC), in a new or existing proceeding, to require each gas corporation to offer a Gas Distribution Service Line Replacement Alternatives Program, on or before January 1, 2028, to provide gas customers served by a gas distribution service line, planned or forecasted for replacement over the next 5 years, or prioritized for replacement by the commission, with a monetary incentive to deploy gas distribution service line replacement alternatives, as defined, and cease gas service to avoid the gas distribution service line replacement, as specified. Air District staff recommends support, as this would allow a subset of homeowners the opportunity to disconnect natural gas service and fully electrify their homes, on a voluntary basis.

  Committee Recommendation: Support

- *AB 2752 (Ávila Farías) – Air Quality Management Districts: Oversight*

  This bill would state the intent of the Legislature to enact future legislation to ensure accountability and oversight of the Bay Area Air District and the South Coast AQMD to ensure the rules and regulations they adopt are cost effective, affordable, and achievable. This bill is currently an "intent bill" that will be amended in the future, however, whether a rule is "cost effective, affordable, and achievable" is currently covered by Health and Safety Code Section 40728.5 Required Assessment. Staff of the Assemblymember has indicated this is an industry-supported bill. Air District staff recommends opposing this bill because it weakens the current rulemaking process and downplays the importance of public health protections in rulemaking.

  Committee Recommendation: Watch

  Staff Note: This bill was amended after the Committee met on March 18, 2026.

  Amended Title: *AB 2752 (Ávila Farías) – Bay Area Air Quality Management District and South Coast Air Quality Management District: Policies: Oil Refineries*

  Updated Summary and Staff Recommendation: This bill would require the Bay Area Air District and the South Coast AQMD to analyze all of their policies that have been adopted and all future policies that they are considering adopting that impact oil refineries located in their districts and determine the cost of compliance, potential cost to consumers, impacts on state and local tax revenue, and refinery employment. Air District staff recommends opposing this bill because air districts are already required to analyze impacts of their rulemaking by Health and Safety Code Section 40728.5. This bill goes farther by requiring an undefined analysis of "all of [the Air District's] policies that have been adopted and all future policies that they are considering adopting that impact oil refineries," which expands the scope beyond adopted and considered rules, and requires retroactive (and potentially duplicative) analysis of actions the Air District may have taken many years ago. The bill does not allow for the Air District to ability to recoup these costs through fee recovery.

  Staff Recommendation: Oppose

- *SB 299 (Cabaldon) – CEQA: Exemption: Day Care Center: Family Daycare Home: Zoning*

  This bill would provide that an exemption from CEQA applies to a day care center on a parcel of land zoned exclusively for residential use. This is another bill seeking to fix problems with SB 131 (Committee on Budget and Fiscal Review, Chapter 24, Statutes of 2025) – a budget trailer bill from 2025 – which in this case provided a CEQA exemption for day care centers proposed on a parcel

of land zoned as industrial, which ultimately made it easier to zone day care centers in industrial areas rather than residential areas. Air District staff recommends support in order to eliminate the incentive to site a day care facility in an industrial area because of the lack of a CEQA requirement.

Committee Recommendation: Support

- *SB 954 (Blakespear) – CEQA : Advanced Manufacturing Facilities: Exemption*

  This bill amends SB 131 (Committee on Budget and Fiscal Review, Chapter 24, Statutes of 2025) – a budget trailer bill from 2025 – that provided broad California Environmental Quality Act (CEQA) exemptions for "advanced manufacturing facilities" which ended up including a long list of industrial activities. Air District staff recommends support in order to narrow the list of industrial facilities that are eligible for CEQA exemptions. One of the benefits of going through a CEQA process is that it allows the project proponent and the air district an opportunity to better understand the project and inform the proponent of likely requirements during the resulting permit process.

  Committee Recommendation: Support

  Staff Note: This bill was amended on March 25, 2026, and is no longer a spot bill. The summary above reflects that update.

  Original Title: *SB 954 (Blakespear) – CEQA : Exemptions: Natural and Protected Lands: Advanced Manufacturing: Childcare Facilities*

- *SB 1392 (Cortese) – Smog Check: Exemption: Collector Motor Vehicles*

  This bill would redefine "collector motor vehicle" in state law and further exempt a collector motor vehicle manufactured before the 1981 model year from the requirement to pass biennial smog check. The bill would extend the applicability of this exemption by one model year each year, beginning on and after January 1, 2028, until the final extension takes effect on and after January 1, 2032, that would exempt a collector motor vehicle manufactured before the 1986 model year from the requirement to obtain the certificate of compliance or noncompliance. This bill is similar to last year's SB 712 (Grove) "Leno's Law," with some additional loopholes. This would remove smog check requirements for roughly 160,000 vehicles through the 1986 model year. Air District staff recommends opposing this bill due to the increase in emissions resulting from having the oldest and most polluting vehicles exempted from smog check requirements, which include visual requirements that prevent tampering and installation of non-approved equipment.

  Committee Recommendation: Oppose

The Board will also discuss the following bill that was amended on March 25, 2026.

- *SB 1075 (Reyes) – Air resources: toxic air contaminants: criteria air pollutants: community emissions reduction programs: local community emissions reduction plans.*

  CapitolTrack Summary: Existing law requires the State Air Resources Board to prepare a statewide strategy to reduce emissions of toxic air contaminants and criteria air pollutants in communities affected by a high cumulative exposure burden that includes an assessment and identification of those communities. Existing law requires the statewide strategy to be updated at least once every 5 years. Existing law requires the state board, based on the assessment and identification, to select locations around the state for preparation of community emissions reduction programs. Existing law requires the assessment and identification to prioritize disadvantaged communities, as defined. Existing law requires the regional air quality management district or the regional air pollution control district encompassing the location selected by the state board, within one year of selection, to adopt a community emissions reduction program to achieve emissions reductions for the location selected using cost-effective measures, as provided. Existing law requires the state board to provide grants to community-based organizations for technical assistance and to support community participation in the implementation of the statewide strategy. Under this existing regulatory authority, the state board provides grants to development and implement local community emissions reduction plans. This bill would revise the definition of "disadvantaged community" to include a disadvantaged unincorporated community. The bill would require the statewide strategy to be updated on or before July 1, 2027, and every 3 years thereafter. The bill would require the local community emissions reduction plans be submitted to the state board for review and approval and would authorize the state board or the relevant air district to enforce those plans. (Based on 03/25/2026 text)

Additional bill information may be found on the California Legislative Information website.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Alan Abbs
Reviewed by: Viet Tran

ATTACHMENT(S):

1. AB 1791 (Sanchez) - Bill Text - As Introduced on February 10, 2026
2. AB 2313 (Berman) - Bill Text - As Introduced on February 19, 2026
3. AB 2752 (Ávila Farías) - Bill Text - As Amended on March 19, 2026
4. SB 299 (Cabaldon) - Bill Text - As Amended on January 14, 2026
5. SB 954 (Blakespear) - Bill Text - As Amended on March 25, 2026
6. SB 1392 (Cortese) - Bill Text - As Introduced on February 20, 2026
7. SB 1075 (Reyes) - Bill Text - As Amended on March 25, 2026
8. Consideration of State Legislation Presentation

ASSEMBLY BILL No. 1791

Introduced by Assembly Member Sanchez

February 10, 2026

An act to add Sections 39616.6 and 40440.9 to the Health and Safety Code, relating to air resources.

LEGISLATIVE COUNSEL'S DIGEST

AB 1791, as introduced, Sanchez. State Air Resources Board: South Coast Air Quality Management District: regulations: prohibition: costs.

The California Global Warming Solutions Act of 2006 designates the State Air Resources Board as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases.

This bill would prohibit the state board from adopting any regulation or rule that would add more than $0.02 to the cost of a gallon of gasoline or add $2,000 or more to the cost to build any home. The bill would require the state board to submit data to the relevant policy committees of the Legislature that demonstrates how a proposed regulation is compliant with this prohibition.

Existing law, the Lewis-Presley Air Quality Management Act, establishes the South Coast Air Quality Management District in those portions of the Counties of Los Angeles, Orange, Riverside, and San Bernardino included within the South Coast Air Basin as the local agency with the responsibility for comprehensive air pollution control within the basin.

This bill would prohibit the south coast district from adopting any regulation or rule that would add more than $0.02 to the cost of a gallon of gasoline, add $2,000 or more to the cost to build any home, or add $5,000 or more to the cost to build a nonresidential building. The bill

would require the south coast district to submit data to the relevant policy committees of the Legislature that demonstrates how a proposed regulation is compliant with this prohibition. To the extent it would impose additional duties on a local entity, this bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that, if the Commission on State Mandates determines that the bill contains costs mandated by the state, reimbursement for those costs shall be made pursuant to the statutory provisions noted above.

Vote: majority. Appropriation: no. Fiscal committee: yes. State-mandated local program: yes.

The people of the State of California do enact as follows:

SECTION 1. Section 39616.6 is added to the Health and Safety Code, to read:

39616.6. Notwithstanding any other law, the state board shall not adopt any regulation or rule that would add more than two cents ($0.02) to the cost of a gallon of gasoline or add two thousand dollars ($2,000) or more to the cost to build any home. The state board shall submit data to the relevant policy committees of the Legislature that demonstrates how a proposed regulation is compliant with this section.

SEC. 2. Section 40440.9 is added to the Health and Safety Code, to read:

40440.9. Notwithstanding any other law, the south coast district shall not adopt any regulation or rule that would add more than two cents ($0.02) to the cost of a gallon of gasoline, add two thousand dollars ($2,000) or more to the cost to build any home, or add five thousand dollars ($5,000) or more to the cost to build a nonresidential building. The south coast district shall submit data to the relevant policy committees of the Legislature that demonstrates how a proposed regulation is compliant with this section.

SEC. 3. If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made

pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

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ASSEMBLY BILL No. 2313

Introduced by Assembly Member Berman

February 19, 2026

An act to add Section 785.3 to the Public Utilities Code, relating to energy.

LEGISLATIVE COUNSEL'S DIGEST

AB 2313, as introduced, Berman. Gas corporations: gas distribution service line replacements: alternatives.

Existing law vests the Public Utilities Commission with regulatory authority over public utilities, including gas corporations. Existing law requires, until January 1, 2031, gas corporations to submit to the commission an annual map that includes, among other things, the location of all potential gas distribution line replacement projects identified in its distribution integrity management plan and any foreseeable gas distribution pipeline replacements.

This bill, the Home Energy Choice Act, would require the commission, in a new or existing proceeding, to require each gas corporation to offer a Gas Distribution Service Line Replacement Alternatives Program, on or before January 1, 2028, to provide gas customers served by a gas distribution service line, planned or forecasted for replacement over the next 5 years, or prioritized for replacement by the commission, with a monetary incentive to deploy gas distribution service line replacement alternatives, as defined, and cease gas service to avoid the gas distribution service line replacement, as specified.

Under existing law, a violation of any order, decision, rule, direction, demand, or requirement of the commission is a crime.

Because a violation of a commission action implementing the bill's requirements would be a crime, the bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

Vote: majority. Appropriation: no. Fiscal committee: yes. State-mandated local program: yes.

The people of the State of California do enact as follows:

SECTION 1. This act shall be known, and may be cited, as the "Home Energy Choice Act."

SEC. 2. (a) The Legislature finds and declares all of the following:

(1) Natural gas demand is already declining as California transitions away from natural gas to zero-emission electric alternatives to achieve the state's energy efficiency, climate, and air quality objectives.

(2) Without active planning and management, reduced demand for natural gas will result in higher gas rates, with a disproportionate burden on vulnerable customers.

(3) Alternatives that avoid new capital investment in the gas system should be pursued where feasible and cost-effective.

(4) California gas corporations replace thousands of gas distribution service lines each year, with the significant majority connected to a single gas meter.

(5) Gas distribution service line replacement costs are paid by all gas customers as capital costs over a period of at least 55 years.

(6) Gas customers are currently not given a choice regarding the replacement of service lines connected to their homes.

(7) A monetary incentive for a gas customer to voluntarily replace their gas appliances with electric alternatives in lieu of a planned service line replacement benefits the customer by helping enable the purchase of new zero-emission appliances, other gas ratepayers by avoiding the long-term capital costs of service line replacements, and California's climate and air quality objectives by reducing reliance on fossil gas combustion.

(b) It is the intent of the Legislature that the Public Utilities Commission establish a program requiring gas corporations to offer gas customers the choice to replace their gas appliances with electric alternatives and cease gas service as an alternative to a planned service line replacement through a monetary incentive no greater than the average avoided cost of service line replacement.

SEC. 3. Section 785.3 is added to the Public Utilities Code, to read:

785.3. (a) For purposes of this section, all of the following definitions apply:

(1) "Disadvantaged community" means a community identified pursuant to Section 39711 of the Health and Safety Code.

(2) "Eligible gas customer" means a gas customer served by a gas distribution service line that is planned or forecasted for replacement during the next five years or prioritized for replacement by the commission based on characteristics, including, but not limited to, age or material of the gas distribution service line.

(3) "Gas distribution service line" has the same meaning as "service line" as set forth in Section 192.3 of Title 49 of the Code of Federal Regulations.

(4) "Gas distribution service line replacement alternatives" means measures to provide gas customers with energy service that does not require connecting to the gas system, including replacement of gas appliances with electric alternatives, any wiring, panel upgrades, or remediation necessary for electric appliance installation, circuit sharing or other devices that can avoid a panel upgrade, and energy efficiency.

(5) "Load-serving entity" has the same meaning as defined in Section 380.

(6) "Program" means the Gas Distribution Service Line Replacement Alternatives Program.

(b) In a new or existing proceeding, the commission shall require each gas corporation to offer a Gas Distribution Service Line Replacement Alternatives Program on or before January 1, 2028. The program shall provide eligible gas customers with a monetary incentive to deploy gas distribution service line replacement alternatives and cease gas service to avoid a planned or forecasted gas distribution service line replacement.

(c) Costs approved for gas distribution service line replacement by the commission may be used to fund incentives for gas distribution service line replacement alternatives. The cost-recovery period for redirected funds shall be no longer than 10 years.

(d) In administering the program, the commission shall establish all of the following:

(1) A standard incentive level for the deployment of gas distribution service line replacement alternatives no greater than the average lifetime cost of an avoided gas distribution service line replacement.

(2) Notice requirements for eligible gas customers. Notice shall include information about the climate and health benefits of zero-emission buildings, and the potential availability of additional incentives from other gas corporation and nongas corporation programs.

(3) A process for program implementation, including, but not limited to, potential use of a third-party program administrator, development of a preapproved list of contractors, development of a program internet website through which gas customers can determine their eligibility for the program, coordination with electrical corporations, local publicly owned electric utilities, load-serving entities, and local governments, and a requirement that a gas customer receiving incentives for gas distribution service line replacement alternatives close their gas account and request removal of their gas meter.

(4) Additional outreach requirements for gas distribution service line replacements in disadvantaged communities.

(5) Coordination with low-income energy efficiency and electrification programs to maximize available incentives for low-income customers.

SEC. 4. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within

the meaning of Section 6 of Article XIII B of the California Constitution.

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AMENDED IN ASSEMBLY MARCH 19, 2026

CALIFORNIA LEGISLATURE—2025–26 REGULAR SESSION

ASSEMBLY BILL No. 2752

Introduced by Assembly Member Ávila Farías

February 20, 2026

An act *to add Section 40004.5 to the Health and Safety Code,* relating to air pollution.

LEGISLATIVE COUNSEL'S DIGEST

AB 2752, as amended, Ávila Farías. ~~Air quality management districts: oversight.~~ *Bay Area Air Quality Management District and South Coast Air Quality Management District: policies: oil refineries.*

Existing law establishes the Bay Area Air Quality Management District, which is vested with the authority to regulate air emissions located in the boundaries of the Counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara and portions of the Counties of Solano and Sonoma.

Under existing law, the Lewis-Presley Air Quality Management Act establishes the South Coast Air Quality Management District in those portions of the Counties of Los Angeles, Orange, Riverside, and San Bernardino included within the South Coast Air ~~Basin,~~ *Basin* as the local agency with the responsibility for comprehensive air pollution control within the basin.

~~This bill would state the intent of the Legislature to enact future legislation to ensure accountability and oversight of the Bay Area Air Quality Management District and the South Coast Air Quality Management District to ensure the rules and regulations they adopt are cost effective, affordable, and achievable.~~

This bill would require the Bay Area Air Quality Management District and the South Coast Air Quality Management District to analyze all of their policies that have been adopted and all future policies that they are considering adopting that impact oil refineries located in their districts and determine the cost of compliance, potential cost to consumers, impacts on state and local tax revenue, and refinery employment. By requiring a higher level of service of local entities, the bill would impose a state-mandated local program.

This bill would make legislative findings and declarations as to the necessity of a special statute for the Bay Area Air Quality Management District and the South Coast Air Quality Management District.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that, if the Commission on State Mandates determines that the bill contains costs mandated by the state, reimbursement for those costs shall be made pursuant to the statutory provisions noted above.

Vote: majority. Appropriation: no. Fiscal committee: ~~no~~ *yes*. State-mandated local program: ~~no~~ *yes*.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares all of the following:

(a) With one oil refinery closed in 2025 and another scheduled to close in April 2026, safe, reliable, and affordable fuel supply is of statewide importance for the 26,800,000 gasoline-powered vehicles registered in California, the state's residents, and California's economy.

(b) In April 2025, Governor Gavin Newsom sent a letter to the State Energy Resources Conservation and Development Commission (CEC) directing the CEC to work closely with oil refineries on short-term and long-term planning to ensure Californians have access to affordable and reliable supply of transportation fuels.

(c) In June 2025, the CEC responded to the Governor's letter with several recommendations to stabilize gasoline supply. The report highlighted inconsistencies and high compliance costs of

California's system to allow the state, local governments, and regional air quality districts to adopt regulations that impact oil refineries. To address this, the letter recommended that the Legislature strategically align regulations and permitting processes across all levels of government to achieve state policy goals.

(d) With more than 30 oil refineries in California in the 1980s having been reduced to six major refineries serving 28 million California drivers, an adequate supply of gasoline is of statewide importance.

(e) Restrictive state regulations and legislative policies that have been adopted over the past decades have resulted in oil refineries leaving the state. In addition, regional and local governments have adopted restrictive policies that impose significant compliance costs on refineries, impeding their ability to meet the demand for California drivers. Specifically, the Bay Area Air Quality Management District and the South Coast Air Quality Management District have adopted policies and requirements over the last six years that have cost refineries between $4,500,000,000 and $6,600,000,000.

SEC. 2. Section 40004.5 is added to the Health and Safety Code, to read:

40004.5. The Bay Area Air Quality Management District and the South Coast Air Quality Management District shall analyze all of their policies that have been adopted and all future policies that they are considering adopting that impact oil refineries located in their districts and determine the cost of compliance, potential cost to consumers, impacts on state and local tax revenue, and refinery employment.

SEC. 3. The Legislature finds and declares that a special statute is necessary and that a general statute cannot be made applicable within the meaning of Section 16 of Article IV of the California Constitution because of the potentially deleterious effect of regulations imposed on oil refineries by the Bay Area Air Quality Management District and South Coast Air Quality Management District and the impact of those regulations on the state's fuel supply.

SEC. 4. If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made

pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

~~SECTION 1. It is the intent of the Legislature to enact subsequent legislation to ensure accountability and oversight of the Bay Area Air Quality Management District and the South Coast Air Quality Management District to ensure the rules and regulations they adopt are cost effective, affordable, and achievable.~~

O

AMENDED IN SENATE JANUARY 14, 2026

AMENDED IN SENATE JANUARY 5, 2026

AMENDED IN SENATE MAY 7, 2025

SENATE BILL No. 299

Introduced by Senator Cabaldon
(Coauthor: Senator Pérez)

February 10, 2025

An act to ~~amend~~ *add* Section ~~21080.69 of~~ *21080.68 to* the Public Resources Code, relating to environmental quality.

LEGISLATIVE COUNSEL'S DIGEST

SB 299, as amended, Cabaldon. California Environmental Quality Act: exemption: day care center: *family daycare home:* zoning.

The California Environmental Quality Act (CEQA) requires a lead agency, as defined, to prepare, or cause to be prepared, and certify the completion of an environmental impact report on a project that it proposes to carry out or approve that may have a significant effect on the environment or to adopt a negative declaration if it finds that the project will not have that effect. CEQA also requires a lead agency to prepare a mitigated negative declaration for a project that may have a significant effect on the environment if revisions in the project would avoid or mitigate that effect and there is no substantial evidence that the project, as revised, would have a significant effect on the environment.

Existing law exempts specified projects from CEQA, including a project that consists exclusively of a day care center, as defined, that is not located in a residential area.

This bill would ~~instead provide that the above exemption from CEQA applies if the day care center is not located on a parcel of land zoned exclusively for residential use. The bill would additionally~~ exempt from CEQA a project that consists exclusively of a *day care center or a* family daycare home, as ~~defined.~~ *defined, that is located on a parcel of land zoned exclusively for residential use, except as provided.* By imposing additional duties on a lead agency to determine the applicability of these exemptions, the bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

Vote: majority. Appropriation: no. Fiscal committee: yes. State-mandated local program: yes.

The people of the State of California do enact as follows:

~~SECTION 1. Section 21080.69 of the Public Resources Code is amended to read:~~

~~21080.69. (a) Except as provided in subdivision (b), this division does not apply to any of the following projects:~~

~~(1) A project that consists exclusively of a day care center, as defined in Section 1596.76 of the Health and Safety Code, that is not located on a parcel of land zoned exclusively for residential use.~~

~~(2) A project that consists exclusively of a family daycare home, as defined in Section 1596.78 of the Health and Safety Code.~~

~~(3) A project that consists exclusively of a rural health clinic, as defined by Section 1396(d)(*l*)(1) of Title 42 of the United States Code, or a federally qualified health center, as defined by Section 1396(d)(*l*)(2) of Title 42 of the United States Code, if the facility is less than 50,000 square feet in total space.~~

~~(4) A project that consists exclusively of a nonprofit food bank or food pantry, defined as a nonprofit organization that is exempt from federal income taxation under Section 501(c)(3) of the Internal Revenue Code of 1986, as amended (26 U.S.C. Sec. 501(c)(3)), that solicits, stores, and distributes sufficient food to~~

~~their defined service area, if the project is located on a site that is zoned exclusively for industrial uses.~~

~~(5) A project that consists exclusively of a facility for advanced manufacturing, as defined in Section 26003, if the project is located on a site zoned exclusively for industrial uses.~~

~~(b) This section does not apply to a project located on natural and protected lands, as defined pursuant to Section 21067.5.~~

SECTION 1. Section 21080.68 is added to the Public Resources Code, to read:

21080.68. (a) This division does not apply to the following projects:

(1) A project that consists exclusively of a day care center, as defined in Section 1596.76 of the Health and Safety Code, that is located on a parcel of land zoned exclusively for residential use.

(2) A project that consists exclusively of a family daycare home, as defined in Section 1596.78 of the Health and Safety Code, that is located on a parcel of land zoned exclusively for residential use.

(b) This section does not apply to a project located within 3,200 feet of a facility that actively extracts or refines oil or natural gas.

(c) This section does not apply to a project located on natural and protected lands, as defined pursuant to Section 21067.5.

SEC. 2. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

O

AMENDED IN SENATE MARCH 25, 2026

SENATE BILL No. 954

Introduced by Senator Blakespear
(Principal coauthor: Assembly Member Connolly)
(Coauthors: Senators Allen, Cortese, McGuire, Pérez, and Reyes)

February 2, 2026

~~An act relating to environmental quality.~~ *An act to amend Sections 21067.5, 21080.085, and 21080.69 of, to add Section 21069.5 to, and to add Chapter 8 (commencing with Section 21189.100) to Division 13 of, the Public Resources Code, relating to environmental quality.*

LEGISLATIVE COUNSEL'S DIGEST

SB 954, as amended, Blakespear. ~~California Environmental Quality Act: exemptions: natural and protected lands: advanced manufacturing: childcare facilities.~~ *California Environmental Quality Act: advanced manufacturing facilities: exemption.*

The California Environmental Quality Act (CEQA) requires a lead agency, as defined, to prepare, or cause to be prepared, and certify the completion of, an environmental impact report on a project that it proposes to carry out or approve that may have a significant effect on the environment or to adopt a negative declaration if it finds that the project will not have that effect. CEQA also requires a lead agency to prepare a mitigated negative declaration for a project that may have a significant effect on the environment if revisions in the project would avoid or mitigate that effect and there is no substantial evidence that the project, as revised, would have a significant effect on the environment.

CEQA defines various terms, including "natural and protected lands" for its purposes.

This bill would revise the definition of that term to include habitats for protected species identified as candidate, sensitive, or species of special status by state or federal agencies.

CEQA exempts from its requirement projects that consist exclusively of a day care center that is not located in a residential area and projects that consist exclusively of an advanced manufacturing facility located on a site zoned exclusively for industrial uses.

This bill would additionally exempt projects consisting exclusively of a family day care home, as defined. The bill would, for the exemption for the day care center and family day care home, instead, require the projects for those facilities not be located in an area zoned for industrial use or within 3,200 feet of a facility that actively extracts or refines oil or natural gas in order for the exemption to apply. The bill would revise the exemption for advanced manufacturing facility projects to require those projects to meet certain requirements and for the Governor to certify the project, as provided. The bill would require an applicant of an advanced manufacturing project that is exempted from CEQA under the bill's requirement to enter into a community benefits agreement, as provided, and to comply with certain labor requirements, as provided. The bill would require to lead agency, before determining that an advanced manufacturing project is exempt from CEQA, to hold at least one public hearing on the project and to ensure that the applicant complies with the requirement to enter into a community benefits agreement and the labor requirements.

CEQA also exempts from its requirements rezoning the implements of the schedule of actions contained in an approved housing element. CEQA provides that this exemption does not apply to rezoning that would allow for the construction of certain facilities, including oil and gas infrastructure.

This bill would provide that the above exemption also does not apply to rezoning that would allow for the construction of a tourism facility, as defined, and would repeal the exception from the exemption for rezoning that would allow for the construction of oil and gas infrastructures.

Because the bill would imposes additional duties on a lead agency, this bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

~~The California Environmental Quality Act (CEQA) requires a lead agency, as defined, to prepare, or cause to be prepared, and certify the completion of an environmental impact report on a project that it proposes to carry out or approve that may have a significant effect on the environment or to adopt a negative declaration if it finds that the project will not have that effect. CEQA also requires a lead agency to prepare a mitigated negative declaration for a project that may have a significant effect on the environment if revisions in the project would avoid or mitigate that effect and there is no substantial evidence that the project, as revised, would have a significant effect on the environment. CEQA exempts specified projects, including, among other things, projects for advanced manufacturing and childcare facilities, as provided, from its provisions.~~

~~This bill would provide that it is the intent of the Legislature to enact subsequent legislation that would amend provisions of CEQA relating to natural and protected lands, childcare facilities, and advanced manufacturing, among other changes, as provided.~~

Vote: majority. Appropriation: no. Fiscal committee: ~~no~~ *yes*. State-mandated local program: ~~no~~ *yes*.

The people of the State of California do enact as follows:

SECTION 1. Section 21067.5 of the Public Resources Code is amended to read:

21067.5. "Natural and protected lands" means sites located within any of the following locations:

(a) The state park system, as described in Article 1 (commencing with Section 5001) of Chapter 1 of Division 5.

(b) A wilderness area, as defined in Section 5093.32.

(c) A marine protected area, as defined in Section 2852 of the Fish and Game Code.

(d) The national park system, as defined in Section 100102 of Title 54 of the United States Code.

(e) A national recreation area.

(f) A national monument.

(g) The national wild and scenic rivers system, as defined in Section 1273 of Title 16 of the United States Code.

(h) Any ecological reserve or wildlife management area acquired and managed by the Department of Fish and Wildlife pursuant to Article 2 (commencing with Section 1525) or Article 4 (commencing with Section 1580) of Chapter 5 of Division 2 of the Fish and Game Code.

(i) A hazardous waste site that is listed pursuant to Section 65962.5 of the Government Code or a hazardous waste site designated by the Department of Toxic Substances Control pursuant to Section 25356 of the Health and Safety Code, unless either of the following apply:

(1) The site is an underground storage tank site that received a uniform closure letter issued pursuant to subdivision (g) of Section 25296.10 of the Health and Safety Code based on closure criteria established by the State Water Resources Control Board for the use proposed by the project. This paragraph does not alter or change the conditions to remove a site from the list of hazardous waste sites listed pursuant to Section 65962.5 of the Government Code.

(2) The State Department of Public Health, State Water Resources Control Board, Department of Toxic Substances Control, or a local agency making a determination pursuant to subdivision (c) of Section 25296.10 of the Health and Safety Code has otherwise determined that the site is suitable for the use proposed by the project.

(j) Within a regulatory floodway as determined by the Federal Emergency Management Agency in any official maps published by the Federal Emergency Management Agency, unless the development has received a no-rise certification in accordance with Section 60.3(d)(3) of Title 44 of the Code of Federal Regulations.

(k) Lands under conservation easement.

(*l*) On, or within a 300-foot radius of, a wetland, as defined in the United States Fish and Wildlife Service Manual, Part 660 FW 2 (June 21, 1993).

(m) An environmentally sensitive area within the coastal zone, as defined in Section 30107.5.

(n) Lands identified for conservation in an adopted natural community conservation plan pursuant to the Natural Community Conservation Planning Act (Chapter 10 (commencing with Section 2800) of Division 3 of the Fish and Game Code) or habitat

conservation plan pursuant to the federal Endangered Species Act of 1973 (16 U.S.C. Sec. 1531 et seq.), or other adopted natural resource protection plan.

(o) Within a very high fire hazard severity zone, as determined by the Department of Forestry and Fire Protection pursuant to Section 51178 of the Government Code, or within the state responsibility area, as defined in Section 4102. This subdivision does not apply to sites that have adopted fire hazard mitigation measures pursuant to existing building standards or state fire mitigation measures applicable to the development, including, but not limited to, standards established under all of the following provisions or their successor provisions:

(1) Section 4291 of this code or Section 51182 of the Government Code, as applicable.

(2) Section 4290.

(3) Chapter 7A (commencing with Section 701A.1) of Part 2 of Title 24 of the California Code of Regulations.

(p) Either prime farmland or farmland of statewide importance, as defined pursuant to the United States Department of Agriculture land inventory and monitoring criteria, as modified for California, and designated on the maps prepared by the Farmland Mapping and Monitoring Program of the Department of Conservation, or land zoned or designated for agricultural protection or preservation by a local ballot measure that was approved by the voters of that jurisdiction.

(q) Habitat for protected species identified as candidate, sensitive, or species of special status by state or federal agencies, fully protected species, or species protected by the federal Endangered Species Act of 1973 (16 U.S.C. Sec. 1531 et seq.), the California Endangered Species Act (Chapter 1.5 (commencing with Section 2050) of Division 3 of the Fish and Game Code), or the Native Plant Protection Act (Chapter 10 (commencing with Section 1900) of Division 2 of the Fish and Game Code).

SEC. 2. Section 21069.5 is added to the Public Resources Code, to read:

21069.5. "Tourism facility" means any of the following:

(a) A hotel, resort, or other transient lodging facility. For purposes of this subdivision, "other transient lodging" does not include either of the following:

(1) A residential hotel, as defined in Section 50519 of the Health and Safety Code.

(2) After the issuance of a certificate of occupancy, a resident's use or marketing of a unit as short-term lodging, as defined in Section 17568.8 of the Business and Professions Code, in a manner consistent with local law.

(b) An event center, as defined in Section 40717.8 of the Health and Safety Code, that is at least 100,000 square feet or has a seating capacity of at least 10,000 seats.

(c) An airport.

SEC. 3. Section 21080.085 of the Public Resources Code is amended to read:

21080.085. (a) This division does not apply to a rezoning that implements the schedule of actions contained in an approved housing element pursuant to subdivision (c) of Section 65583 of the Government Code.

(b) (1) Subdivision (a) does not apply to either of the following:

(A) A rezoning that would allow for the construction of a distribution center or for ~~oil and gas infrastructure.~~ *a tourism facility.*

(B) A rezoning that would allow for construction to occur within the boundaries of any natural and protected lands as defined pursuant to Section 21067.5.

(2) (A) (i) Subdivision (a) applies to a rezoning that contains within its boundaries any natural and protected lands as defined pursuant to Section 21067.5 if those natural and protected lands are excluded from the rezoning.

(ii) The definition of "natural and protected lands" described in clause (i) does not include the lands described in subdivision (p) of Section 21067.5.

(B) The rezoning of any parcel or portions of a parcel that is excluded from a rezoning under this paragraph shall be a separate project that is subject to this division.

SEC. 4. Section 21080.69 of the Public Resources Code is amended to read:

21080.69. (a) Except as provided in subdivision (b), this division does not apply to any of the following projects:

(1) A project that consists exclusively of *either* a day care center, as defined in Section 1596.76 of the Health and Safety Code, ~~that~~ *or a family daycare home, as defined in Section 1596.78 of the*

Health and Safety Code, and the project is not located in ~~a residential area.~~ *either of the following:*

(A) An area zoned for industrial use.

(B) An area within 3,200 feet of a facility that actively extracts or refines oil or natural gas.

(2) A project that consists exclusively of a rural health clinic, as defined by Section 1396(d)(*l*)(1) of Title 42 of the United States Code, or a federally qualified health center, as defined by Section 1396(d)(*l*)(2) of Title 42 of the United States Code, if the facility is less than 50,000 square feet in total space.

(3) A project that consists exclusively of a nonprofit food bank or food pantry, defined as a nonprofit organization that is exempt from federal income taxation under Section 501(c)(3) of the Internal Revenue Code of 1986, as amended (26 U.S.C. Sec. 501(c)(3)), that solicits, stores, and distributes sufficient food to their defined service area, if the project is located on a site that is zoned exclusively for industrial uses.

~~(4) A project that consists exclusively of a facility for advanced manufacturing, as defined in Section 26003, if the project is located on a site zoned exclusively for industrial uses.~~

(b) This section does not apply to a project located on natural and protected lands, as defined pursuant to Section 21067.5.

SEC. 5. Chapter 8 (commencing with Section 21189.100) is added to Division 13 of the Public Resources Code, to read:

CHAPTER 8. ENVIRONMENTAL LEADERSHIP PROGRAM FOR ADVANCED MANUFACTURING

21189.100. (a) The Legislature finds and declares both of the following:

(1) California is first in the nation in manufacturing output and remains the global center for innovation, technology, and entrepreneurship.

(2) The state's manufacturing sector spans advanced electronics, semiconductors, clean energy technologies, decarbonization, and climate resilience. These industries are essential to economic resilience, supply chain security, and climate progress.

(b) It is the intent of the Legislature to streamline manufacturing for advanced manufacturing that deploys cutting-edge technologies to significantly reduce environmental impacts, to increase resource

use efficiency compared to existing industry standards in California, and to promote development of clean energy and other manufacturing industries that lead to an abundant future for all Californians.

21189.101. For purposes of this chapter, the following definitions apply:

(a) "Advanced manufacturing facility" means a facility used for advanced manufacturing, as defined in Section 26003, and is used exclusively for final tier manufacturing of any of the following:

(1) ____.

(2) ____.

(3) ____.

(b) "Advanced manufacturing facility project" or "project" means a project for the construction and operation of an advanced manufacturing facility.

(c) "Applicant" means a person, or a public or private entity or its affiliates, and its successors, heirs, or assignees, who undertakes or proposes an advanced manufacturing facility project.

(d) "Disadvantaged community" means any of the following:

(1) A disadvantaged community identified pursuant to Section 39711 of the Health and Safety Code.

(2) A disadvantaged unincorporated community as defined in Section 65302.10 of the Government Code.

(3) A census tract receiving the highest 15 percentile of the CalEnviroScreen Pollution Burden percentile score.

(e) (1) "Final tier manufacturing" means the stage of manufacturing that does any of the following:

(A) Performs the final assembly of components, subassembly, or materials into a completed, market-ready product.

(B) Integrates hardware or software, or other financial systems necessary for the product's intended use.

(C) Conducts final quality control testing, inspection, certification, or validation required for sale or distribution.

(D) Packages or otherwise prepares the completed product for sale or distribution.

(2) "Final tier manufacturing" does not include either of the following:

(A) The production of raw materials.

(B) The manufacture of intermediate components or subassembly of intermediate components that are not sold or distributed as complete, end-use products.

(f) "Office" means the Office of Land Use and Climate Innovation.

(g) "Sensitive receptor" has the same meaning as set forth in Section 65098 of the Government Code.

21189.102. Subject to Section 21189.105, this division does not apply to an advanced manufacturing facility project that is certified by the Governor pursuant to Section 21189.104 and meets all of the following criteria:

(a) The project is located on a site zoned exclusively for heavy industrial uses as of January 1, 2026.

(b) The project is not located within 1,600 feet of a sensitive receptor.

(c) The project is not located within 1,000 feet of a disadvantaged community.

(d) The project does not exceed any of the following operational or construction emissions limits:

(1) Fifty-four pounds per day or 10 tons per year of reactive organic gases, whichever is lower.

(2) Fifty-four pounds per day or 10 tons per year of oxides of nitrogen, whichever is lower.

(3) Eighty pounds per day or 14.6 tons per year, whichever is lower, of particulate matter less than 10 microns in diameter.

(4) One hundred thirty-seven pounds per day or 25 tons per year, whichever is lower, of oxides of sulfur.

(5) Five hundred forty-eight pounds per day or 100 tons per year, whichever is lower, of carbon monoxide.

(e) The project is compliant with a quality community risk reduction plan or demonstrates an increased cancer risk of no more than 10 in one million and an increase in noncancer risk of less than 1.0 on the hazard index for both chronic and acute exposure for receptors within 1,000 feet radius of the fence of the advanced manufacturing facility.

(f) The project does not cause significant adverse impacts to tribal cultural resources unless there is a documented enforceable agreement as defined in subparagraph (B) of paragraph (5) of subdivision (b) of Section 21080.66.

(g) The project is not located on natural and protected lands.

(h) The project uses zero-emission backup generation.

21189.103. An advanced manufacturing facility project is eligible for certification by the Governor if the project meets both of the following:

(a) The advanced manufacturing facility is certified as Leadership in Energy and Environmental Design gold or better by the United States Green Building Council.

(b) The applicant demonstrates that the project has significant improvements over the current industry standards for energy and water consumption, water quality impacts, specifically including reducing perfluoroalkyl or polyfuoroalkyl substances effluent as compared to industry baselines, and air quality impacts.

21189.104. (a) (1) The Governor may certify a project under this chapter if the project meets the requirements of Section 21189.103. An applicant may apply for certification of a project by the Governor under this chapter by submitting an application to the office. The applicant shall provide evidence and materials deemed necessary by the Governor demonstrating that the project meets the requirements of Section 21189.103. The applicant shall also submit the business case on why the project should be implemented.

(2) The office may charge a fee on an applicant seeking certification under this chapter for the reasonable costs incurred by the Governor's office in implementing this chapter.

(3) The office shall make evidence and materials submitted by the applicant in support of the application publicly available on its internet website at least 30 days before the Governor's decision on the application.

(b) (1) If the Governor determines to certify the project, the Governor shall submit the proposed certification and any supporting information to the Joint Legislative Budget Committee for review and concurrence or nonconcurrence.

(2) Except as provided in paragraph (3), within 30 days of receiving the determination, the Joint Legislative Budget Committee shall concur or nonconcur in writing on the determination.

(3) If the Joint Legislative Budget Committee fails to concur or nonconcur on the determination within 30 days of the submittal, the project is deemed to be certified.

21189.105. Before making a determination that a project is not subject to this division, the lead agency shall do all of the following:

(a) Hold at least one public hearing on the project.

(b) Ensure that the applicant has entered into a community benefits agreement pursuant to Section 21189.106.

(c) Ensure that the applicant complies with Section 21189.107.

21189.106. An applicant of a project that is exempt from this division under this chapter shall enter into a community benefits agreement that includes all of the following:

(a) Enforceable commitments to provide local environmental mitigation.

(b) (1) High road employment standards and job access within the community in which the project is located.

(2) The State Energy Resources Conservation and Development Commission shall develop and make available to lead agencies guidelines for evaluating whether a project applicant demonstrates high road employment standards as required pursuant to paragraph (1).

(c) Funding for, or direct implementation of, specific community improvements or amenities that may include, but are not limited to, park and playground equipment, urban greening, enhanced safety crossings, paving roads and bicycle paths, reductions in or credits for residential utility bills, and annual contributions to a nonprofit or community-based organization that awards grants to organizations delivering community-based services and amenities.

21189.107. An applicant for a project that is exempt from this division under this chapter shall comply with either of the following:

(a) (1) For a project undertaken by a public agency, the project is a public work for which prevailing wages shall be paid for purposes of Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 of the Labor Code.

(2) Except as provided in paragraph (3), for a project undertaken by a public agency, an entity shall not be prequalified or shortlisted or awarded a contract by the public agency to perform any portion of the project unless the entity provides an enforceable commitment to the public agency that the entity and its contractors and subcontractors at every tier will use a skilled and trained workforce to perform all work on the project or

contract that falls within an apprenticeable occupation in the building and construction trades.

(3) Paragraph (2) does not apply if the project will be covered by a project labor agreement that will bind all contractors and subcontractors at every tier performing work on the project to use a skilled and trained workforce and provide for enforcement of that obligation through an arbitration procedure.

(b) For a project undertaken by a private entity, the applicant shall do all of the following:

(1) Certify to the lead agency that either of the following is true:

(A) The entirety of the project is a public work for purposes of Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 of the Labor Code.

(B) (i) If the project is not in its entirety a public work, all construction workers employed on the project will be paid at least the general prevailing rate of per diem wages for the type of work and geographic area, as determined by the Director of Industrial Relations pursuant to Sections 1773 and 1773.9 of the Labor Code, except that apprentices registered in programs approved by the Chief of the Division of Apprenticeship Standards may be paid at least the applicable apprentice prevailing rate. If the project is subject to this subparagraph, then for those portions of the project that are not a public work, all of the following shall apply:

(I) The project applicant shall ensure that the prevailing wage requirement is included in all contracts for the performance of all construction and maintenance work.

(II) All contractors and subcontractors shall pay to all construction workers employed in the execution of the work on the project or contract at least the general prevailing rate of per diem wages, except that apprentices registered in programs approved by the Chief of the Division of Apprenticeship Standards may be paid at least the applicable apprentice prevailing rate.

(III) (ia) Except as provided in sub-subclause (ic), all contractors and subcontractors shall maintain and verify payroll records pursuant to Section 1776 of the Labor Code and make those records available for inspection and copying as provided therein.

(ib) Except as provided in sub-subclause (ic), the obligation of the contractors and subcontractors at every tier to pay prevailing wages may be enforced by the Labor Commissioner through the

issuance of a civil wage and penalty assessment pursuant to Section 1741 of the Labor Code, which may be reviewed pursuant to Section 1742 of the Labor Code, within 18 months after the completion of the development, or by an underpaid worker through an administrative complaint or civil action, or by a joint labor-management committee though a civil action under Section 1771.2 of the Labor Code. If a civil wage and penalty assessment is issued, the contractor, subcontractor, and surety on a bond or bonds issued to secure the payment of wages covered by the assessment shall be liable for liquidated damages pursuant to Section 1742.1 of the Labor Code.

(ic) Sub-subclauses (ia) and (ib) do not apply if all contractors and subcontractors at every tier performing work on the project are subject to a project labor agreement that requires the payment of prevailing wages to all construction workers employed in the execution of the project or contract and provides for enforcement of that obligation through an arbitration procedure.

(ii) Notwithstanding subdivision (c) of Section 1773.1 of the Labor Code, the requirement that employer payments not reduce the obligation to pay the hourly straight time or overtime wages found to be prevailing shall not apply if otherwise provided in a bona fide collective bargaining agreement covering the worker. The requirement to pay at least the general prevailing rate of per diem wages does not preclude use of an alternative workweek schedule adopted pursuant to Section 511 or 514 of the Labor Code.

(2) Certify to the lead agency that a skilled and trained workforce will be used to perform all construction work on the project. All of the following requirements shall apply to the project:

(A) The project applicant shall require in all contracts for the performance of work that every contractor and subcontractor at every tier will individually use a skilled and trained workforce to construct and maintain the project.

(B) Every contractor and subcontractor at every tier shall use a skilled and trained workforce to construct and maintain the project.

(C) (i) Except as provided in clause (ii), the project applicant shall provide to the lead agency, on a monthly basis while the project or contract is being performed, a report demonstrating compliance with Chapter 2.9 (commencing with Section 2600) of

Part 1 of Division 2 of the Public Contract Code. A monthly report provided to the local government pursuant to this subclause shall be a public record under the California Public Records Act (Division 10 (commencing with Section 7920.000) of Title 1 of the Government Code) and shall be open to public inspection. A project applicant that fails to provide a monthly report demonstrating compliance with Chapter 2.9 (commencing with Section 2600) of Part 1 of Division 2 of the Public Contract Code shall be subject to a civil penalty of ten thousand dollars ($10,000) per month for each month for which the report has not been provided. Any contractor or subcontractor that fails to use a skilled and trained workforce shall be subject to a civil penalty of two hundred dollars ($200) per day for each worker employed in contravention of the skilled and trained workforce requirement. Penalties may be assessed by the Labor Commissioner within 18 months of completion of the project using the same procedures for issuance of civil wage and penalty assessments pursuant to Section 1741 of the Labor Code, and may be reviewed pursuant to the same procedures in Section 1742 of the Labor Code. Penalties shall be paid to the State Public Works Enforcement Fund, established pursuant to Section 1771.3 of the Labor Code.

(ii) Clause (i) shall not apply if all contractors and subcontractors at every tier performing work on the project are subject to a project labor agreement that requires compliance with the skilled and trained workforce requirement and provides for enforcement of that obligation through an arbitration procedure.

(3) Certify to the lead agency that it has entered into a labor peace agreement. This paragraph applies only if the state has a proprietary interest in the project or the state is providing direct financial assistance to the project, tax credits, or tax preferences in excess of two million five hundred thousand dollars ($2,500,000).

SEC. 6. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

~~SECTION 1. It is the intent of the Legislature to enact subsequent legislation that would amend provisions of the law as~~

~~enacted by Senate Bill 131 (Chapter 24 of the Statutes of 2025), relating to natural and protected lands, childcare facilities, and advanced manufacturing, among other changes.~~

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SENATE BILL No. 1392

Introduced by Senators Cortese and Grove
(Coauthors: Senators Archuleta, Choi, Dahle, Niello, Ochoa Bogh, Richardson, Seyarto, Strickland, and Valladares)
(Coauthors: Assembly Members Alanis, Alvarez, Davies, Ellis, Gallagher, Jeff Gonzalez, Lackey, Patterson, and Michelle Rodriguez)

February 20, 2026

An act to amend Section 44011 of the Health and Safety Code, and to amend Section 259 of the Vehicle Code, relating to air pollution.

LEGISLATIVE COUNSEL'S DIGEST

SB 1392, as introduced, Cortese. Smog check: exemption: collector motor vehicles.

Existing law establishes a motor vehicle inspection and maintenance (smog check) program that is administered by the Department of Consumer Affairs. The smog check program requires inspection of motor vehicles upon initial registration, biennially upon renewal of registration, upon transfer of ownership, and in certain other circumstances. Existing law requires all motor vehicles to biennially obtain a certificate of compliance or noncompliance, as provided. Existing law exempts specified vehicles from obtaining the certificate of compliance or noncompliance, including, among others, all motor vehicles manufactured before the 1976 model year. Existing law also exempts from specified portions of the smog test, both biennially and at transfer, a collector motor vehicle that is insured as a collector motor vehicle, is at least 35 model years old, complies with the exhaust emissions standards for that motor vehicle's class and model year as prescribed by the department, and passes a functional inspection of the fuel cap and a visual inspection for liquid fuel leaks. Existing law defines collector motor vehicle for this purpose to mean a motor vehicle owned

by a collector, as defined, used primarily in shows, parades, charitable functions, and historical exhibitions for display, maintenance, preservation, and not used primarily for transportation.

This bill would redefine collector motor vehicle to mean a vehicle that is at least 35 years old, is used primarily in shows, parades, charitable functions, and historical exhibitions, as provided, and is not used as the owner's primary mode of transportation, and is insured as a collector motor vehicle, as specified. The bill would exempt a collector motor vehicle manufactured before the 1981 model year from the requirement to obtain a certificate of compliance or noncompliance. The bill would extend the applicability of this exemption by one model year each year, beginning on and after January 1, 2028, until the final extension takes effect on and after January 1, 2032, that would exempt a collector motor vehicle manufactured before the 1986 model year from the requirement to obtain the certificate of compliance or noncompliance.

Vote: majority. Appropriation: no. Fiscal committee: yes. State-mandated local program: no.

The people of the State of California do enact as follows:

SECTION 1. Section 44011 of the Health and Safety Code is amended to read:

44011. (a) All motor vehicles powered by internal combustion engines that are registered within an area designated for program coverage shall be required biennially to obtain a certificate of compliance or noncompliance, except for the following:

(1) All motorcycles until the department, pursuant to Section 44012, implements test procedures applicable to motorcycles.

(2) All motor vehicles that have been issued a certificate of compliance or noncompliance or a repair cost waiver upon a change of ownership or initial registration in this state during the preceding six months.

(3) All motor vehicles manufactured ~~prior to~~ *before* the 1976 ~~model-year.~~ *model year.*

(4) (A) Except as provided in subparagraph (B), all motor vehicles four or less ~~model-years~~ *model years* old.

(B) (i) Beginning January 1, 2005, all motor vehicles six or less ~~model-years~~ *model years* old, unless the state board finds that providing an exception for these vehicles will prohibit the state

from meeting the requirements of Section 176(c) of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.) or the state's commitments with respect to the state implementation plan required by the federal Clean Air Act.

(ii) Notwithstanding clause (i), beginning January 1, 2019, all motor vehicles eight or less ~~model-years~~ *model years* old, unless the state board finds that providing an exception for these vehicles will prohibit the state from meeting the requirements of Section 176(c) of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.) or the state's commitments with respect to the state implementation plan required by the federal Clean Air Act.

(iii) Clause (ii) does not apply to a motor vehicle that is seven ~~model-years~~ *model years* old in year 2018 for which a certificate of compliance has been obtained.

(C) All motor vehicles excepted by this paragraph shall be subject to testing and to certification requirements as determined by the department, if any of the following apply:

(i) The department determines through remote sensing activities or other means that there is a substantial probability that the vehicle has a tampered emission control system or would fail for other cause a smog check test as specified in Section 44012.

(ii) The vehicle was previously registered outside this state and is undergoing initial registration in this state.

(iii) The vehicle is being registered as a specially constructed vehicle.

(iv) The vehicle has been selected for testing pursuant to Section 44014.7 or any other provision of this chapter authorizing out-of-cycle testing.

(D) This paragraph does not apply to diesel-powered vehicles.

(5) In addition to the vehicles exempted pursuant to paragraph (4), any motor vehicle or class of motor vehicles exempted pursuant to subdivision (c) of Section 44024.5. It is the intent of the Legislature that the department, pursuant to the authority granted by this paragraph, exempt at least 15 percent of the lowest emitting motor vehicles from the biennial smog check inspection.

(6) All motor vehicles that the department determines would present prohibitive inspection or repair problems.

(7) Any vehicle registered to the owner of a fleet licensed pursuant to Section 44020 if the vehicle is garaged exclusively

outside the area included in program coverage, and is not primarily operated inside the area included in program coverage.

(8) (A) All diesel-powered vehicles manufactured ~~prior to~~ *before* the 1998 ~~model year.~~ *model year.*

(B) All diesel-powered vehicles that have a gross vehicle weight rating of 8,501 to 10,000 pounds, inclusive, until the department, in consultation with the state board, pursuant to Section 44012, implements test procedures applicable to these vehicles.

(C) All diesel-powered vehicles that have a gross vehicle weight rating from 10,001 pounds to 14,000 pounds, inclusive, until the state board and the Department of Motor Vehicles determine the best method for identifying these vehicles, and until the department, in consultation with the state board, pursuant to Section 44012, implements test procedures applicable to these vehicles.

(D) All diesel-powered vehicles that have a gross vehicle weight rating of 14,001 pounds or greater.

(9) A collector motor vehicle manufactured before the 1981 model year.

(10) On and after January 1, 2028, a collector motor vehicle manufactured before the 1982 model year.

(11) On and after January 1, 2029, a collector motor vehicle manufactured before the 1983 model year.

(12) On and after January 1, 2030, a collector motor vehicle manufactured before the 1984 model year.

(13) On and after January 1, 2031, a collector motor vehicle manufactured before the 1985 model year.

(14) On and after January 1, 2032, a collector motor vehicle manufactured before the 1986 model year.

(b) Vehicles designated for program coverage in enhanced areas shall be required to obtain inspections from appropriate smog check stations operating in enhanced areas.

(c) For purposes of subdivision (a), a collector motor ~~vehicle, as defined in Section 259 of the Vehicle Code,~~ *vehicle* is exempt from those portions of the test required by subdivision (f) of Section 44012 if the collector motor vehicle meets all of the following criteria:

(1) Submission of proof that the motor vehicle is insured as a collector motor vehicle, as shall be required by regulation of the bureau.

(2) The motor vehicle is at least 35 ~~model-years~~ *model years* old.

(3) The motor vehicle complies with the exhaust emissions standards for that motor vehicle's class and ~~model-year~~ *model year* as prescribed by the department, and the motor vehicle passes a functional inspection of the fuel cap and a visual inspection for liquid fuel leaks.

(d) For purposes of this section, "collector motor vehicle" has the same meaning as defined in Section 259 of the Vehicle Code.

SEC. 2. Section 259 of the Vehicle Code is amended to read:

259. "Collector motor vehicle" means a motor vehicle ~~owned by a collector, as defined in subdivision (a) of Section 5051, and the motor vehicle is used primarily in shows, parades, charitable functions, and historical exhibitions for display, maintenance, and preservation, and is not used primarily for transportation.~~ *that meets all of the following criteria:*

(a) Is at least 35 model years old.

(b) Is used primarily in shows, parades, charitable functions, and historical exhibitions for display, maintenance, and preservation, and is not used as the owner's primary mode of transportation.

(c) Is insured as a collector motor vehicle with proof of insurance submitted to the department at the time of registration.

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AMENDED IN SENATE MARCH 25, 2026

SENATE BILL No. 1075

Introduced by Senator Reyes

February 13, 2026

An act to amend Section 44391.2 ~~of~~ *of, and to add Sections 44391.6, 44391.7, 44391.8, and 44391.9 to,* the Health and Safety Code, relating to air resources.

LEGISLATIVE COUNSEL'S DIGEST

SB 1075, as amended, Reyes. Air resources: toxic air contaminants: criteria air pollutants: community emissions reduction ~~programs.~~ *programs: local community emissions reduction plans.*

Existing law requires the State Air Resources Board to prepare a statewide strategy to reduce emissions of toxic air contaminants and criteria air pollutants in communities affected by a high cumulative exposure burden that includes an assessment and identification of those communities. *Existing law requires the statewide strategy to be updated at least once every 5 years.* Existing law requires the state board, based on the assessment and identification, to select locations around the state for preparation of community emissions reduction programs. *Existing law requires the assessment and identification to prioritize disadvantaged communities, as defined.* Existing law requires the regional air quality management district or the regional air pollution control district encompassing the location selected by the state board, within one year of selection, to adopt a community emissions reduction program to achieve emissions reductions for the location selected using cost-effective measures, as provided. *Existing law requires the state board to provide grants to community-based organizations for technical assistance and to support community participation in the implementation*

of the statewide strategy. Under this existing regulatory authority, the state board provides grants to development and implement local community emissions reduction plans.

~~This bill would make nonsubstantive changes to the above-described provisions.~~

This bill would revise the definition of "disadvantaged community" to include a disadvantaged unincorporated community. The bill would require the statewide strategy to be updated on or before July 1, 2027, and every 3 years thereafter. The bill would require the local community emissions reduction plans be submitted to the state board for review and approval and would authorize the state board or the relevant air district to enforce those plans. The bill would specify that a steering committee formed by an air district to assist it in the development and implementation of a community emissions reduction program remains active until the emissions objectives identified in the program are achieved. The bill would require members of the steering committee to meet certain requirements. The bill would specify eligible uses for the grants provided and would authorize the state board to audit and to take corrective action if those resources are improperly used.

This bill would require a local government with land use planning authority to align its local land use decisions, as specified, to support the goals of an approved community emissions reduction program, approved local community emissions reduction plan, or both program and plan, and the environmental justice element of the general plan of the local government and to prevent new, substantial modification or substantial expanded uses that contribute to poor air quality, as provided. The bill would authorize a local land use agency, as provided, to make a land use decision that does not align with the community emissions reduction program or local community emissions reduction plan if the decision serves an essential environmental, health, or safety need of the applicable community and there is no reasonable alternative. The bill would authorize a person living in a community with a community emissions reduction program or a local community emissions reduction plan to seek a de novo review of a land use decision that does not align with the program or plan. The bill would authorize the Attorney General to require the local land use agency to take certain actions if it finds that the challenged land use decision did not comply with those requirements. Because the bill would impose additional duties on local land use agencies, this bill would impose a state-mandated local program.

This bill would add one additional member of the governing board of an air district with a community that is in a location that has been selected for the preparation of a community emissions reduction program who is a member of a bona fide environmental justice organization or is a member of a steering committee of the air district and who is appointed by the state board, in collaboration with the steering committee. By expanding the membership of the governing board of air districts, this bill would impose a state-mandated local program. The bill would require the state board, on or before June 30, 2027, and annually thereafter, to report to the appropriate subcommittees of the budget committee of the Legislature about the progress the state board has made to implement the statewide strategy and the community emissions reduction programs. The bill would require the Secretary for Environmental Protection to periodically convene representatives of agencies and departments with the California Environmental Protection Agency to ensure coordination among agencies and departments with jurisdiction over pollution sources included in a community emissions reduction program to address concerns raised about those sources.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that with regard to certain mandates no reimbursement is required by this act for a specified reason.

With regard to any other mandates, this bill would provide that, if the Commission on State Mandates determines that the bill contains costs so mandated by the state, reimbursement for those costs shall be made pursuant to the statutory provisions noted above.

Vote: majority. Appropriation: no. Fiscal committee: ~~no~~ *yes*. State-mandated local program: ~~no~~ *yes*.

The people of the State of California do enact as follows:

SECTION 1. Section 44391.2 of the Health and Safety Code is amended to read:

44391.2. (a) For purposes of this section, the following definitions apply:

(1) "Disadvantaged community" means a community identified as disadvantaged pursuant to Section ~~39711.~~ *39711 or a*

disadvantaged unincorporated community as defined in Section 65302.10 of the Government Code.

(2) "Sensitive receptors" includes the same locations as specified in paragraph (5) of subdivision (a) of Section 42705.5.

(b) *(1)* On or before October 1, 2018, the state board shall prepare, in consultation with the Scientific Review Panel on Toxic Air Contaminants, the districts, the Office of Environmental Health Hazard Assessment, environmental justice organizations, affected industry, and other interested stakeholders, a statewide strategy to reduce emissions of toxic air contaminants and criteria air pollutants in communities affected by a high cumulative exposure burden. ~~The state board shall update the statewide strategy at least once every five years.~~ In preparing the statewide strategy, the state board shall conduct at least one public workshop in each of the northern, central, and southern parts of the state. The statewide strategy shall include criteria for the development of community emissions reduction programs. The criteria presented in the statewide strategy shall include, but are not limited to, all of the following:

~~(1)~~

(A) An assessment and identification of communities with high cumulative exposure burdens for toxic air contaminants and criteria air pollutants. The assessment shall prioritize disadvantaged communities and sensitive receptor locations based on one or more of the following:

~~(A)~~

(i) Best available modeling information.

~~(B)~~

(ii) Existing air quality monitoring information.

~~(C)~~

(iii) Existing public health data based on consultation with the Office of Environmental Health Hazard Assessment.

~~(D)~~

(iv) The monitoring results obtained pursuant to Section 42705.5.

~~(2)~~

(B) 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 identified pursuant to ~~paragraph (1).~~ *subparagraph (A).*

~~(3)~~

(C) An assessment of whether a district should update and implement the risk reduction audit and emissions reduction plan developed pursuant to Section 44391 for a facility to achieve emissions reductions commensurate with its relative contribution, if the facility's emissions either cause or significantly contribute to a material impact on a sensitive receptor location or disadvantaged community, based on data available for assessment pursuant to ~~paragraph (1)~~ *subparagraph (A)* or other relevant data.

~~(4)~~

(D) An assessment of the existing and available measures for reducing emissions from the contributing sources or categories of sources identified pursuant to ~~paragraph (2),~~ *subparagraph (B),* including, but not limited to, best available control technology, as defined in Section 40405, best available retrofit control technology, as defined in Section 40406, and best available control technology for toxic air contaminants, as defined in Section 39666.

(2) On or before July 1, 2027, and every three years thereafter, the state board shall update the statewide strategy prepared pursuant to paragraph (1).

(c) (1) Based on the assessment and identification pursuant to *subparagraph (A) of* paragraph (1) of subdivision ~~(b),~~ *(b) and updates to the assessment and identification,* the state board shall select, concurrent with the statewide strategy, locations around the state for preparation of community emissions reduction programs. The state board shall select additional locations annually thereafter, as appropriate.

(2) (A) Within ~~one year~~ *two years* of the state board's selection, the district encompassing a location selected pursuant to this subdivision shall adopt, in consultation with the state board, individuals, community-based organizations, affected sources, and local governmental bodies in the affected community, a community emissions reduction program to achieve emissions reductions for the location selected using cost-effective measures identified pursuant to ~~paragraph (4)~~ *subparagraph (D) of paragraph (1)* of subdivision (b).

(B) A district, with the agreement of the state board and a majority of the persons who are designated by the district to

participate in the development and adoption of the community emissions reduction program, may take up to one additional year to adopt a community emissions reduction program pursuant to subparagraph (A).

(3) The community emissions reduction programs shall be consistent with the statewide strategy and include emissions reduction targets, specific reduction measures, a schedule for the implementation of measures, and an enforcement plan.

(4) Local community emissions reduction plans developed in accordance with the statewide strategy prepared pursuant to subdivision (b), also known as the "Community Air Protection Blueprint" or "Blueprint" pursuant to Section 44391.5, shall be consistent with the statewide strategy.

~~(4)~~

(5) The community emissions reduction programs *and local community emissions reduction plans* shall be submitted to the state board for review and approval within 60 days of the receipt of the program. Programs that are rejected shall be resubmitted within 30 days. To the extent that a program, in whole or in part, is not approvable, the state board shall initiate a public process to discuss options for achieving an approvable program. Concurrent with the public process to achieve an approvable program, the state board shall develop and implement the applicable mobile source elements in the draft program to commence achievement of emissions reductions.

~~(5)~~

(6) The community emissions reduction ~~programs~~ *programs or local community emissions reduction plans* shall result in emissions reductions in the community, based on monitoring or other data.

~~(6)~~

(7) In implementing a community emissions reduction program, the district and the state board shall be responsible for measures consistent with their respective authorities.

~~(7)~~

(8) A district encompassing a location selected pursuant to this subdivision shall prepare an annual report summarizing ~~both of the following:~~ *the results and actions taken to further reduce emissions pursuant to the community emissions reduction program.*

~~(A) The results and actions taken to further reduce emissions pursuant to the community emissions reduction program.~~

~~(B) Updates to the community emissions reduction program made to ensure consistency with updates to the statewide strategy prepared pursuant to subdivision (b).~~

~~(8)~~

(9) Compliance with a community emissions reduction program prepared pursuant to this ~~section,~~ *section or a local community emissions reduction plan developed pursuant to a grant provided under subdivision (d),* including its implementation, shall be enforceable by the district and state board, as applicable.

(10) (A) A steering committee formed by a district for a location selected for preparation of a community emissions reduction program pursuant to this subdivision or a location for which a local community emissions reduction plan is developed in accordance with the statewide strategy prepared pursuant to subdivision (b), also known as the "Community Air Protection Blueprint" or "Blueprint" pursuant to Section 44391.5, shall remain active until the emissions objectives identified in the program are achieved.

(B) The steering committee shall meet both of the following:

(i) All members of the steering committee live, work, or own businesses within the community reduction program area or local community emissions reduction plan area and a majority of the members are residents. For purposes of this clause, employment by a nonprofit organization that is engaged in the support of community members in a program area or employment by a for-profit company or organization that has workers or managers working at a facility located in a program area constitute working within the program area.

(ii) The steering committee uses an open and transparent nomination process to select members and the membership of the committee reflects the diverse makeup of the community in the program area.

(d) The state board shall provide grants to community-based organizations for technical assistance and to support community participation in the implementation of this section and Section ~~42705.5.~~ *42705.5 to support the implementation of strategies that directly reduce emissions or exposure to air pollution in disadvantaged communities.*

(e) The requirements of this section shall apply to all community emission reduction programs or local community emissions

reduction plans developed pursuant to a grant provided under subdivision (d), until attainment with the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.) is achieved.

(f) The state board may audit and take corrective action if a district or other stakeholder is found to improperly use the resources allocated according to this section. Eligible uses of grant funding provided pursuant to this section shall include, but not be limited to, any of the following:

(1) Community-led deployment of technologies, practices, or projects that result in measurable or meaningful reductions in emissions or exposure to air pollution.

(2) Local mitigation strategies that address emission sources identified in community emissions reduction programs or local community emissions reduction plans.

(3) Projects that improve air quality outcomes through neighborhood- or household-level interventions, as identified in collaboration with community residents and stakeholders.

(4) Other initiatives that align with the goals of this section and support the implementation of community emissions reduction programs and local community emissions reduction plans developed pursuant to this chapter.

SEC. 2. Section 44391.6 is added to the Health and Safety Code, to read:

44391.6. (a) (1) A local government with land use planning authority that includes a location selected for the preparation of a community emissions reduction program or a location for which a local community emissions reduction plan will be or has been prepared pursuant to the statewide strategy shall comply with the community emissions reduction program or local community emissions reduction plan or both program and plan that are approved by the state board and with the environmental justice element, as described in subdivision (h) of Section 65302 of the Government Code, in the general plan of the local government. If any inconsistency exist among the program, plan, or element, the most health protective standard shall apply.

(2) For purposes of paragraph (1), "compliance" means aligning local land use decisions, including, but not limited to, long-term land use planning through general plans, area plans, and specific plans, zoning, siting and permitting, and

transportation planning, to ensure those decisions do both of the following:

(A) Support the goals of the community emissions reduction program, the local community emissions reduction plan, or both program and plan, and the environmental justice element.

(B) Prevent new, substantial modification or substantial expanded uses that contribute to poor air quality, as determined by the community emissions reduction program and the environmental justice element.

(b) (1) Notwithstanding subdivision (a), a local land use agency may make a land use decision that would serve an essential environmental, health, or safety need of the community located within the program area of a community emissions reduction program or the plan area of a local community emissions reduction plan that does not align with the program or plan for which there is no reasonable alternative.

(2) (A) Before permitting a use pursuant to paragraph (1), the local land use agency shall provide notice of, and conduct, a public meeting in accordance with Section 54953 of the Government Code. The notice shall include a description of the essential environmental, health, or safety need of the community being used to justify the permitting. The local land use agency shall provide analyses in support of its determination under paragraph (1).

(B) Notwithstanding any other law, the public meeting held pursuant to subparagraph (A) shall not be a special meeting call pursuant to Section 54956 of the Government Code.

(c) (1) (A) A person living in a community with a community emissions reduction program area or a local community emissions reduction plan area may seek a review of a land use decision approved pursuant to subparagraph (B) from the Attorney General for compliance with that paragraph by filing a petition with the Attorney General. The Attorney General shall review the challenged decision de novo and may retain independent experts to determine the merits of the petition.

(B) The Attorney General may stay the local land use agency decision if the Attorney General finds that the petition makes a prima facie showing that the local land use agency has failed to comply with subdivision (b) in making its decision.

(C) If the Attorney General determines that the decision does not comply with subdivision (b), the Attorney General may require the local land use agency to do either of the following:

(i) Conduct additional analyses to support its decision made pursuant to subparagraph (B).

(ii) Void its decision.

(2) A relevant steering committee may refer the additional analysis and its determinations to the Attorney General for certification pursuant to the same procedures as specified in this subdivision.

(d) (1) In an action brought by the Attorney General to enforce its determination made pursuant to subdivision (c), a local land use agency that is in violation of this section shall be subject to both of the following remedies:

(A) Equitable, injunctive, and declaratory relief, as the court deems appropriate.

(B) All costs of investigating and prosecuting the action, including expert fees, reasonable attorney's fees, and costs, whenever the Attorney General prevails.

(2) The liability and remedies imposed by this paragraph are in addition to any other liability and remedies imposed by any other law.

SEC. 3. Section 44391.7 is added to the Health and Safety Code, to read:

44391.7. In addition to any other law, one additional member shall be added to the governing board of a district with a community that is in a location that has been selected for preparation of a community emissions reduction program pursuant to subdivision (c) of Section 44391.2 or a community provided with a grant pursuant to subdivision (d) of Section 44391.2 who is a member of a bona fide environmental justice organization or is a member of a steering committee in the district. The member shall be appointed by state board, in collaboration with the steering committee formed pursuant to paragraph (10) of subdivision (c) of Section 44391.2.

SEC. 4. Section 44391.8 is added to the Health and Safety Code, to read:

44391.8. The Secretary for Environmental Protection shall periodically convene representatives of agencies and departments within the California Environmental Protection Agency to ensure

that coordination among those agencies and departments with jurisdiction over pollution sources included in a community emissions reduction program to address concerns raised about those sources.

SEC. 5. Section 44391.9 is added to the Health and Safety Code, to read:

44391.9. (a) Notwithstanding Section 10231.5 of the Government Code, on or before June 30, 2027, and annually thereafter, the state board shall report to the appropriate subcommittees of the budget committee of each house of the Legislature about the progress the state board has made in implementing Section 44391.2. The report shall include, but is not limited to, all of the following:

(1) The status of implementation of the community emissions reduction program in each selected community.

(2) Best practices.

(3) Lessons learned through the implementation of the community emissions reduction programs or local community emissions reduction plans.

(4) Activities taken to enforce the community emissions reduction programs and local community emissions reduction plans.

(5) Outcome data that is available, through air monitoring or other means, including, but not limited to, achieved emissions reductions.

(6) Expenditures made in furtherance of Section 44291.2.

(b) A report submitted pursuant to this section shall also be submitted in compliance with Section 9795 of the Government Code.

SEC. 6. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

However, if the Commission on State Mandates determines that this act contains other costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made

pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

O

Bay Area Air District

Consideration of State Legislation

Board of Directors

April 1, 2026

Alan Abbs
Legislative Officer
Legislative and Government Affairs Division

Abbreviations

- Assembly Bill (AB)
- Senate Bill (SB)
- California Air Resources Board (CARB)
- California Energy Commission (CEC)
- California Environmental Quality Act (CEQA)
- California Public Utilities Commission (CPUC)
- South Coast Air Quality Management District (South Coast AQMD)

Recommended Action

Adopt positions on pending state legislative bills where appropriate, including, but not limited to the following bills:

As recommended by the Policy, Grants, and Technology Committee at its meeting on March 18, 2026:

SUPPORT	OPPOSE	WATCH*
AB 2313 (Berman)	**AB 1791 (Sanchez)**	**AB 2752 (Ávila Farías)**
SB 299 (Cabaldon)	**SB 1392 (Cortese)**	
SB 954 (Blakespear)		

*See Air District staff recommendation based on recently amended bill language on next slide.

Recommended Action (cont.)

As recommended by Air District staff based on the amended bill language:

OPPOSE
AB 2752 (Ávila Farías)

Bill Position Recommendations

AB 1791 (Sanchez)

State Air Resources Board: South Coast AQMD: Regulations: Prohibition: Costs

This bill would prohibit the South Coast AQMD from adopting any regulation or rule that would add more than $0.02 to the cost of a gallon of gasoline, add $2,000 or more to the cost to build any home, or add $5,000 or more to the cost to build a nonresidential building. The bill would require the South Coast AQMD to submit data to the relevant policy committees of the Legislature that demonstrates how a proposed regulation is compliant with this prohibition.

Committee Recommendation: Oppose

AB 2313 (Berman)

Gas Corporations: Gas Distribution Service Line Replacements: Alternatives

This bill, the Home Energy Choice Act, would require the CPUC in a new or existing proceeding, to require each gas corporation to offer a Gas Distribution Service Line Replacement Alternatives Program, on or before January 1, 2028, to provide gas customers served by a gas distribution service line, planned or forecasted for replacement over the next 5 years, or prioritized for replacement by the commission, with a monetary incentive to deploy gas distribution service line replacement alternatives, as defined, and cease gas service to avoid the gas distribution service line replacement, as specified.

Committee Recommendation: Support

AB 2752 (Ávila Farías)

Bay Area Air Quality Management District and South Coast Air Quality Management District: Policies: Oil Refineries

This bill would require the Bay Area Air District and the South Coast AQMD to analyze all of their policies that have been adopted and all future policies that they are considering adopting that impact oil refineries located in their districts and determine the cost of compliance, potential cost to consumers, impacts on state and local tax revenue, and refinery employment.

Committee Recommendation: Watch

Staff Note: This bill was amended after the Committee met on March 18, 2026.

Staff Recommendation: Oppose

SB 299 (Cabaldon)

CEQA: Exemption: Day Care Center: Family Daycare Home: Zoning

This bill would provide that an exemption from CEQA applies to a day care center on a parcel of land zoned exclusively for residential use. This is another bill seeking to fix problems with SB 131 (Committee on Budget and Fiscal Review, Chapter 24, Statutes of 2025) – a budget trailer bill from 2025 – which provided a CEQA exemption for day care centers proposed on a parcel of land zoned as industrial, which ultimately made it easier to zone day care centers in industrial areas rather than residential areas.

Committee Recommendation: Support

SB 954 (Blakespear)

CEQA : Advanced Manufacturing Facilities: Exemption

This bill amends SB 131 (Committee on Budget and Fiscal Review, Chapter 24, Statutes of 2025) – a budget trailer bill from 2025 – that provided broad CEQA exemptions for “advanced manufacturing facilities” which ended up including a long list of industrial activities.

Committee Recommendation: Support

SB 1392 (Cortese)

Smog Check: Exemption: Collector Motor Vehicles

This bill would redefine “collector motor vehicle” in state law and further exempt a collector motor vehicle manufactured before the 1981 model year from the requirement to pass biennial smog check. The bill would extend the applicability of this exemption by one model year each year, beginning on and after January 1, 2028, until the final extension takes effect on and after January 1, 2032, that would exempt a collector motor vehicle manufactured before the 1986 model year from the requirement to obtain the certificate of compliance or noncompliance.

Committee Recommendation: Oppose

Additional Bill(s) for Discussion

SB 1075 (Reyes)

Air Resources: Toxic Air Contaminants: Criteria Air Pollutants: Community Emissions Reduction Programs: Local Community Emissions Reduction Plans

This bill was introduced as a spot bill on February 13, 2026, and was amended on March 25, 2026, to include substantive language.

Air District staff will provide a verbal update and summary of this bill.

Recap: Recommended Action

Adopt positions on pending state legislative bills where appropriate, including, but not limited to the following bills:

As recommended by the Policy, Grants, and Technology Committee at its meeting on March 18, 2026:

SUPPORT	OPPOSE	WATCH*
AB 2313 (Berman)	**AB 1791 (Sanchez)**	**AB 2752 (Ávila Farías)**
SB 299 (Cabaldon)	**SB 1392 (Cortese)**	
SB 954 (Blakespear)		

*See Air District staff recommendation based on recently amended bill language on next slide.

Recap: Recommended Action (cont.)

As recommended by Air District staff based on the amended bill language:

OPPOSE
AB 2752 (Ávila Farías)

Questions & Discussion

For more information:

Alan Abbs | Legislative Officer | aabbs@baaqmd.gov

BAY AREA AIR DISTRICT
Memorandum

To: Chairperson Lynda Hopkins and Members of the Board of Directors

From: Philip M. Fine
Executive Officer/APCO

Date: April 1, 2026

Re: Update on Bay Area Regional Climate Action Plan

RECOMMENDED ACTION

None; the Board will discuss this item, but no action is requested at this time.

BACKGROUND

In July 2023, the Air District received a $1 million Climate Pollution Reduction Grant from the United States Environmental Protection Agency (US EPA) to lead the development of a regional climate action plan. The Air District refers to this plan as the Bay Area Regional Climate Action Plan (BARCAP). The purpose of the BARCAP is to reduce greenhouse gas (GHG) emissions and other harmful air pollutants through measures that meaningfully benefit communities that bear the brunt of the impacts from fossil fuel dependence, referred to herein as frontline communities. It aims to also create jobs, spur economic growth, and enhance health and quality of life in the Bay Area.

The BARCAP planning region encompasses Alameda, Contra Costa, Marin, Napa, San Francisco, and San Mateo counties, and the portions of Solano and Sonoma counties that fall within the Air District's jurisdiction. Santa Clara County received its own US EPA grant to develop a climate action plan in partnership with San Benito County. Air District staff have worked in close coordination with staff leading the Santa Clara County climate planning effort.

Air District staff presented several updates on the BARCAP to the Policy, Grants and Technology Committee (Committee), most recently on March 18, 2026. The presentation included a high-level review of the project and overview of GHG reduction measures. On July 16, 2025, both Air District staff and staff from Santa Clara County presented on the respective climate action planning efforts to the Committee.

DISCUSSION

The State of California and over 80 Bay Area cities and counties have adopted plans to aggressively fight climate change. The BARCAP adds to these efforts without duplicating what others are already doing, fills key gaps, and enables existing plans to be successfully implemented in ways that are efficient, equitable, and will benefit the whole region. As the Bay Area's first regional climate action plan, the BARCAP lays out a set of actionable and impactful strategies to accelerate the transition to a cleaner economy and the state's goal of a carbon-neutral future.

The Air District led development of the BARCAP in close collaboration with a regional Advisory Work Group, consisting of staff representatives from the Air District, the Metropolitan Transportation Commission/Association of Bay Area Governments (specifically, the Bay Area Regional Energy Network), the Bay Area Regional Collaborative, the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Sonoma, the City of Oakland, as well as several community-based organizations including the Canal Alliance, Climate Resilient Communities, Emerald Cities Collaborative-Northern California, Rise South City, and Transform.

The Air District led a robust engagement process to collect information on community priorities, existing and planned policy and planning efforts, and technical challenges and opportunities. Through a series of interactive working sessions with technical stakeholders, community and public workshops, and input from local governments and the Advisory Work Group, Air District staff led the development of GHG reduction measures for all economic sectors (transportation, residential and commercial buildings, electricity (power) generation, waste and materials management, and agriculture/natural and working lands). While not required, the Air District provided a thirty-day public comment period on the draft measures. Air District staff summarized major comment themes and described how comments were addressed in a "BARCAP Summary Response to Public Comment" document that has been posted to the Air District website.

Analyses of the BARCAP measures include potential GHG emissions reduction, criteria pollutant reductions, impacts on frontline communities, workforce planning, and funding pathways.

Air District staff will present an overview of the BARCAP and the planned implementation next steps.

Staff from Santa Clara County will provide brief comments on the County's parallel climate action planning effort.

BUDGET CONSIDERATION/FINANCIAL IMPACT

The $1 million grant award is being allocated in the Air District's Fiscal Year End (FYE) 2025, FYE 2026, and FYE 2027 budgets.

Respectfully submitted,

Philip M. Fine
Executive Officer/APCO

Prepared by: Jamesine Rogers Gibson
Reviewed by: Wendy Goodfriend

ATTACHMENT(S):

1. Bay Area Regional Climate Action Plan
2. Appendix A - BARCAP Region Greenhouse Gas Emissions Inventory
3. Appendix B - 2022 Natural Working Lands Inventory
4. Appendix C - Technical Methodology for Quantifying GHGs, Co-pollutants, and Costs
5. Appendix D - Frontline Community Impacts Analysis
6. Appendix E - Engagement
7. Appendix F - Workforce Planning Analysis
8. Appendix G - Funding Roadmaps
9. Appendix H - Glossary
10. BARCAP Summary Response to Public Comment
11. Update on Bay Area Regional Climate Action Plan Presentation

Bay Area Air District



BAY AREA REGIONAL CLIMATE ACTION PLANNING INITIATIVE

Bay Area Regional Climate Action Plan

MARCH 2026

Land Acknowledgement

The land that makes up the eight-county BARCAP region is home to diverse groups of Indigenous peoples with unique cultures and deeply rooted relationships to the land for over 10,000 years. This land is unceded Indigenous land and the territories, or counties, the Bay Area Air District (Air District) represents are of the Indigenous people. To acknowledge this history of our country – that this nation was built on genocide, the exclusion and erasure of Indigenous people – grounds our work in truth. The Air District acknowledges the Ohlone as the traditional caretakers of the land – including the water and air that makes up the Bay Area. We honor their connection to the land and the deep respect they hold for this region.[1]

Ohlone is the most commonly used term for the predominant Indigenous group of the Bay Area, who are made up of linguistically similar but ethnically diverse Native American tribes. These tribes include the Chochenyo and the Karkin of the East Bay, the Ramaytush of San Francisco, the Yokuts of the South Bay and Central Valley, and the Muwekma tribe from throughout the region. Other Indigenous groups in the region distinct from the Ohlone linguistic group including the Coast Miwok and Southern Pomo of the Graton Rancheria community; the Kashaya, Patwin and Mishewal Wappo of the North Bay; and the Bay Miwok of the East Bay.[2,3]

Acknowledgements

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District staff members who contributed to the development of the Bay Area Regional Climate Action Plan include:

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- **Andrea Gordon,** Senior Environmental Planner, Planning and Climate Protection
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- **Song Bai,** Director, Assessment, Inventory, and Modeling
- **Wendy Goodfriend,** Director, Planning and Climate Protection

Advisory Work Group Member Organizations:

- **Aleka Seville,** Regional Coordination Advisor, Bay Area Regional Energy Network
- **Allison Brooks,** Executive Director, Bay Area Regional Collaborative
- **Avana Andrade,** Senior Sustainability Coordinator, San Mateo County Office of Sustainability
- **Carrie Harvilla,** Deputy Director, Transform
- **Chirag Rabari,** Assistant Director, Metropolitan Transportation Commission
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- **Jane Elias,** Program Administrator, Bay Area Regional Energy Network
- **Jody London,** Sustainability Coordinator, Contra Costa County
- **Josh Bradt,** Program Coordinator, Bay Area Regional Collaborative (BARC)
- **Julio Garcia,** Executive Director, Rise South City
- **Kim Springer,** Transportation Systems Coordinator, City/County Association of Governments of San Mateo County
- **Krute Singa,** Principal Regional Planner, Metropolitan Transportation Commission
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- **Miya Kitahara,** Program Manager, Alameda County Waste Management Authority (StopWaste)
- **Omar Carrera,** CEO, Canal Alliance
- **Ryan Melendez,** Sustainability Planner, Napa County
- **Shayna Hirshfield-Gold,** Climate Program Manager, City of Oakland
- **Tanya Nareth,** Chief Deputy Executive Officer, Sonoma County Regional Climate Protection Authority
- **Violet Wulf-Saena,** Founder and Executive Director, Climate Resilient Communities



Acronyms

AB: Assembly Bill

ABAG: Association of Bay Area Governments

ACC II: Advanced Clean Cars II

AEA: Association for Energy Affordability

AWG: Advisory Work Group

BACHI: Bay Area Clean Homes Initiative

BayREN: Bay Area Regional Energy Network

BARC: Bay Area Regional Collaborative

BARCAP: Bay Area Regional Climate Action Plan Initiative

BCD: Bay Conservation and Development Commission

BTM: Behind-the-meter

BUG: Backup generation

CAHPP: CA Heat Pump Partnership

CAL FIRE: California Department of Forestry and Fire Protection

CALGreen: California Green Building

CARB: California Air Resources Board

CBO: Community-based organization

CCAP: Comprehensive Climate Action Plan

CCA: Community Choice Aggregator

CCUS: Carbon capture, utilization, and storage

CEC: California Energy Commission

CH_4: Methane

CO: Carbon monoxide

CO_2: Carbon dioxide

CO_2e: Cabon dioxide equivalents

CPRG: Climate Pollution Reduction Grants

DC: Direct current

EE: Energy efficiency

EV: Electric vehicle

EVSE: Electric vehicle supply equipment

GHG: Greenhouse gas

GW: Gigawatt

GWh: Gigawatt hour

GWP: Global warming potential

HFCs: Hydrofluorocarbons

HPWH: Heat pump water heater

IPCC: Intergovernmental Panel on Climate Change

kW: Kilowatt

MSA: Metropolitan Statistical Area

MTC: Metropolitan Transportation Commission

MT C: Metric tons of carbon

$MTCO_2e$: Metric tons of carbon dioxide equivalent

$MMTCO_2e$: Million metric tons of carbon dioxide equivalent

MW: Megawatt

NEEA: Northwestern Energy Efficiency Alliance

NF_3: Nitrogen trifluoride

N_2O: Nitrous oxide

NO_x: Nitrogen oxides

NWL: Natural and working lands

PBA: Plan Bay Area

PCA: Priority Conservation Area

PCAP: Priority Climate Action Plan

PFCs: Perfluorocarbons

PG&E: Pacific Gas and Electric Company

PM: Particulate matter or secondary aerosols

RCDs: Resource Conservation Districts

SB: Senate Bill

SCTCA: Sonoma County Transportation and Climate Authorities

SF_6: Sulfur hexafluoride

SLCP: Short-Lived climate pollutant

SO_2: Sulfur dioxide

SPUR: San Francisco Bay Area Planning and Urban Research Association

TDM: Transportation demand management

TOC: Transit-Oriented Communities

UCCE: University of California Cooperative Extension

UEF: Uniform energy factor

US DOE: United States Department of Energy

US EPA: United States Environmental Protection Agency

VMT: Vehicle miles traveled

VOC: Volatile organic compound

WAIRE: Warehouse Actions and Investment to Reduce Emissions

WUI: Wildland-urban-interface

ZE: Zero-emission

ZEV: Zero-emission vehicles



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1 Introduction

Climate change is already happening in the San Francisco Bay Area (Bay Area) today, as evidenced by wildfires and smoke-filled skies, record-breaking heatwaves, major storms, flooding, and continually rising seas. Bold action to reduce climate pollution (or greenhouse gas (GHG) emissions) is critical to address the climate crisis and prevent its most devastating impacts – and bring key quality of life improvements and economic development benefits to the region.

The State of California and many local governments in the Bay Area have committed to ambitious GHG emission reduction goals. They have also adopted climate action plans that specify what must happen to meet them. Because nearly 80% of GHG emissions in the region come from the burning of fossil fuels, a core strategy is shifting from a fossil fuel-based economy to one that is based on clean energy. Solutions that work with nature (nature-based solutions) and keep waste to an absolute minimum (circularity) will be critical as well. Not only do these solutions reduce emissions, they also benefit the region by improving the health and quality of life for Bay Area residents, supporting healthy natural systems, and creating a more sustainable and prosperous economy. To ensure that all communities have equal access to these benefits, historically underserved communities must be centered in how these solutions are designed and implemented.

These climate goals and benefits will require everyone to play their part at the state, local, and regional levels. This is where the Bay Area Regional Climate Action Plan (BARCAP) comes in. Rather than duplicating the measures in state and local climate plans, it complements these plans with a focus on filling key gaps and enabling state and local plans to be successfully implemented. The BARCAP tackles common challenges that cross city and county boundaries and slow or impede local action, like misaligned policies, hard-to-get financing and funding, supply and workforce shortages, insufficient technical support, and unequal access to programs. Regional collaboration – on programs, outreach, development of policies and standards, data-sharing, acquiring funding/financing, and access to benefits – can help make local action easier, faster, cheaper, and more equitable. The BARCAP identifies where regional action is essential to

ensure that state plans and policies succeed in the Bay Area, and in ways that are equitable and bring tangible benefits to the region. It also encourages the expansion of promising local solutions across the region, bringing economies of scale and centering equity in deployment. Equity in this context refers to "increasing access to power, redistributing and providing additional resources, and eliminating barriers to opportunity, in order to empower low-income communities of color to thrive and reach full potential."[4] More information on how equity will be centered in BARCAP implementation is included in Chapter 12.

As the Bay Area's first regional climate action plan, the BARCAP lays out a set of feasible, actionable, and widely supported strategies to accelerate the region's transition to a clean energy economy and a carbon neutral future.[5] Implementation of the BARCAP will reduce GHG emissions, criteria air pollutants, and hazardous air pollutants; create jobs and spur economic growth; and enhance health and quality of life for Bay Area residents. The plan is designed to help ensure these benefits reach communities that have historically been marginalized, and frontline communities that bear the brunt of the impacts from fossil fuel dependence, including poor air quality, and are often the first to experience climate impacts such as extreme heat.



Vision for the BARCAP:

Together, we envision a Bay Area where achieving our climate goals fosters thriving communities, healthy natural systems, and a sustainable and prosperous economy. On the path to that future, we will create family-sustaining jobs, inspire innovation, improve air quality and public health, and prioritize environmental justice.[6]

The BARCAP is rooted in regional collaboration. While the Air District coordinated development of the plan, the Air District is only one of many implementers. Other agencies and organizations will lead the implementation of different parts of the plan, including in areas that extend beyond the Air District's jurisdiction.

Together, the Bay Area has a strong foundation to lead on climate action: supportive state policies and ambitious local plans and policies, world-class academic institutions, an innovative business community, diverse, knowledgeable and engaged residents, and a strong network of non-profits and community organizations. With a thoughtful approach, the region is well-positioned to tackle climate change in a way that improves health and quality of life for everyone, boosts the economy, and benefits frontline communities. The BARCAP is a crucial piece of this strategy.

1.1 THE NEED FOR CLIMATE ACTION NOW

Reliance on fossil fuels to power the region's economy, homes, and transportation results in GHG emissions that warm our atmosphere, alter our climate, and threaten the Bay Area's people, economy, environment, and infrastructure.

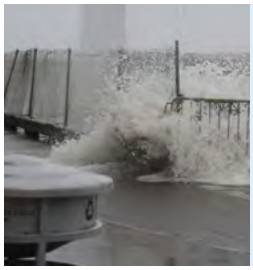
Over the past two decades, the Bay Area has seen increasingly frequent and severe climate-related challenges, including:



Extreme Heat: The Bay Area's average annual maximum temperature has risen 1.5˚F since 2001.[7] By mid-century, the mean annual temperature is projected to increase by 3.3˚F.[8] The Bay Area is experiencing more heatwaves as a result and the number of extreme heat days (90-100˚F) is projected to increase to 30-50 days by the end of the century.[9] Intensifying extreme heat and wildfires are impacting air quality and public health. Higher temperatures accelerate the formation of ground-level ozone, worsening air quality and respiratory health.[10] Extreme heat is now the leading cause of weather-related deaths in California, underscoring the growing risk to Bay Area communities.[11]



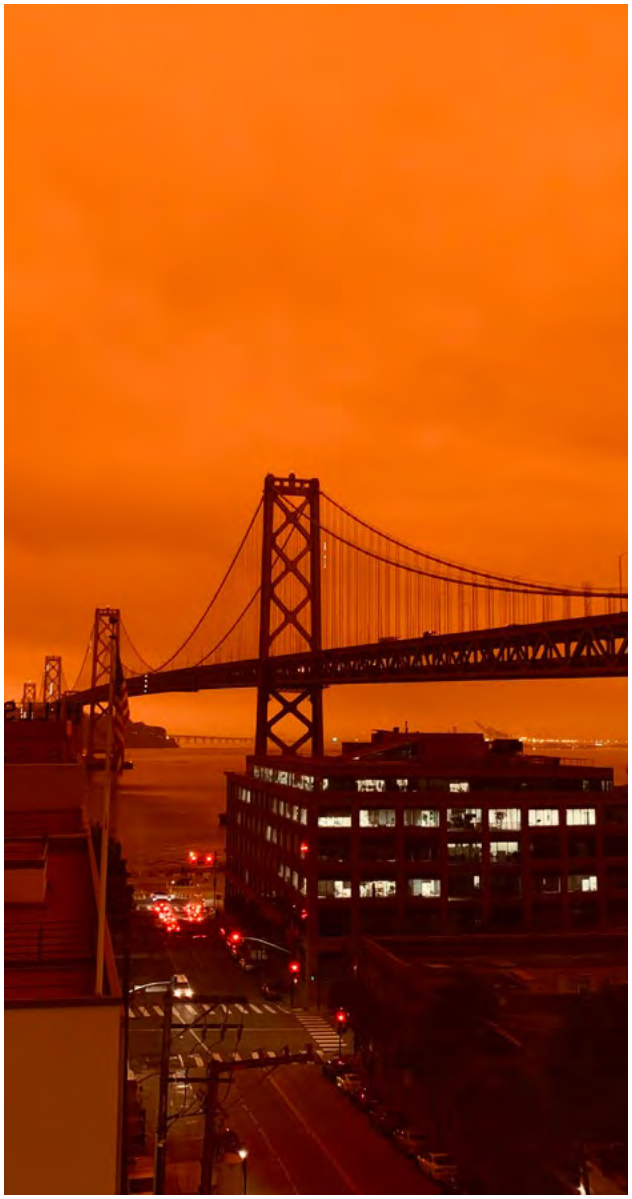
Wildfires: Drier, hotter conditions are conducive to wildfires, which further degrade air quality and increase health risks. Six out of the 15 most destructive wildfires in California history have occurred in the Bay Area, five of which have taken place in the last decade.[12] This destruction has immediate and lasting impacts. In 2018, 354,000 individuals were displaced in California due to wildfires.[13] Fire risk is projected to increase in the Bay Area as temperatures rise, particularly when paired with the potential expansion of the wildland-urban interface.[14]



Sea Level Rise: The Bay Area has seen an eight inch increase in sea level over the past century, with an additional 3.4 to 4.4 feet expected by 2100.[15] Future sea level rise threatens vital ecosystems, infrastructure, and frontline communities.[16] In combination with extreme storms, sea level rise also increases the risk of toxic chemicals leaking from hazardous sites.[17]



Drought and Extreme Precipitation: The Bay Area faces more frequent cycles of drought and extreme precipitation.[18] For example, the drought of 2012-2016 led to the greatest water deficits seen in 1,200 years. In contrast, during the winter of 2022–2023, California experienced a dozen atmospheric rivers, resulting in major flooding and landslides. Across the state, 43 out of 58 counties declared states of emergencies that winter.[19]



Climate-driven hazards such as extreme heat, wildfires, and declining air quality are increasing rates of respiratory and cardiovascular disease, hospitalizations, and premature deaths.[20] The economic consequences are also becoming apparent. In the past two decades, California was impacted by 31 weather and climate disasters with a billion dollars or more in damages. The two decades prior only experienced 14 events of the same caliber.[21] Here in the Bay Area, the San Francisco Bay Conservation and Development Commission (BCDC) estimates that, without adaptation, the cost of sea level rise could surpass $230 billion by 2050, accounting for property, infrastructure, and environmental losses from flooding and shoreline degradation.[22] Increased risks of natural disasters, including climate-related ones, translate to higher risks of property damage, with serious impacts on the homeowner insurance market.[23] State and local authorities are often first responders during a disaster and lead preparedness and long-term recovery efforts. As the cost and frequency of these events grows, greater portions of constrained public budgets may be diverted to these purposes, leaving fewer resources for other vital functions.

These impacts and the associated costs will not be experienced equally. Frontline communities are often disproportionately exposed to climate hazards due to historic discriminatory policies and practices such as redlining and disinvestment in infrastructure. As a result, these communities face higher health and economic risks today, with fewer resources to adapt to climate change.[24] Other groups such as people with disabilities or chronic conditions, people of color, Indigenous populations, older adults, children, pregnant people, low-income individuals, and people working outdoors or in hot environments are also at higher risk. These groups can experience differences in exposure, sensitivity, or ability to adapt to climate hazards, making them more vulnerable. For example, people with disabilities can face challenges responding to extreme weather events, especially if evacuation instructions and actions are inaccessible.[25]

1.2 THE BAY AREA CONTEXT

The Bay Area is well-positioned to lead boldly on climate action. In addition to the strong state, regional, and local climate plans and policies described throughout the BARCAP, the region can leverage its strengths to accelerate progress toward carbon neutrality while advancing equity and affordability. For the purposes of the BARCAP, the region includes eight counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Solano, and Sonoma (see Figure 1-1). It is referred to in this document as the BARCAP region. (Santa Clara County was funded by the U.S. Environmental Protection Agency (US EPA) to complete its own regional climate action plan.)

Figure 1-1: Map of the BARCAP region



1.2.1 Population

The greater Bay Area is one of the most diverse metropolitan areas in the United States.[26] Fifty-nine percent of the population are people of color, including many different racial and ethnic groups.[27] The Bay Area is home to speakers of more than 160 languages, nearly half (43%) of whom speak a language other than English at home.[28] The BARCAP region includes a population of approximately 5.5 million across eight counties and 81 cities that range from very small and rural, to large and dense. The region's diversity can support innovation by providing fresh perspectives and challenging conventional thinking. Bay Area residents understand that climate change is real and requires greater action. According to recent polling, over 70% of Bay Area residents are worried about climate change, and believe that governments, corporations, and citizens should do more to address the issue.[29] The BARCAP leverages this awareness and popular support for climate action while balancing climate goals with other goals of Bay Area residents, including affordability and economic security.

1.2.2 Community-based organizations

The Bay Area has a strong network of community-based organizations (CBOs) and an active climate youth movement dedicated to addressing existing inequities and improving the lives and well-being of the Bay Area's diverse communities. There are over 300 non-profits and CBOs supporting climate change mitigation in the Bay Area. Youth-led

climate action groups in the Bay Area are organizing and advocating for energy system reform, equitable decarbonization, and corporate accountability for pollution and GHG emissions.[30] Many Bay Area CBOs specifically serve non-English speaking and frontline communities, with an increasing focus on inclusion in the clean energy transition and protection from the effects of pollution and climate change. CBOs are experts in environmental justice and the lived experiences of community members and are, and will continue to be, key stakeholders for equitably implementing climate action. Their role in BARCAP implementation is further described in Chapter 12.

1.2.3 Economy

The BARCAP region's economy generated almost $869 billion in output in 2023.[31] Many leading-edge industries like aerospace and defense, biotech, clean tech, high-tech (e.g., hardware, software and services, semiconductors, and microelectronics), and manufacturing are based in the Bay Area.[32] The Bay Area is globally recognized as a center for climate technology. The BARCAP region is also home to many academic institutions and national research laboratories, an innovative business sector, engaged and knowledgeable residents, robust network of non-profits and CBOs, and strong environmental ethos. The Bay Area includes expansive natural and working lands as well, which support a large wine industry, dairy farms, tourism and outdoor recreation industries. The Bay Area Jobs First Collaborative Regional Plan identifies several areas for the region that present potential competitive advantages for



future job creation, including transportation electrification, battery storage and other renewable technologies, sustainable agriculture, and alternative fuel production.[33] The BARCAP region is home to refineries, power plants, and commercial ports too. While these industries play a key role in the regional economy, the emissions from their activities also have exacted a toll on the health of nearby residents, many of whom live near these facilities due to historic redlining. A history of venture capitalism and a robust network of philanthropic organizations complement the rich diversity of the region.[34]

The Bay Area's economy is also a polarized economy with a visible economic divide between high- and low-income earners and deep wealth inequality. Income inequality between low- and high-income earners has been growing rapidly over the past four decades.[35] Additional factors contributing to significant economic disparities include the cost of living, rising costs of housing, and lingering impacts on the job market from the COVID-19 pandemic.[36] In 2023, 31% of Bay Area residents spent over 35% of their income on housing, the threshold to be considered cost-burdened due to housing.[37] In conjunction with rising inflation and mortgage rates, homeownership and market rate rentals are becoming increasingly unattainable, particularly for low-income residents.[38] This inequality is compounded by the legacy of systemic and prolonged environmental injustice, disinvestment, and structural and institutional racism.[39] Today, the per capita median income of white Bay Area residents is two times greater than the median incomes of Hispanic/Latino, Indigenous, and Black residents.[40]

1.3 LOCAL AND REGIONAL CLIMATE ACTION



The BARCAP builds on the region's long history of leadership on climate action and a rich foundation of climate-related plans, programs, projects, and policies already in place.

1.3.1 Local action

Nearly every city and county in the BARCAP region (83 out of 88) has adopted a plan focusing on climate change, including climate action plans.[41] Roughly half of these jurisdictions have set targets for reducing GHG emissions that are at least as ambitious as the state's targets and many of them include equity as a key consideration. Other important local policies and programs

to reduce GHG emissions include building energy codes that exceed state mandated codes, general plans that address climate change, housing elements that aim to reduce vehicle miles traveled (VMT), and plans focused on transportation, urban forestry, and building decarbonization (i.e., transitioning gas appliances to clean electric alternatives paired with energy efficiency). In addition, six out of eight counties and over 30 cities in the BARCAP region have declared climate emergencies, making climate change a priority for immediate and accelerated action.

1.3.2 Regional action

Regional agencies are complementing local action through regional planning, programs, projects, and funding efforts for transportation, land use, buildings, energy, and more.

- The Metropolitan Transportation Commission and Association of Bay Area Governments (MTC-ABAG) develop and help implement Plan Bay Area 2050+, the Bay Area's long-range plan for transportation, housing, the economy, and the environment. This plan focuses on ensuring the Bay Area is affordable, connected, diverse, healthy, and vibrant for all by 2050.[42] Priorities include sufficient housing options for residents, a well-functioning multi-modal transportation system, clean air and water, conserving natural resources and open space, creating quality job opportunities for all, and providing ample fiscal resources for all communities.



- The Air District and MTC-ABAG provide incentives for clean transportation in the Bay Area. Examples include the Air District's Clean Cars for All program, which provides grants to offset the cost of new electric vehicles, and MTC's regional component of the Active Transportation Program, which provides funding to build bicycle and pedestrian infrastructure.[43]
- The Air District adopted amendments to existing rules to establish zero-NO_x emissions standards for natural gas-fired furnaces and water heaters that are typically found in residential and commercial buildings. These amendments will result in reduced air pollution, improvements in public health, and are expected to also reduce GHG emissions.
- The Bay Area Regional Energy Network (BayREN) at MTC-ABAG, a coalition of Bay Area counties working together, promotes resource efficiency at the regional level, through outreach, training, technical assistance, funding, and resources.
- Five Community Choice Aggregators (CCAs) purchase clean energy on behalf of residents and businesses and provide rebates and other incentives for clean vehicles and heat pumps.[44]
- Resource Conservation Districts (RCDs) work with landowners and communities to implement projects related to water conservation, soil health, and carbon farm planning. RCDs, working with the Carbon Cycle Institute and other collaborators, have organized into seven Regional Agriculture and Climate Hubs comprised of 45 California RCDs and spanning 12.5 million acres of agricultural lands, to better implement a Carbon Farming Network in the Bay Area and beyond.



1.4 CALIFORNIA'S CLIMATE ACTION FRAMEWORK

The State of California's climate action plan, the 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan), is comprised of a robust collection of statewide policies, programs, and sector-specific goals spanning every sector of the economy. The Scoping Plan provides a strategic policy roadmap to achieve statewide targets of reducing GHG emissions 40% below 1990 levels by 2030, and achieving carbon neutrality by 2045, with an 85% reduction in GHGs from 1990 levels. The Scoping Plan was shaped by extensive stakeholder engagement, including an Environmental Justice Advisory Committee. Since adoption, state agencies have implemented industry-leading regulations, initiated groundbreaking voluntary programs, and updated standing efforts to advance their goals, which are discussed in the sector-specific chapters (Chapters 6-10).

A core component of the state's climate action framework is its Cap-and-Invest program, which places declining GHG emissions caps on large-emitting facilities. In 2025, the Cap-and-Invest program was reauthorized and extended to 2045. Current state law prohibits local air districts from regulating carbon dioxide (CO_2) emissions – the most prevalent GHG emitted when fossil fuels are combusted – from facilities that are included in the Cap-and-Invest program. In the BARCAP region, these facilities account for most of the CO_2 emissions from the industrial sector, leaving the Air District with a very limited ability to directly address industrial GHG emissions. The BARCAP does not, therefore, include measures addressing the industrial sector. However, the Air District is exploring ways to maximize the GHG reduction co-benefits of its regulations that focus on other (non-CO_2) GHGs.





Embedding equity

Frontline communities, which may include communities of color, lower-income neighborhoods, and other historically marginalized groups and communities, tend to contribute the least to climate change yet often face disproportionate exposure to negative climate impacts and greater susceptibility due to underlying social and health inequities. These disparities are often due longstanding structural inequities such as red-lining and housing discrimination, occupational segregation, and lack of access to the funding and financing required to adapt. New climate solutions should prioritize building the resilience of and bringing benefits to these communities.

Frontline and historically marginalized groups, though, face persistent barriers due to long-standing systemic inequities. Housing instability, food insecurity, limited mobility access, and lack of time or money, can significantly limit people's ability to participate in voluntary climate programs or comply with mandatory requirements. If these obstacles are not addressed, climate actions will be less effective, as the people who are most affected by climate change will be the least able to take part in the solutions and benefit from them. Building the capacity of communities to fully participate in and benefit from local and regional actions to reduce GHG emissions should be central to new climate solutions. Embedding equity in climate action is a critical opportunity to invest in, and build resilience in frontline communities, while pushing for tangible improvements in everyday lives through deployment of climate solutions.

If not designed equitably, GHG reduction measures could exacerbate unfair or unequal outcomes and environmental injustices. For example, inequitable building electrification can leave people on legacy fossil fuel infrastructure that becomes increasingly expensive to maintain, worsen housing insecurity, and cause displacement. The BARCAP region risks repeating historical patterns of disinvestment and perpetuating past environmental injustices unless equitable and just approaches are incorporated when developing GHG reduction measures.

Environmental justice is defined by the pioneering environmental justice scholar Dr. Bunyan Bryant as: "Environmental Justice … refers to those cultural norms and values, rules, regulations, behaviors, policies, and decisions [that] support sustainable communities where people can interact with confidence that the environment is safe, nurturing, and productive. Environmental justice is served when people can realize their highest potential … where both cultural and biological diversity are respected and highly revered and where distributive justice prevails." Equitable climate action that advances environmental justice means no community is treated as "other" or expendable. This starts by valuing and prioritizing the lived experiences and leadership of historically marginalized communities. Centering equity and environmental justice involves approaching conversations with humility and sustaining community dialogue throughout implementation to inform actions — not just during the planning stage.

Equity and environmental justice were designed into the BARCAP through community vetted design principles, inclusion of frontline community feedback in draft measures, and working partnerships with CBOs.[45] Environmental justice values like biological diversity, sustainable communities, and safe environments can be found woven throughout BARCAP measures and actions as measure language. Measure benefits paint a fuller picture of how climate actions can improve frontline community lives beyond purely GHG reductions. As the BARCAP moves into the implementation stage, equity and environmental justice will continue to be centered.

For more information on equity in BARCAP implementation, see Chapter 12. For more information on the BARCAP's approach to engaging frontline communities, see Chapter 4 and Appendix E, as well as the Air District's commitment to center environmental justice as described in the 2024-2029 Strategic Plan.[46]



1.5 APPROACH TO DEVELOPING THE BARCAP

1.5.1 Overview of Climate Pollution Reduction Grant Program

In July 2023, the Air District received funding from the U.S. Environmental Protection Agency's (US EPA) Climate Pollution Reduction Grant (CPRG) Program. The CPRG Program provides funding to states, local governments, tribes, and territories to develop and implement ambitious plans for reducing GHG emissions and other harmful air pollutants. This funding enabled the Air District to launch the Bay Area's first region-wide climate action planning effort, resulting in two plans required by the US EPA.

The first plan is the Priority Climate Action Plan (PCAP).[47] It includes two near-term, high-priority, implementation-ready measures to reduce GHG emissions from residential buildings and passenger vehicles, which together make up one-quarter of the Bay Area region's GHG emissions. The PCAP was submitted to US EPA February 29, 2024. The second plan is this comprehensive BARCAP covering all sectors, which will be submitted to US EPA by December 1, 2025.[48]

1.5.2 BARCAP goals

The BARCAP focuses on four core goals:



Given the robust climate leadership in the Bay Area and the state's climate action framework, the BARCAP focuses on regional action and collaboration that addresses the space in between, helping advance local action and ensuring state plans and goals are more achievable and equitable in the BARCAP region. It does not seek to duplicate

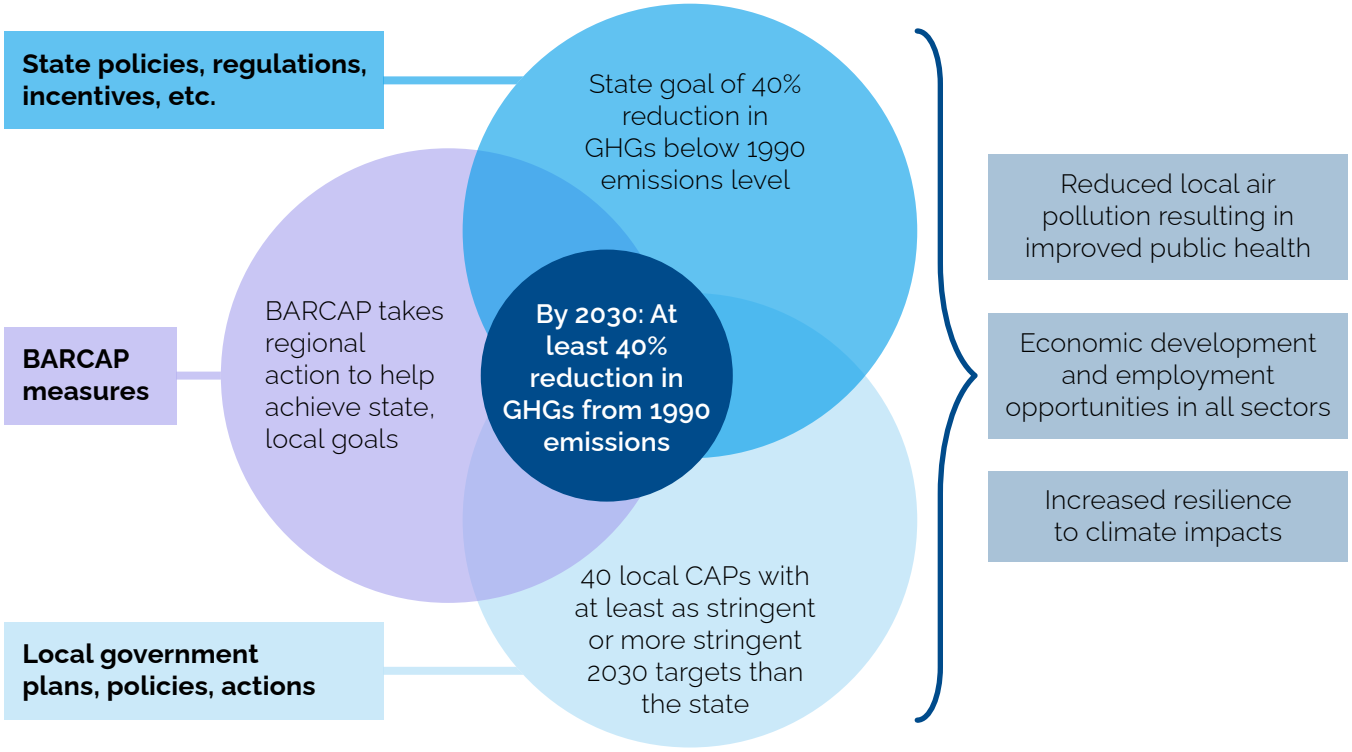
work already being done but rather focuses on filling gaps and tackling key challenges and obstacles to local action that only regional action can effectively address. It provides a vehicle to identify and encourage wider adoption of promising local climate solutions across the Bay Area. The BARCAP approach elevates and centers the priorities of frontline communities, building on the extensive work that cities and counties in the region have been doing for years.

While the Air District is coordinating development of the BARCAP, it is not the only implementer. Many sectors extend beyond the Air District's jurisdiction and expertise. Other agencies and organizations are well-suited and well-positioned to lead implementation in these areas. The general roles in implementation played by lead and supporting agencies and organizations are defined in Chapter 5. Specific lead and supporting implementing agencies and organizations are described in the sector-specific chapters (Chapters 6-10).

1.5.3 Supporting successful state and local climate action

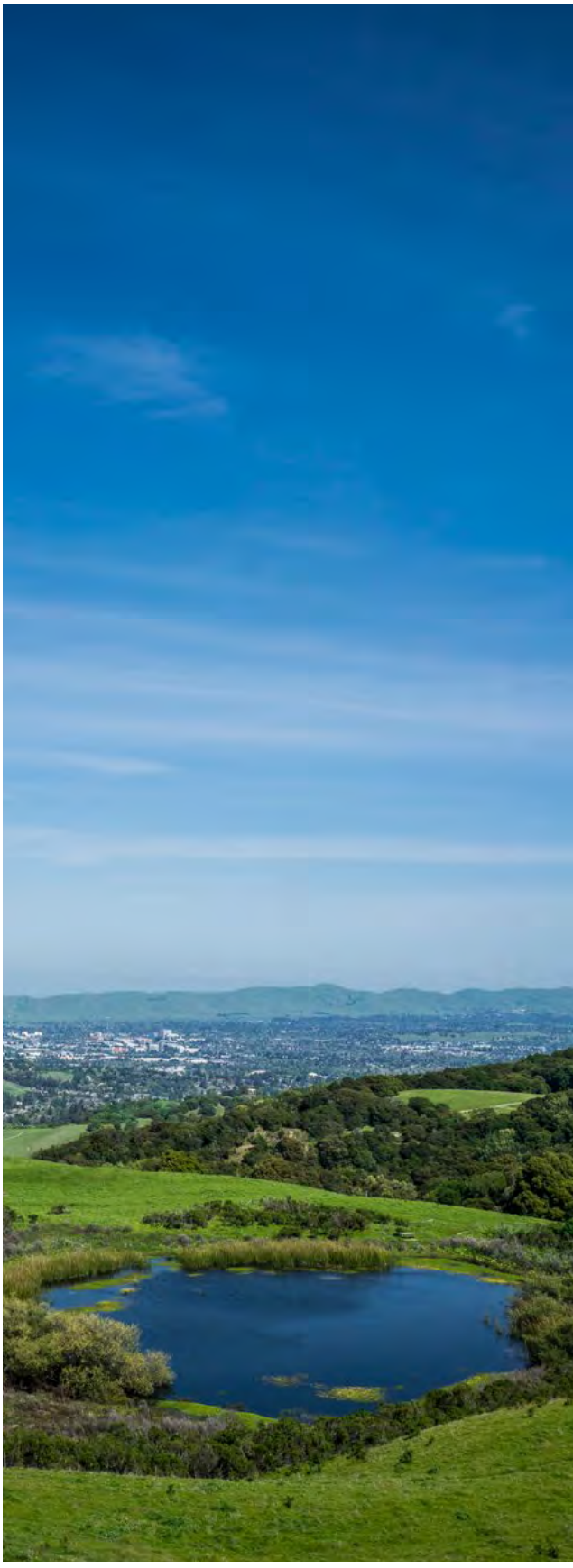
The BARCAP focuses on setting up key enabling conditions necessary to ensure that the GHG emission reductions outlined in state and local climate action plans are achieved – in full and on time. BARCAP measures are additive and not duplicative of state and local actions.

Figure 1-2: BARCAP measures contributing to local and state goals



Many Scoping Plan measures rely on local and regional action to fully realize their GHG reduction potential. For example, Senate Bill 1383 (2016) requires reducing the amount of organic waste disposed in landfills by 75% below 2014 levels by 2025. While the state has set this target, it cannot be achieved without alternatives for managing organic waste, local waste diversion, and education programs. Similarly, the Scoping Plan includes the statewide goal of 100 percent of in-state sales of new passenger cars and trucks being zero-emission by 2035. This goal cannot be met without a robust regional electric vehicle (EV) charging network and local policies that enable a rich local charging infrastructure. Without sufficient local and regional action, the state is unlikely to meet its climate goals.

Local governments often face common challenges that can slow or impede local climate action. These barriers include misaligned policies, hard-to-get financing and funding, supply and workforce shortages, insufficient technical support, and unequal access to programs. The BARCAP focuses on where regional collaboration – on programs, outreach, development of policies and standards, data-sharing, acquiring funding/financing, and access to benefits – can help make local action more efficient, effective, and equitable. Increased regional coordination also enables the scaling of promising local solutions.



1.5.4 Overview of BARCAP development

Foundational research

From May 2024 to November 2025, the Air District partnered with regional agencies, local governments, and other stakeholders across the region to develop the BARCAP. The thoughtful and phased approach began with an assessment of existing local climate action plans and the Scoping Plan, as well as key state and regional policies and programs. Air District staff also reviewed other state and regional PCAPs for innovative and impactful measure concepts to consider for inclusion in the BARCAP.



Stakeholder engagement

Building on the foundational research, the Air District engaged local governments to learn about specific challenges and barriers to local climate action that could be addressed through a regional approach, and opportunities to advance local climate action that cross jurisdictional borders. Local governments also provided feedback through a virtual input session on preliminary measures, specifically on alignment with city and county efforts, potential interest in implementation, and other critical concerns and opportunities.

The Air District partnered with eight local CBOs to hold a series of four workshops with frontline communities. Through these workshops, members of frontline communities shared community priorities and how the preliminary BARCAP measures might benefit or negatively impact their everyday life. The public was invited to provide feedback on the BARCAP vision, initial measure concepts, and final proposed measures through a series of three public workshops. There was also a public survey that resulted in 680 responses. Information about these engagement opportunities was shared through a dedicated BARCAP website and email list, the Air District's social media channels, and local government communication channels.

The Air District established an Advisory Work Group (AWG) composed of representatives from each county, the City of Oakland, regional agencies, and community-serving and community-based organizations. It served as a key forum for regional coordination and collaboration to support the Air District's development of the BARCAP. Members helped identify key gaps, challenges, and opportunities for the plan to address, and helped connect the BARCAP with local governments and communities in their jurisdictions. They also reviewed key BARCAP deliverables.

Measure development

The Air District developed a GHG inventory and projections to understand the main drivers of current and future GHG emissions in the BARCAP region. The agency also identified a set of core criteria and design principles to guide measure development. Combining GHG emissions data, foundational research, and initial stakeholder input, the Air District worked with sector-specific technical working groups composed of potential implementers, community organizations, and subject matter experts to develop measure concepts, which were further refined with a technical consultant. The Air District also met with regional agencies and potential implementers to finalize draft measures prior to a four-week public review period. The final measures reflect public feedback and the results of several technical analyses, including a frontline communities impacts analysis, workforce planning analysis, and a funding analysis.

ENDNOTES

1 UC Berkeley Centers for Educational Justice & Community Engagement. (© 2021). Ohlone Land. https://cejce.berkeley.edu/ohloneland

2 Bay Area Equity Atlas. (© 2021). Indigenous Populations in the Bay Area. https://bayareaequityatlas.org/about/indigenous-populations-in-thebay-area

3 This land acknowledgment is closely adapted from and includes direct references to indigenous land acknowledgements in Plan Bay Area 2050, developed by the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) (2021) (https://planbayarea.org/digital-library/plan-bay-area-2050-indigenous-land-acknowledgement) and the Air District Community Advisory Committee Land Acknowledgement (2022) (https://www.baaqmd.gov/en/about-the-air-district/community-advisory-council).

4 The definition of equity is from the Air District's CEQA Air Quality Guidelines (2023).

5 According to the California Air Resources Board's 2020 report, Achieving Carbon Neutrality in California, carbon neutrality means that all GHG emissions emitted into the atmosphere are balanced in equal measure by GHGs that are removed from the atmosphere, either through carbon sinks or carbon capture and storage.

6 The vision for the BARCAP draws from and/or aligns with visions from other climate-related planning efforts in the region including several county climate action plans and Plan Bay Area 2050+.

7 Data from CA's upcoming Fifth Climate Assessment Bay Area Regional Report.

8 Louise Bedsworth et al., "California's Fourth Climate Change Assessment San Francisco Bay Area Summary Report," California Natural Resources Agency, 2018, https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-005_SanFranciscoBayArea_ADA.pdf.

9 Data from CA's upcoming Fifth Climate Assessment Bay Area Regional Report. There is larger projected increase for the northern (e.g., Solano County) and eastern portions (e.g., Contra Costa County) of the Bay Area.

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in general plans. It also includes plans that may now be outdated.

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2 Regional Greenhouse Gas Inventory and Projections and Carbon Stock Inventory

The regional greenhouse gas (GHG) emissions inventory and projections detail the major GHG emission sources in the Bay Area Regional Climate Action Plan (BARCAP) region while the carbon stock inventory shows where carbon is stored in both plants and soils (i.e., carbon stocks) on natural and working lands. These inventories and the projections were used to inform the BARCAP measure development.

2.1 GHG INVENTORY

2.1.1 Overview

The GHG emissions inventory provides emissions data for the base year of 2022.[1] It accounts for county-level emissions from the BARCAP region across six major sectors – transportation, industrial, buildings, power, waste, and agriculture (as part of natural and working lands).[2] Specific emissions sources within each sector are defined and discussed in Appendix A. The natural and working lands carbon stock inventory is discussed in Section 2.3.

For all sources, the following GHG emissions are quantified: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and several fluorinated gases, including hydrofluorocarbons (HFCs),

perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). GHG emissions are reported in terms of CO_2-equivalents (CO_2e), which is a standardized metric to compare emissions across different GHGs. This metric is calculated using 100-year time-horizon global warming potentials (GWP). GWP is a measure of how much heat a specific GHG traps in the atmosphere relative to the same amount of CO_2. The 100-year time horizon represents how much a given GHG will contribute to global warming over a 100-year time frame. Some GHGs, like CH_4, N_2O, and particularly fluorinated gases, have high GWPs and thus make greater contributions to global warming on a per ton basis than CO_2. The BARCAP inventory uses GWPs from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5).[3]

2.1.2 Inventory methodology

The Air District applied a production-based methodology to develop the GHG emissions inventory. This approach focuses on the emissions released directly into the atmosphere from sources located within the BARCAP region. This differs from a consumption-based methodology, which attributes emissions to regional consumers by accounting for the full life-cycle emissions of goods and services consumed locally, regardless of where those emissions occur globally. For example, emissions from electricity generated from power plants in the BARCAP region are included in the inventory, whereas emissions from electricity consumed in the BARCAP region but generated beyond the BARCAP region's borders are excluded.



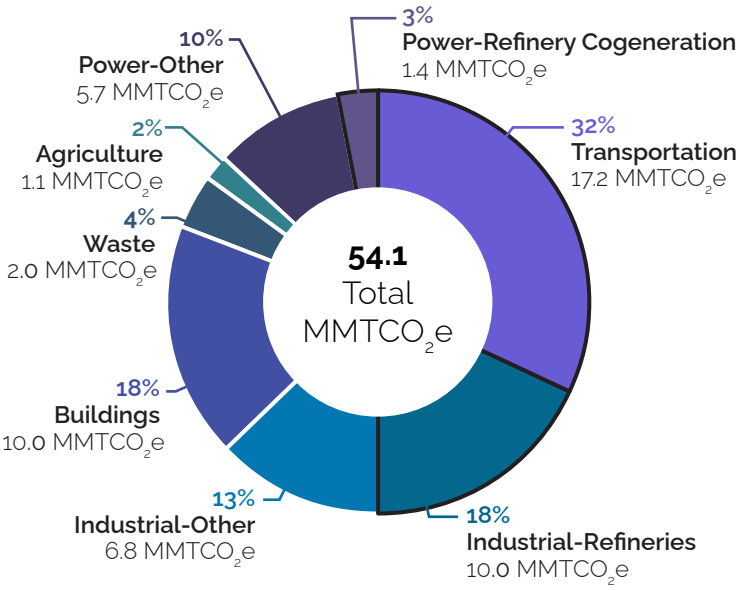
Within the production-based methodology, the Air District uses two approaches to estimate GHG emissions, depending on the type of emissions source:

- A bottom-up approach where emissions are derived by combining activity data and/or throughputs with GHG emissions factors and local or regional controls;[4]
- A top-down approach where emissions are derived by scaling down from an existing (e.g., national and/or state) emissions inventory using a proxy (such as population, vehicle miles traveled, etc.).

More details on inventory accounting methods can be found in Appendix A.

2.1.3 GHG inventory key results

Figure 2-1: GHG emissions for the different sectors, in $MMTCO_2e$ and in percent relative to the total of 54.1 $MMTCO_2e$. Emissions related to transportation are outlined in black.



The annual GHG emissions for the Bay Area region for the year 2022 total 54.1 million metric tons of CO_2e ($MMTCO_2e$), as shown in Figure 2-1 (subsector detail in Table 3-2 and Figure 3-1 in Appendix A). For context, this total represents about 15% of California's statewide GHG emissions in 2022.[5] Transportation (32%) is the largest contributing sector to the annual total GHG emissions, followed by industrial (31%) emissions. Other high contribution sectors include buildings (18%) and power (13%).

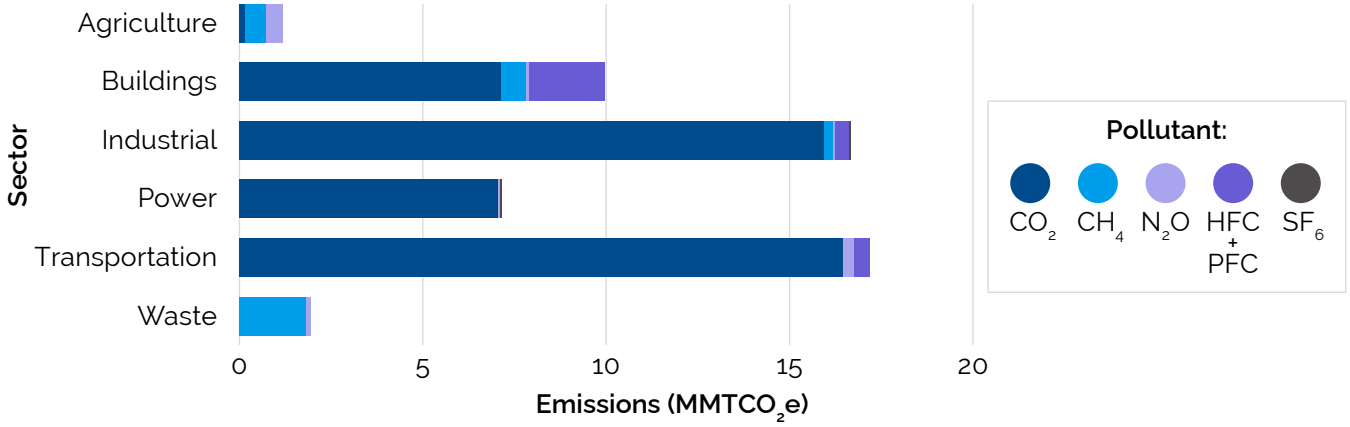
As currently defined for the BARCAP, the transportation sector only accounts for GHG emissions from the combustion (end-use) of fossil fuels to move people and goods (e.g., tailpipe emissions from on-road motor vehicles, fuel combustion exhaust from ships and airplanes, etc.). However, every lifecycle stage of fossil fuel extraction, processing, and use for the transportation sector generates GHG emissions. While the BARCAP region has negligible fossil fuel extraction sources, processing of fossil fuels for the transportation sector at the BARCAP region's refineries contributes significantly to the industrial sector emissions, accounting for over 60% (~10 $MMTCO_2e$) of that sector's total GHG emissions. In addition, on-site cogeneration of electricity for use at these refineries, categorized under the power sector, adds another 1.4 $MMTCO_2e$ or 20% to that sector's total. When combined with the transportation sector emissions, the GHG emissions related to transportation that are associated with both production (extraction and processing) and consumption (combustion) of fossil fuels account for over half of the total regional GHG emissions in 2022 (53% or 28.6 $MMTCO_2e$), as seen by the sectors outlined in black in Figure 2-1.

2.1.3.1 By GHG pollutant

CO_2 is the predominant GHG pollutant, representing 86% of the GHG emissions in the BARCAP region, mostly from combustion of fuels across the transportation, buildings, power, and industrial sectors. About half of CH_4 emissions, which constitute >6% of the BARCAP GHG inventory, are emitted from landfills in the waste sector; however, recent measurement studies have indicated that current inventory approaches may be

underestimating landfill methane emissions (see Appendix A Chapter 4 – Uncertainties and Future Improvements). About 44% of all N_2O emissions in the BARCAP region can be attributed to the agriculture sector, mostly due to fertilizer use. Nearly 6% of regional GHG emissions are attributed to leakages and fugitive losses of fluorinated high-GWP gases (including HFCs, PFCs, CFCs, HCFCs, and SF_6), a majority of which occur in the building sector as refrigerants.[6] The distribution of the different climate pollutants by sector in the BARCAP region is shown in Figure 2-2.

Figure 2-2: Pollutant contributions by sector to the greenhouse gas emissions inventory for 2022



2.1.3.2 *By county*

Figure 2-3: Relative percentages of GHG emissions from each county in the BARCAP region

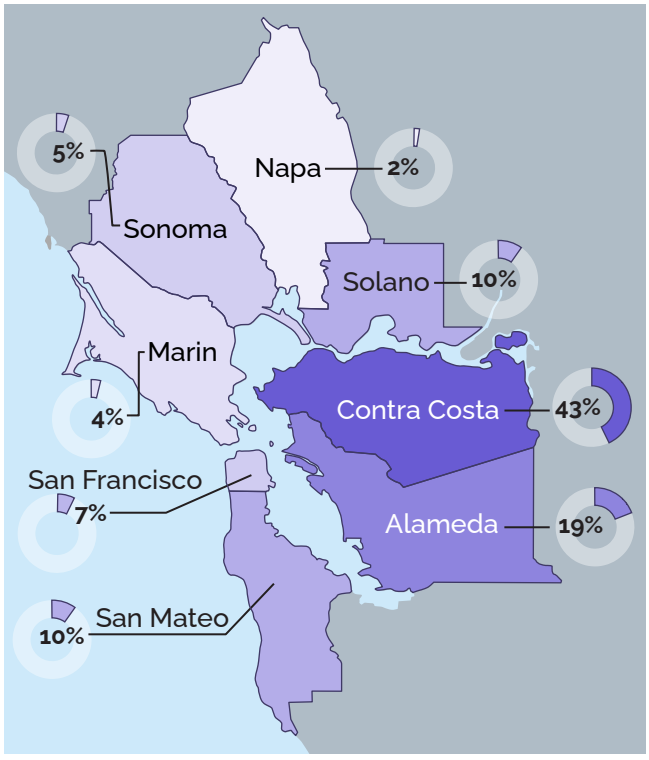


Figure 2-3 shows the distribution of emissions by county across the BARCAP region in 2022. Contra Costa County stands out as the county with the most GHG emissions (~45%). This is, in large part, because the county is home to four refineries and the majority of the power plants in the BARCAP region. The fifth refinery is in Solano County, which otherwise has relatively low GHG emissions, due to only the southern part of the county being included in the BARCAP region. In the other six counties, the transportation sector and buildings sector account for the majority of GHG emissions. A detailed breakdown is provided in Table 3-2 in Appendix A, showing emissions by county and sector.

2.2 GHG INVENTORY HISTORICAL EMISSIONS AND FUTURE PROJECTIONS



2.2.1 Overview

Historical emissions (back-cast to 1990) and future emissions projections (projected forward to 2050) provide insight into past emission trends and expected future trends. The historical back-cast uses the most recent available data to analyze emissions over the past 35 years. This information helps identify major emission sources and evaluate progress over time.[7] Future emissions projections extend through 2050 and are largely based on the California Air Resources Board's 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan) reference scenario and incorporate anticipated population growth and economic development for the BARCAP region. Additionally, the Air District's regulations for residential appliances (Rules 9-4 and 9-6) are incorporated into the future projections.[8] Together, the historical back-cast and the future projections provide a foundation for prioritizing measures and understanding the effectiveness of implemented measures over time.

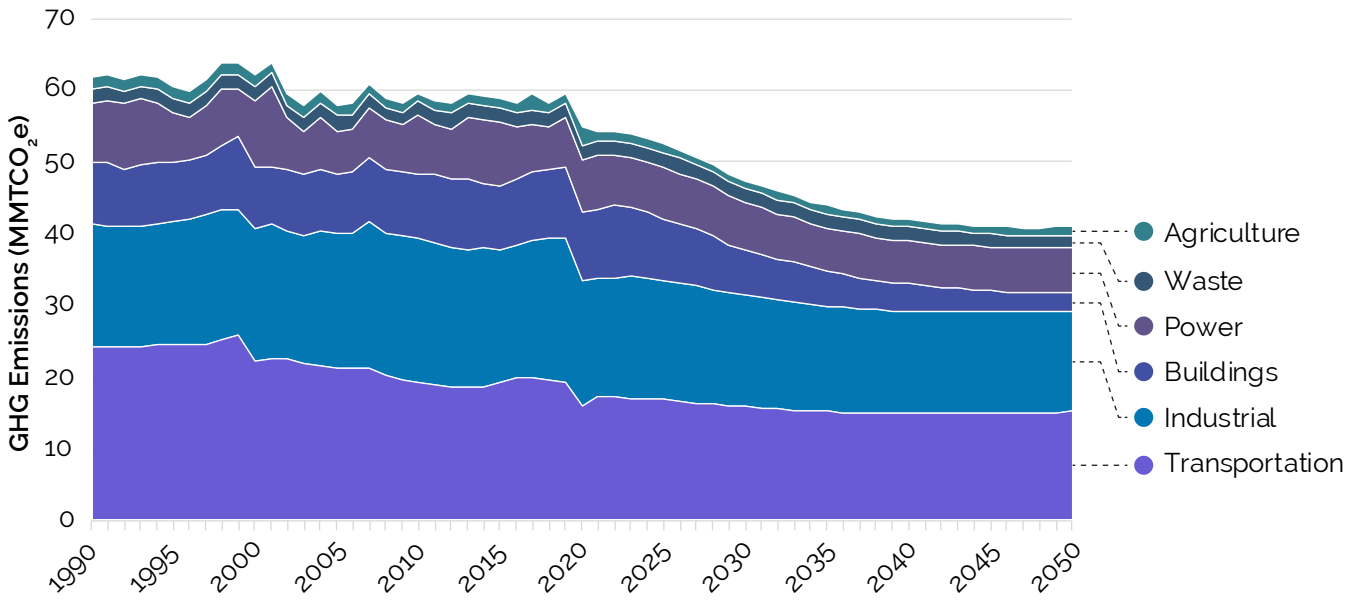
2.2.2 Historical emissions and future projections key results

The BARCAP region's total GHG emissions have dropped from 62.2 $MMTCO_2e$ in 2000 to 54.1 $MMTCO_2e$ in 2022, representing a 13% decrease, primarily resulting from reduction in emissions in the transportation (-23%) and power (-23%) sectors, as shown in Figure 2-4. For the transportation sector overall, on-road mobile source GHG emissions have declined significantly over the past few decades despite a growing vehicle population

and long-term increase in vehicle miles travelled (VMT) in the BARCAP region. This is largely due to reduced fossil fuel use from improved fuel economy and increased use of electric vehicles. In the power sector, the decline in GHG emissions is largely driven by the growing proliferation of renewable energy, which has reduced the BARCAP region's reliance on natural gas for power production. This trend is further strengthened by an increase in residents opting to purchase cleaner and renewable energy through public Community Choice Aggregators.[9] Over the past two decades, declining natural gas use in electricity generation has been offset by increased demand for natural gas use for space- and water-heating in the buildings sector, driven by the region's economic growth and rising population.

Annual GHG emissions for 2050 (which does not include emission reductions expected from the measures included in the BARCAP) are projected to decline to 36.7 $MMTCO_2e$ in the BARCAP region across major sectors including transportation (-12%), industrial (-16%), and power (15%). This anticipated trend reflects the impact from California's efforts to reduce fossil fuel use through promoting zero-GHG transportation, the state's Cap-and-Invest program that disincentivizes and puts a cap on GHG emissions from large emitters (power plants, landfills, etc.), and the continuing decarbonization of the Bay Area's electric power generation mix as required under the Renewables Portfolio Standard.[10] In comparison, annual GHG emissions of the buildings sector are expected to decline by 73% by 2050, with 70% primarily resulting from the Air District's Rule 9-4 and Rule 9-6, which require newly installed furnaces and water heaters to meet a zero-NO_x standard. While Rules 9-4 and 9-6 do not require the use of electric appliances, currently only electric appliances will meet the zero-NO_x standard.[11] Figure 2-4 shows the change in GHG emissions for each sector over time. More information on historical emissions and future projections can be found in Appendix A.

Figure 2-4: Changes in GHG emissions (in $MMTCO_2e$) by sector over time[12].



2.3 CARBON STOCK INVENTORY



2.3.1 Overview

The Air District developed a carbon stock inventory for the BARCAP region for the year 2022. This inventory illustrates where carbon is stored across the landscape in both plants and soils (i.e., carbon stocks). It can be used to understand the overall importance of natural and working lands for climate action, quantify and locate carbon at risk of being lost due to wildfire or development, and understand the impact of natural and working lands climate measures described in Chapter 10.

The carbon stock inventory does not include historical carbon stock amounts or project future carbon stock amounts. CARB is currently updating its Natural and Working Lands Carbon Inventory, which will include detailed data for the BARCAP region for carbon stock amounts.[13] This updated analysis may also lead to changes in statewide future carbon stock projections. The Scoping Plan shows that despite the vast amounts of carbon stored across lands in the state, natural and working lands are projected to be a source, not a sink, of carbon into the mid-century due to estimated carbon losses mainly from drought and wildfire.[14] These statewide projections are expected to hold true for the Bay Area.

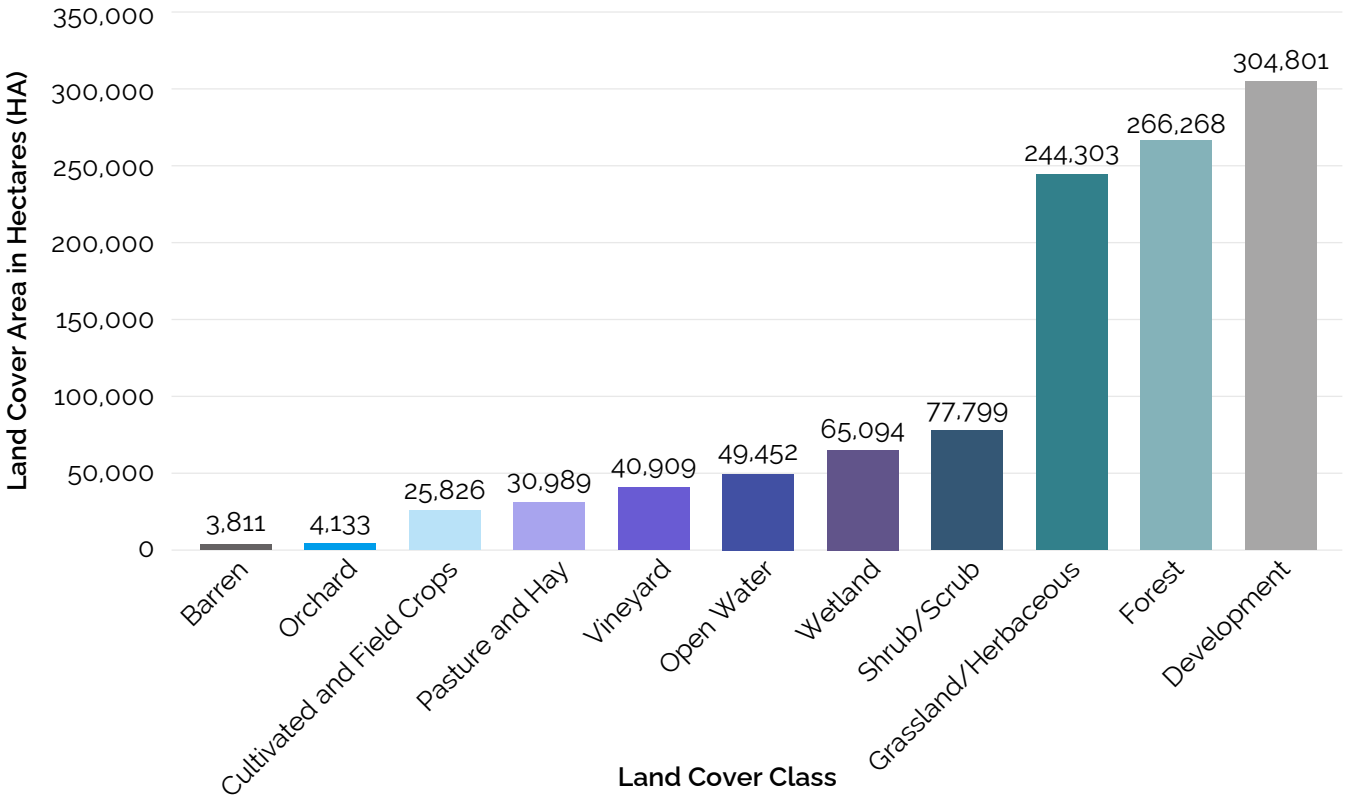
2.3.2 Carbon stock inventory methodology

The BARCAP region carbon stock inventory aligns with the most recent 2018 statewide carbon stock inventory described in the Scoping Plan, as well as local analyses conducted in Sonoma and Contra Costa counties. Santa Clara County conducted its own parallel and aligned carbon stock inventory for its own U.S. Environmental Protection Agency (US EPA)-funded Climate Pollution Reduction Grant (CPRG) effort. For a more comprehensive description of the carbon stock methodology and regional and state alignment, refer to Appendix B.

2.3.3 Carbon stock inventory key results

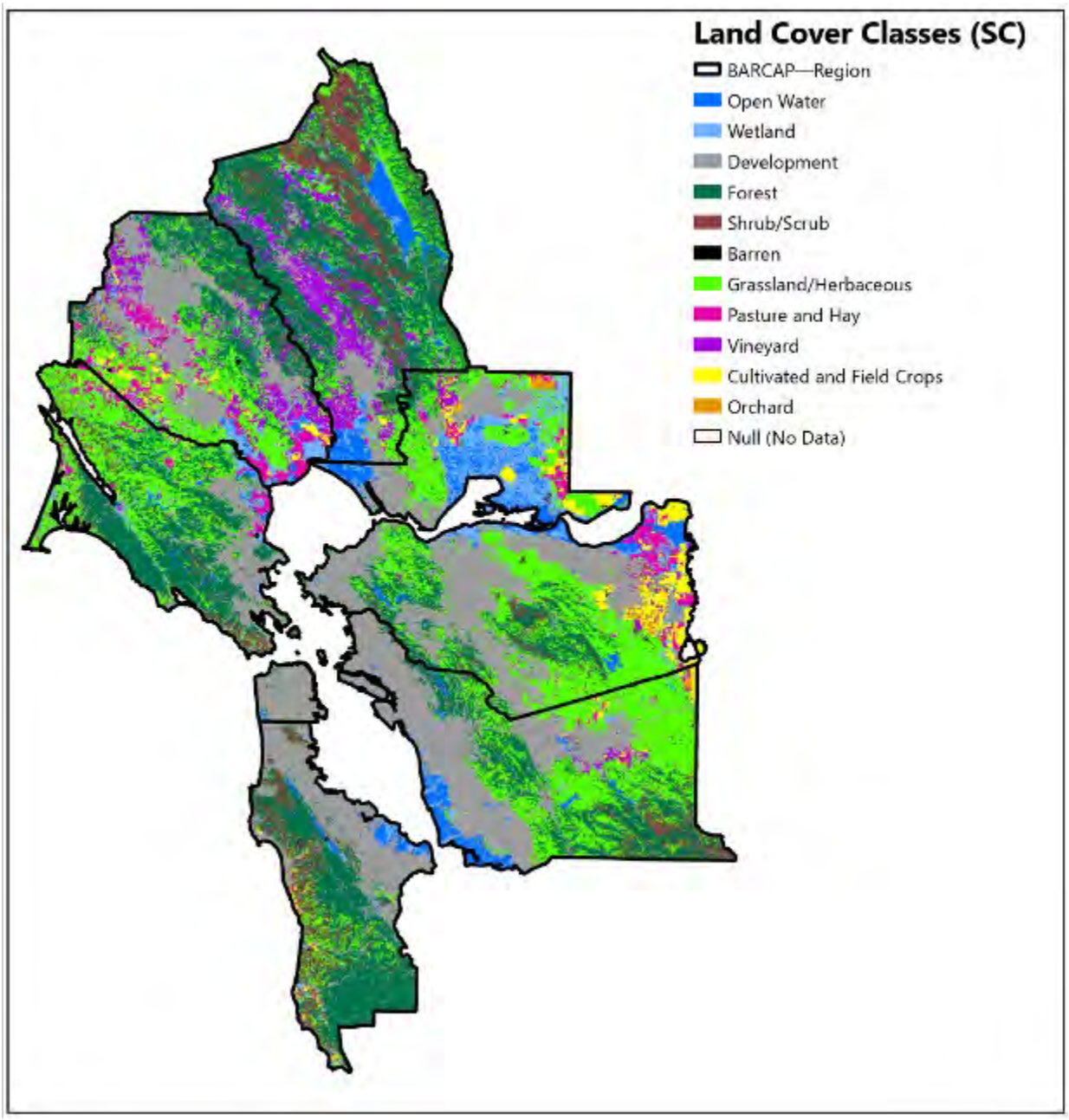
In order to quantify carbon stocks held in plants and soils across the eight counties, landcover types across the BARCAP region must first be mapped. As shown by the maps and figures below, the eight-county BARCAP region is mainly comprised of developed urban, forested, and grassland/herbaceous lands. Developed urban and suburban lands cover the largest area across the BARCAP region, taking up 27% of total hectares. Forested lands are the second largest category, covering 24%, followed by grassland/herbaceous lands at 21% of total hectares. All other landcover types are less than 10% of the total as shown in Figure 2-5, which displays all mapped landcover types from lowest to highest proportion, with total hectares identified. As carbon held in plants and soils is calculated in part based on landcover type, it is important to first identify prevalence of different kinds of landcovers across the BARCAP region.

Figure 2-5: BARCAP region total land cover in hectares



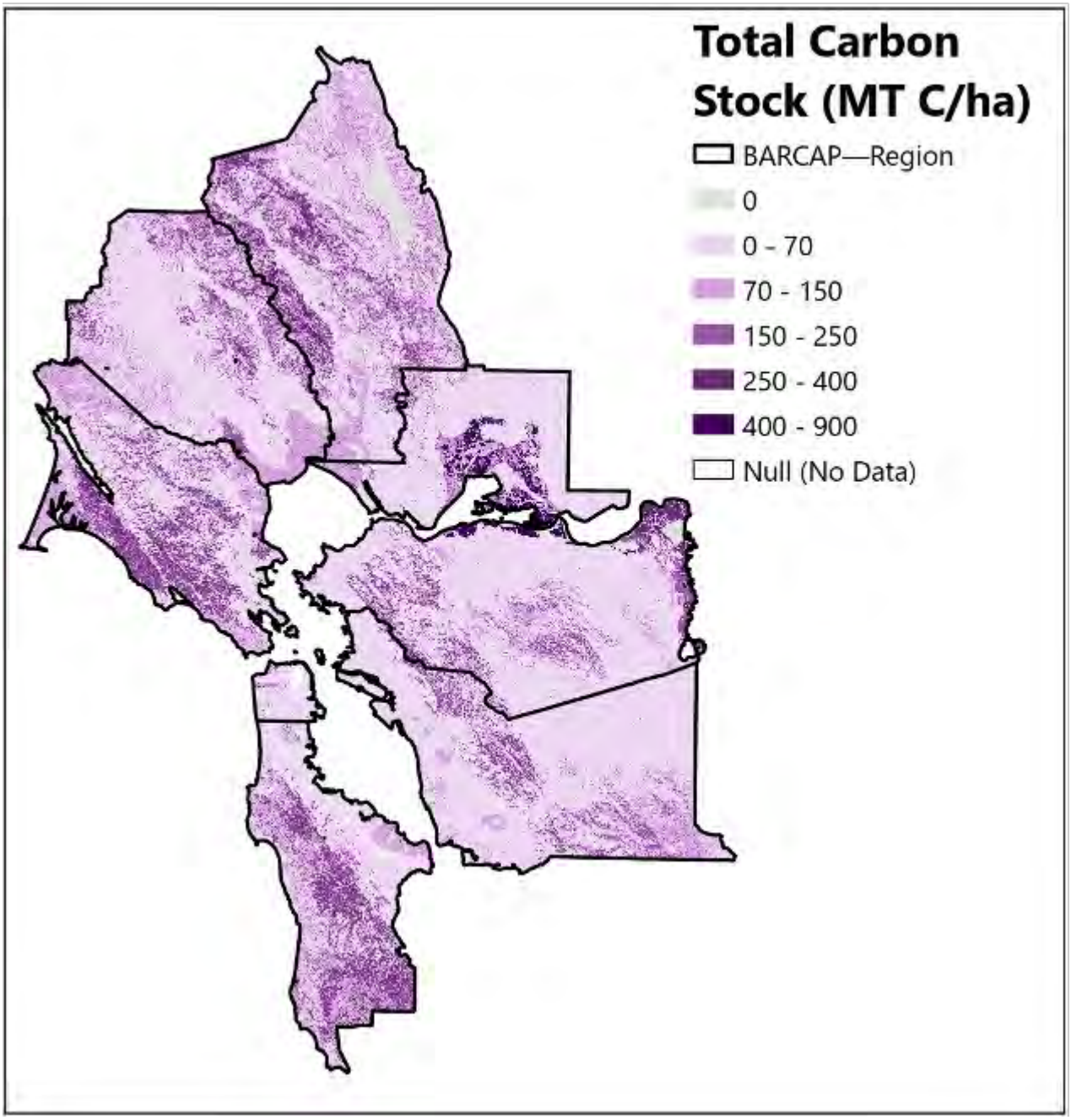
The geographic distribution of these landcover types is illustrated across the region in Figure 2-6. Highlights from the mapped landcover types include high densities of forests in Napa, Marin, and San Mateo counties, dominance of wetlands in mapped portions of Solano County, and high proportions of developed lands in Contra Costa, Alameda, and San Francisco counties.

Figure 2-6: Land cover types across the BARCAP region



Plants and soils across the region held 92,335,131 metric tons of carbon (MT C), as shown in Figure 2-7. These carbon stocks are six times larger than total GHG emissions across the BARCAP region for 2022, underscoring the importance of natural and working lands for Bay Area climate action.[15] While the BARCAP GHG Inventory uses units of MT CO_2e, MT C is used to describe carbon held in plants and soils to be consistent with the State and Intergovernmental Panel on Climate Change (IPCC) standards.[16]

Figure 2-7: Total carbon stock per hectare (metric tons carbon/hectare)



Forests and wetlands hold the highest density of carbon across Bay Area lands. Forests on average store 175 MT C per hectare, while wetlands store 133 MT C per hectare - both are significantly higher than the average of all land cover classes of 83 MT C per hectare, as shown in Table 2-1.

Table 2-1: 2022 Total Carbon Stock by Landcover Type

LAND COVER CLASS	AREA IN HECTARES	TOTAL CARBON STOCK IN MT C	AVG. TOTAL CARBON STOCK IN MT C PER HECTARE
Barren	3,811	139,387	37
Orchard	4,133	377,494	91
Vineyard	40,909	1,673,057	41
Cultivated and Field Crops	25,826	2,397,443	93
Pasture and Hay	30,989	2,570,126	83
Open Water	49,452	3,668,746	74
Shrub/Scrub	77,799	5,270,461	68
Wetland	65,094	8,632,855	133
Grassland/Herbaceous	244,303	10,296,937	42
Development	304,801	10,652,489	35
Forest	266,268	46,656,135	175
Total	***1,113,384***	***92,335,131***	***83***

Total ecosystem carbon stocks are nearly equally split between carbon held in plants (biomass) and carbon held in soils.[17] Carbon in soils comprises 51% (47,455,018 MT C, or 174,001,733 MT CO_2e) of total ecosystem carbon, while carbon in plants comprises 49% (44,880,113 MT C, or 164,560,414 MT CO_2e).[18] These soil and plants carbon values have been converted to units of CO_2e in order to emphasize their importance for regional climate action, and compare to total GHG emissions: carbon in soils is over 3.2 times larger than total regional emissions (54.1 MMT CO_2e), while carbon in plants is ~3 times larger than total regional emissions (see Figure 2-8). This distribution is shown on the following pages in Figure 2-9 and Figure 2-10, with separate visualizations for carbon held in soils (Figure 2-9), and carbon held in plants (Figure 2-10).

Figure 2-8: Comparison of soil and plant carbon values to total regional emissions (CO_2e)

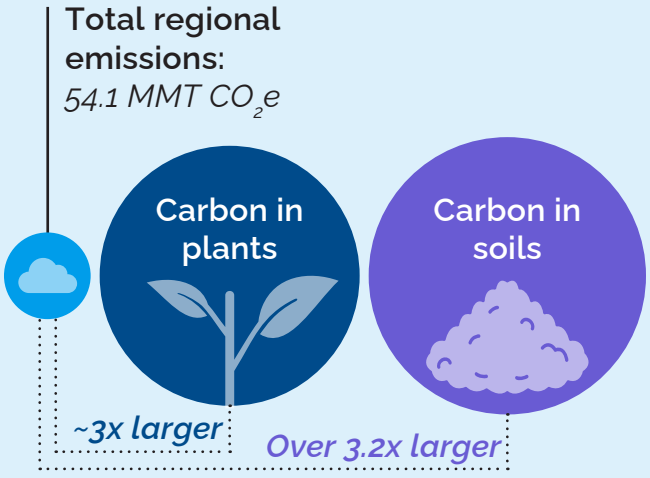


Figure 2-9: Soil carbon stock per hectare (metric tons carbon/hectare)

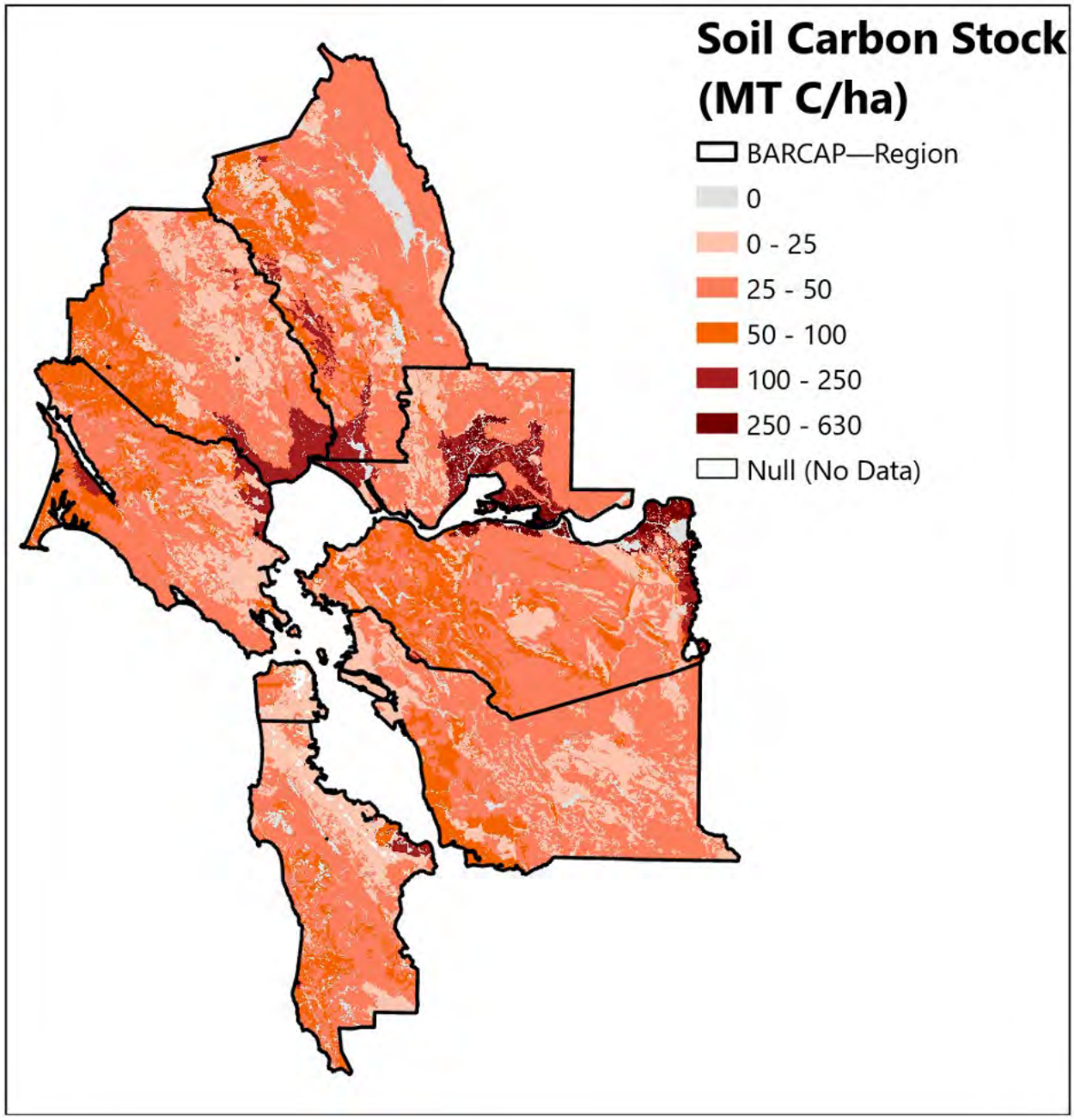
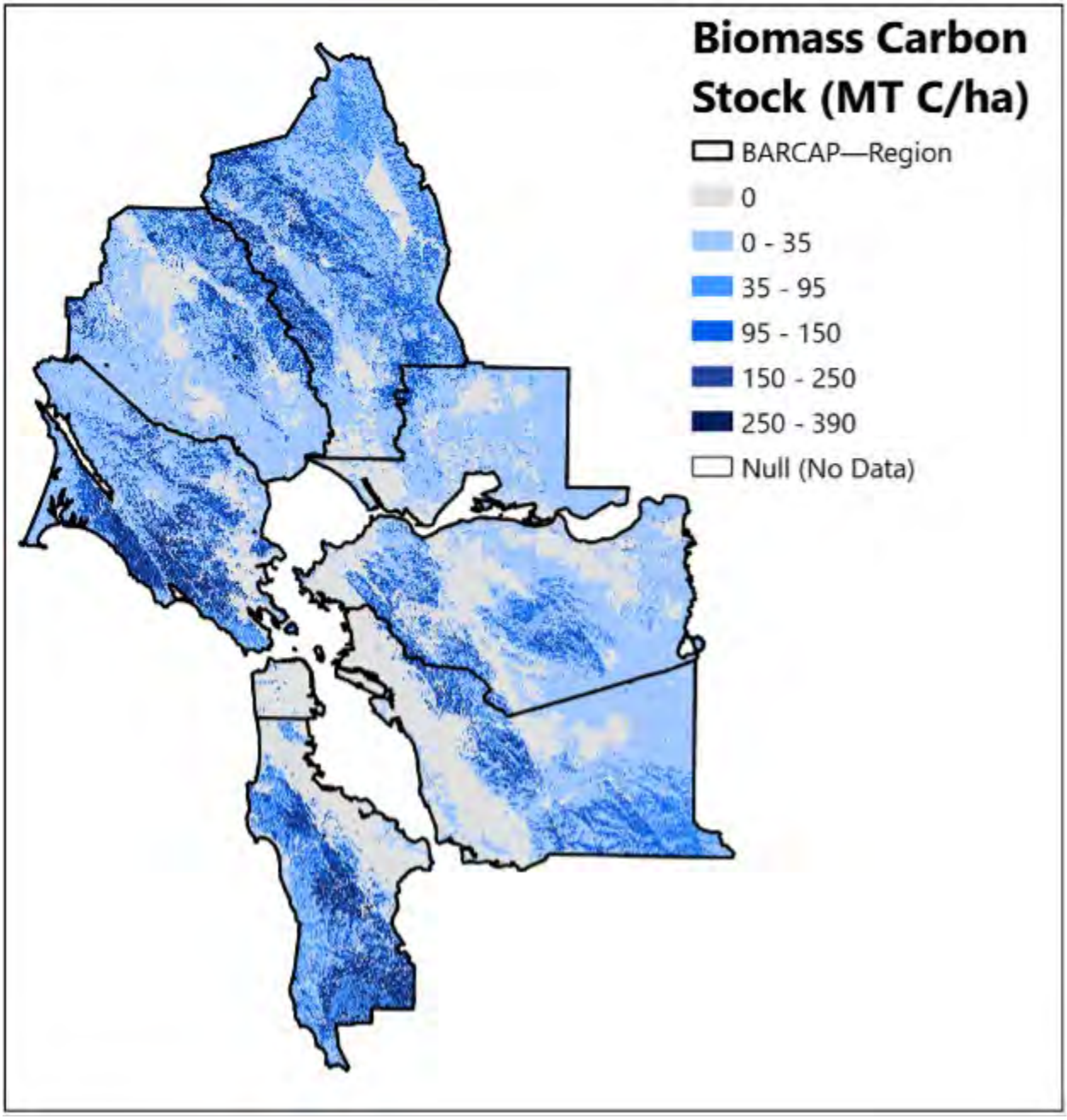


Figure 2-10: Plant (biomass) carbon stock per hectare (metric tons carbon/hectare)



Wetlands are notable for the density of carbon held in their soils. Despite comprising only 6% of total landcover, wetlands account for 14% of total soil carbon stocks across the BARCAP region. However, developed lands, forests, and grassland/herbaceous lands are the three largest total pools of carbon held in soils due to a combination of their soil carbon density (i.e., in forests and grasslands), and/or sheer area across the BARCAP region.

Forests are the most significant pool of carbon held in plants, accounting for 82% of the total plant carbon pool, with significant density of forest landcover types in Napa, San Mateo, Sonoma, and Alameda Counties. Scrub and shrub lands account for the second largest pool of carbon held in plants, accounting for 6% followed by wetlands, which account for 4% of total carbon held in plants.

The results of the carbon stock inventory informed the potential for GHG emissions reductions from measures and actions in the natural and working lands sector, which are described in further detail in Chapter 10. For more information on the carbon inventory methodology and results, please refer to Appendix B.



GHG emissions beyond the BARCAP region

Unlike local air pollution, GHGs impact our environment at the global scale. This means that in a globalized economy, the BARCAP region's actions have the potential to reduce not only GHG emissions within the region, but anywhere that supplies energy and materials consumed in the region. The GHG emissions inventory for the BARCAP categorizes and quantifies the GHG emissions produced or emitted within the geographic boundaries of the BARCAP region. However, this emissions inventory does not tell the whole story of the BARCAP region's impact on the global climate since a significant portion of the goods and services consumed by residents are produced outside the region.

To more fully describe the amount of GHGs generated by a region, a consumption-based GHG emissions inventory can be developed, similar to the one incorporated in the Air District's 2017 Clean Air Plan in collaboration with the Cool Climate Network at UC Berkeley.[19] This type of inventory is typically based on a full life-cycle analysis of the emissions generated by the production, use, and disposal of each activity or product. By estimating the GHG emissions embedded in the goods, services, and activities consumed by residents, regardless of where the goods were produced or the emissions were released, a consumption-based inventory provides insight into the full scale of the impact and benefit of GHG reduction actions.

There are currently several efforts to develop consumption-based inventories for the Bay Area and other regions of the state led by the Cool Climate Network which would provide a different view of the region's GHG impact.

ENDNOTES

1 This choice of base year reflects the best available data, for a vast majority of the source categories, including up-to-date (current) activity data, throughputs, emissions factors, impact of implemented controls, or actual reported and approved emissions (not a projection), or access to up-to-date national and statewide emissions inventories.

2 The Air District's complete GHG inventory includes nine counties, but the GHG inventory for the BARCAP excludes Santa Clara County to align with the geographic scope of this planning effort. Both inventories exclude the portions of Sonoma County and Solano County that fall outside the Air District's jurisdiction.

3 Gunnar Myhre et al., "Anthropogenic and Natural Radiative Forcing," in Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, ed. T. F. Stocker et al. (Cambridge: Cambridge University Press, 2013), 714, table 8.7, https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf.

4 An emission factor is a standardized value describing the mass of GHGs emitted per unit of activity. Activity data includes data such as vehicle miles traveled or landfill gas emitted; A throughput indicates how much material or fuel is being used, which directly influences the amount of pollutants released. E.g., a substance that is consumed during a process, and, while being consumed, produces emissions, such as the type and amount of waste processed at composting facilities or the amount of natural gas consumed for electricity production at power plants; A local control is a local rule or policy that limits emissions in ways not done by state and federal regulations, such as Air District Regulation 9 Rules 4 and 6 which aim to prohibit the use of space and water heating appliances that produce nitrogen oxides emissions, with co-benefits of reducing GHG emissions; "Regulation 9 Rule 4: Nitrogen Oxides from Natural Gas-Fired Furnaces – 2023 Amendment (Current)", Bay Area Air District, accessed September 4, 2025, https://www.baaqmd.gov/rules-and-compliance/rules/reg-9-rule-4-nitrogen-oxides-from-fan-type-residential-central-furnaces; "Regulation 9 Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters – 2023 Amendment (Current)," Bay Area Air District, Accessed September 4, 2025, https://www.baaqmd.gov/rules-and-compliance/rules/reg-9-rule-6-nitrogen-oxides-emissions-from-natural-gasfired-water-heaters.

5 "California 2000-2022 GHG Inventory (2024 Edition)", California Air Resources Board, accessed October 30, 2025, https://ww2.arb.ca.gov/ghg-inventory-data.

6 With the adoption of SB1206 in 2022, HFCs will be phased-out in California by 2033, to be replaced with lower-GWP and/or non-GHG options. Senate Bill No. 1206, Skinner. Hydrofluorocarbon gases: sale or distribution; "SB 1206 and AB 663," California Air Resources Board, Accessed November 11, 2025, https://ww2.arb.ca.gov/our-work/programs/sb-1206-and-ab-663/about.

7 This scenario represents "what GHG emissions would look like if (the state) did nothing at all beyond existing policies that are required or already in place to achieve the 2030 target of at least 40 percent below 1990 levels. across all sectors statewide; "CARB 2022 Scoping Plan for Achieving Carbon Neutrality," California Air Resources Board, December 2022, https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf; More information on historical and future projections is provided in Appendix A.

8 "Regulation 9 Rule 4: Nitrogen Oxides from Natural Gas-Fired Furnaces," Bay Area Air District; "Regulation 9 Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters," Bay Area Air District; California's

Advanced Clean Cars II regulation and MTC-ABAG's Plan Bay Area 2050+ were not incorporated into the future projections of the inventory but are accounted for separately from GHG and co-pollutant emissions quantification of measures in the transportation sector.

9 "Community Choice Aggregation (CCA): What is it?" CALCCA, Accessed October 21, 2025, https://cal-cca.org/powered/.

10 "2022 Scoping Plan for Achieving Carbon Neutrality"; "Cap-and-Invest Program," California Air Resources Board, Accessed January 21, 2026, https://ww2.arb.ca.gov/our-work/programs/cap-and-invest-program; "Renewables Portfolio Standard – RPS," California Energy Commission, Accessed October 21, 2025, https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard.

11 "Regulation 9 Rule 4: Nitrogen Oxides from Natural Gas-Fired Furnaces – 2023 Amendment (Current)," Bay Area Air District; "Regulation 9 Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters – 2023 Amendment (Current)," Bay Area Air District.

12 The large peaks in the agriculture sector trendline are due to major fire events in 2017 and 2020.

13 "2025 Natural and Working Lands Cabon Inventory update", California Air Resource Board, accessed October 30, 2025. https://ww2.arb.ca.gov/our-work/programs/nature-based-strategies/natural-and-working-lands-carbon-inventory/2025-natural.

14 "APPENDIX I – NATURAL AND WORKING LANDS TECHNICAL SUPPORT DOCUMENT," California Air Resources Board, November 2022, https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-i-nwl-modeling.pdf.

15 The U.S. Environmental Protection Agency's (EPA) Greenhouse Gas Equivalencies Calculator was used to convert carbon held in NWL to carbon dioxide equivalent (CO_2-e) units in order to make this comparison. MT C is used throughout this section as opposed to MT CO_2-e, as carbon (C) is the standard unit of measurement used for carbon stocks in plants and soils used by the International Panel on Climate Change, State of California, and local Bay Area analyses. As described by the EPA Greenhouse Gas Equivalencies calculator, units of Carbon to CO_2-e are converted by multiplying by a factor of 3.67 based on molecular weight.

16 At certain points in this section, such as presenting total carbon stock values for plants and soils, units of carbon are converted into CO_2-e for the purposes of helping the reader understand their magnitude of importance compared to the GHG inventory and emissions reductions measures.

17 Biomass carbon describes carbon held in the total mass of organic material at a given time including both above and below ground live plant matter like roots, trunks, and branches, as well as dead plant material like litter and dead wood. Soil carbon describes the amount of carbon held in the top 30 centimeters of the soil column. Source: Appendix B Carbon Stock Inventory.

18 The U.S. Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator was used to convert carbon held in NWL to carbon dioxide equivalent (CO_2-e) units in order to make this comparison.

19 The Bay Area Air District Consumption-based GHG Emissions Inventory can be accessed here: https://www.baaqmd.gov/en/about-air-quality/emission-inventory/consumption-based-ghg-emissions-inventory; The UC Berkeley CoolClimate Network's updated database can be accessed here: https://www.ecodatalab.com/.



3 GHG Emission Reduction Targets

The Bay Area Regional Climate Action Plan (BARCAP) is designed to complement climate planning efforts at the state, county, and city levels by focusing on filling gaps, addressing common challenges, building on, expanding, and accelerating climate solutions that are already underway in the BARCAP region. The BARCAP aligns with and supports achievement of the state's greenhouse gas (GHG) reduction targets. It also supports achieving targets set by other regional and local agencies.

3.1 STATE TARGETS

The BARCAP is aligned with and supports state targets. The State of California adopted the following GHG emission reduction targets, as established in statute:

- **40% below 1990 levels by 2030,** which translates to roughly 47% below 2005 levels;[1]
- **Carbon neutrality by 2045,** with at least 85% of reductions from 1990 levels from direct emissions reductions.[2]

Carbon neutrality is achieved when the amount of carbon dioxide emissions (CO_2) emitted into the atmosphere is offset by an equivalent amount removed, such as through sequestration, resulting in net-zero CO_2 emissions. To achieve this, the state's 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan) maps out a pathway that includes directly reducing GHG emissions by 85% and achieving the rest of the carbon neutrality target by removing carbon in the atmosphere and storing it through natural carbon sequestration as well as a variety of mechanical approaches such as direct air capture and carbon capture, utilization, and storage (CCUS). In the BARCAP, regional and local governments and partner organizations have focused on helping the state maximize direct GHG emission reductions and minimize reliance on CCUS in order to maximize the public health co-benefits of reducing dependence on fossil fuels.

3.2 REGIONAL TARGETS

Regional agencies in the Bay Area have adopted GHG reduction targets in support of the state's GHG reduction goals. Under Senate Bill 375, the Sustainable Communities and Climate Protection Act of 2008, the state set a Bay Area regional target for GHG emissions from passenger vehicles of a 19% reduction in per capita emissions below 2005 levels by 2035.[3] The Metropolitan Transportation Commission and the Association of Bay Area Governments' (MTC-ABAG) Plan Bay Area 2050+ aims to meet the state mandated target through strategies that integrate transportation and land use planning. The Air District adopted a regional GHG emissions reduction target aligned with the state's target in Assembly Bill 32 (2006) to reduce emissions 80% below 1990 levels by 2050. This target is reflected in the Air District's 2017 Clean Air Plan.

3.3 LOCAL TARGETS

Many local climate action plans in the Bay Area include equal or more stringent GHG reduction targets than the state. For example, some jurisdictions have set targets for net-zero emissions by 2030, fifteen years before the state plans to achieve carbon neutrality. Additionally, six out of eight counties and over 30 cities in the BARCAP region have declared climate emergencies, acknowledging the urgency of climate mitigation and prioritizing accelerated action.



- **By 2045,** the State of California plans to achieve carbon neutrality
- **By 2035,** the Bay Area plans to reach -19% per capita passenger vehicle GHG emissions relative to 2005
- **27 local climate action plans** set targets for GHG emissions reductions that surpass the state's targets
- **Nearly 40 cities and counties** in the BARCAP region have declared a climate emergency

ENDNOTES

1 SB 32 (2016); Rhodium Group, the Scoping Plan has a 2030 goal of 48% below 1990 levels (55.8% below 2005 levels).

2 AB 1279 (2022).

3 "SB 375 Regional Targets," California Air Resources Board, Accessed January 20, 2025, https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/sb-375-regional-targets#:~:text=Senate%20Bill%20375%20requires%20CARB,if%20feasible%20to%20do%20so.



4 Engagement

Successfully achieving the Bay Area Regional Climate Action Plan (BARCAP) vision will require everyone.[1] The BARCAP engagement process provided a forum to hear from local governments, regional agencies, technical experts, community-based organizations (CBOs), climate solution implementers, frontline communities, and the general public. Local governments, regional agencies, and other potential implementers identified existing hurdles and standout opportunities for regional climate action. Giving frontline communities a seat at the table was critical to ensure that the actions in the BARCAP center environmental justice by improving the daily lives of frontline communities and minimizing unintentional harms to the extent feasible.[2] Engaging with the general public helped provide broad information on regional perspectives and values related to climate action.

The project team incorporated the knowledge gathered during engagement into the BARCAP to ensure it is both feasible and aspirational, reflecting the challenges and opportunities encountered by climate action implementers as well as the values of diverse communities across the BARCAP region. Implementing the BARCAP will require continuing and building on this foundation of thoughtful, collaborative engagement.

4.1 OVERVIEW OF APPROACH

The BARCAP region's large geographic area and diverse communities required an engagement approach with both breadth and depth, reaching across the BARCAP region while achieving a deep understanding of local priorities and concerns. The BARCAP region encompasses rural areas, farmland, and urban centers. It is diverse and populous – home to 5.5 million people, with a growing share of Asian, Pacific Islander, and Latino populations.[3] The Bay Area is one of the most diverse regions in the nation, with speakers of more than 160 languages, forty-three percent of whom speak a language other than English at home. Fifty-nine percent of the population identify as people of color, and there is a wide diversity of different racial and ethnic groups.

The BARCAP region is also home to over 80 climate action plans at the county, city, and town level across 88 jurisdictions in the BARCAP eight-county region.[4] Engagement activities helped determine how the BARCAP could complement and build on these local efforts and not duplicate them, in particular where there had been strong local engagement. The BARCAP engagement strategy sought to minimize potential 'engagement fatigue' experienced by community members, especially frontline community members, who have actively participated in local climate action planning efforts.

Key engagement goals

The following goals shaped the design of the BARCAP engagement strategy and helped ensure there was meaningful and iterative feedback from local governments, technical experts, frontline communities, potential implementers, and the general public.

- **Cultivate a shared understanding** about climate change and key areas for action
- **Gather perspectives and feedback** from community that are representative of the Bay Area
- **Strengthen community partnerships and center equity,** and build community-facing bridges to support future equitable implementation
- **Build on current and past progress** including the Priority Climate Action Plan (PCAP), local jurisdictions' recent climate plans and regional efforts to minimize duplication
- **Identify standout opportunities for regional climate action,** including key gaps and challenges to local climate action
- **Facilitate new conversations** and partnerships
- **Leverage insights and perspectives** from knowledgeable practitioners to inform key areas for action

The BARCAP engagement strategy thoughtfully deployed tools including surveys, multilingual workshops, CBO partnerships, interactive public commenting, and strategic meetings and work groups, which are shown in the infographic below. As a result, members of the public and frontline community members had the opportunity to provide feedback through multiple avenues while measures were being drafted. Technical experts, potential measure implementers, CBOs, nonprofits, local governments, and regional agencies were also engaged throughout BARCAP development.

In total, the BARCAP engagement process resulted in:



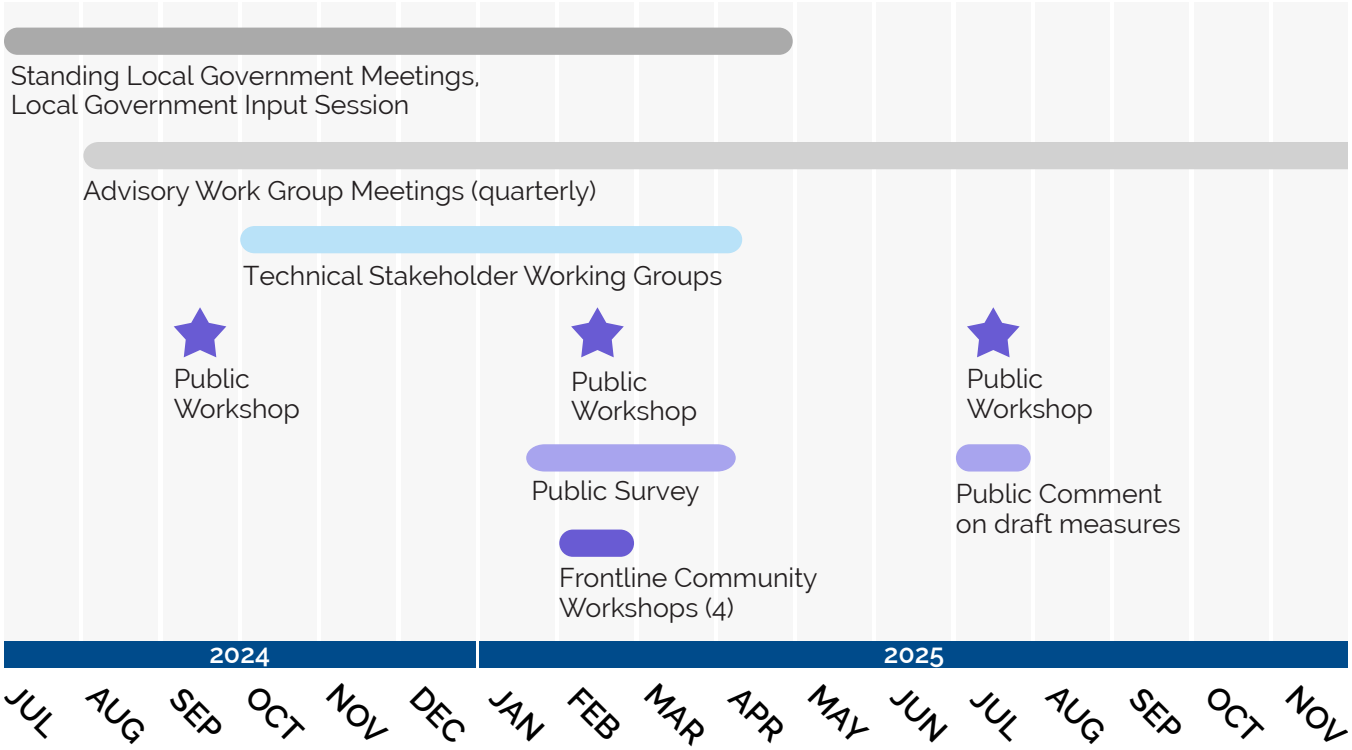
Key stakeholders & engagement toolbox

Each audience played a critical role in ensuring the BARCAP was **implementable, innovative, inspiring, additive (not duplicative), and centered on environmental justice**.

FRONTLINE COMMUNITIES: Influence design principles, measure development, community benefits and risks	**ENGAGEMENT TOOLS:** four subregional frontline community workshops, multilingual survey, community-based organization partnerships, public comment period, multilingual outreach
COMMUNITY-BASED ORGANIZATIONS AND ENVIRONMENTAL JUSTICE ORGANIZATIONS: Co-create design principles, advise project process, co-create and recruit community members to engage with priority community workshops	**ENGAGEMENT TOOLS:** roundtable, four subregional frontline community workshops, surveys, partnerships, public comment period, Advisory Work Group
LOCAL GOVERNMENTS: Identify key obstacles to local action that regional strategies could address, advise on process, shape and lead measures, provide technical expertise and highlight local climate actions already being implemented to avoid duplication, recommend local successes for potential scaling across the BARCAP region	**ENGAGEMENT TOOLS:** Advisory Work Group, technical stakeholder working groups (working groups), local government outreach
PUBLIC: Contribute to vision and measure development, understand and engage with project process, provide information on regional perspectives and values related to climate action	**ENGAGEMENT TOOLS:** three public workshops, survey, public comment period
TECHNICAL EXPERTS & IMPLEMENTERS: Ground measures and actions in on-the-ground realities, identify areas to advance regional leadership through BARCAP measure implementation	**ENGAGEMENT TOOLS:** technical stakeholder working groups

The timeline for BARCAP outreach is shown below in Figure 4-1.

Figure 4-1: Timeline of BARCAP Engagement Activities



The Air District hired a consultant team with extensive experience in public and community engagement to support implementation of the engagement strategy. Air District and consultant staff worked closely together and are referred to throughout this chapter as the project team.

4.2 ADVISORY WORK GROUP

An Advisory Work Group (AWG) met quarterly with the Air District to help inform decisions on key aspects of the BARCAP, connect the BARCAP to communities and local governments in AWG members' jurisdictions, discuss key challenges and important gaps to be addressed, and review key deliverables. AWG members also participated in the Technical Work Groups, described on the following page, and several contributed to the development of the engagement strategy. The Air District was able to leverage ongoing stakeholder engagement efforts led by AWG members, such as standing county-led local government meetings, and received support from AWG members for targeted engagement and information sharing with their networks as needed.

4.2.1 AWG members

The AWG was composed of representatives from regional agencies (Air District, Association of Bay Area Governments/Bay Area Regional Energy Network (ABAG/BayREN), Bay Area Regional Collaborative (BARC), and Metropolitan Transportation Commission (MTC)), two cities named in the federally-designated planning region (City of Oakland and City and County of San Francisco), the counties comprising the planning region (Alameda County, Contra Costa County, Marin County, Napa County, San Mateo County, and the portions of Solano County and Sonoma County that are within the Air District's jurisdiction), and several community-based and community-serving organizations (Canal Alliance, Climate Resilient Communities, Emerald Cities Collaborative Northern California, Rise South City, and Transform).[5] The full list of participants is available in Appendix E. The Air District also actively coordinated with Santa Clara County, the leader of the Climate Pollution Reduction Grant planning effort for the broader San Jose metropolitan area.

Figure 4-2: Members of Advisory Work Group



4.3 FRONTLINE COMMUNITIES

In order to center environmental justice in BARCAP outcomes and process, the project team and its partners sought to meaningfully engage frontline communities early in the plan development process. Key goals included strengthening community partnerships to center equity and facilitate implementation, and empowering and gathering perspectives and feedback representative of the Bay Area's diverse communities. Engagement was designed to give community members and CBOs a seat at the table, reflecting their position as experts in environmental justice, injustice, and the conditions needed for climate policy to improve the daily lives of their communities.

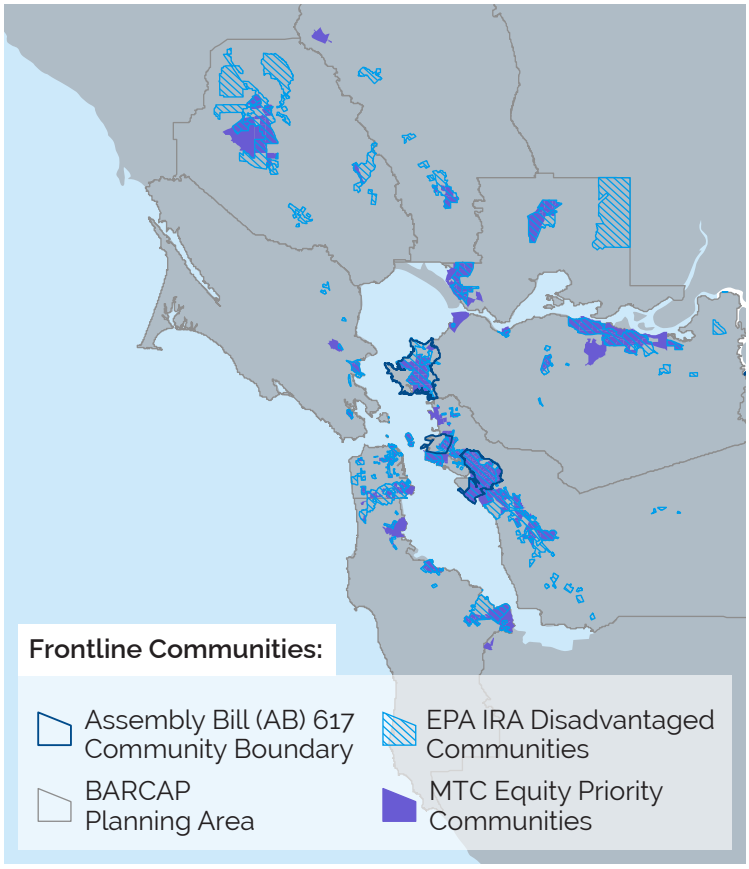
4.3.1 Defining frontline communities

The Air District identified frontline communities for the BARCAP, shown in Figure 4-3,

using a U.S. Environmental Protection Agency (US EPA) screening tool (US EPA Inflation Reduction Act Disadvantaged Communities tool) and two frameworks used by Bay Area regional agencies to identify priority communities for regional planning efforts: Assembly Bill 617 communities, and MTC Equity Priority Communities.[6]

4.3.2 Frontline community workshops

Figure 4-3: BARCAP Frontline Communities



Workshops were held in frontline communities early in the planning process before BARCAP measures were drafted. This allowed workshop participants to provide input on measures at the 'ground floor' and have a role in shaping design principles which were fundamental in guiding measure development. The input and findings gathered from these workshops were essential in shaping the draft measures.

To gather perspectives and feedback representative of the BARCAP region's frontline communities within the timeframe to inform the measures, the project team divided the BARCAP region into four subregions, each of which hosted a frontline community workshop. Eight CBOs were critical partners in planning the workshops, providing invaluable expertise and deep relationships with the communities they serve in the subregions. The CBOs co-developed the workshop agendas and multilingual materials to ensure that workshop content resonated with the needs of community members. CBO partners also recruited workshop participants, which was key in hearing the voices of the community and bringing multilingual community members to the table. The CBOs were compensated for their efforts, recognizing their expertise and role as part of the project team.

In addition to facilitating engagement, CBOs will be critical partners in implementation. Part of the vision for the community workshops was to engage CBOs in a meaningful way to begin building the long-term community partnerships needed to support equitable implementation across the BARCAP region. CBO partners and subregions are described on the following page in Table 4-1.

Table 4-1: Subregional Workshop Areas and Community-Based Organization Partners

FRONTLINE COMMUNITY WORKSHOP SUBREGIONS (COUNTIES)	COMMUNITY-BASED ORGANIZATION PARTNERS
Napa, Marin, Sonoma	North Marin Community Services Graton Day Labor Center
Alameda	Higher Ground Neighborhood Development Corporation Hayward Community Coalition (HayCoCoa)
Contra Costa and Solano	Citizen Air Monitoring Network Sustainable Solano Sustainable Contra Costa
San Mateo and San Francisco	El Concilio of San Mateo



The workshops occurred in the evenings to maximize participation, with options for dedicated Spanish and Cantonese discussion groups, and virtual and/or in-person participation as desired by the partner CBOs. Attendees received stipends for their participation. During the workshops participants brainstormed how preliminary areas of focus for BARCAP measures might impact their daily lives. Figure 4-4 shows a snapshot of participant discussions of risks and benefits of proposed areas for climate action from multilingual breakout rooms for Cantonese and Spanish speakers.

Figure 4-4: Snapshots of Community Feedback from Spanish and Cantonese Breakout Rooms

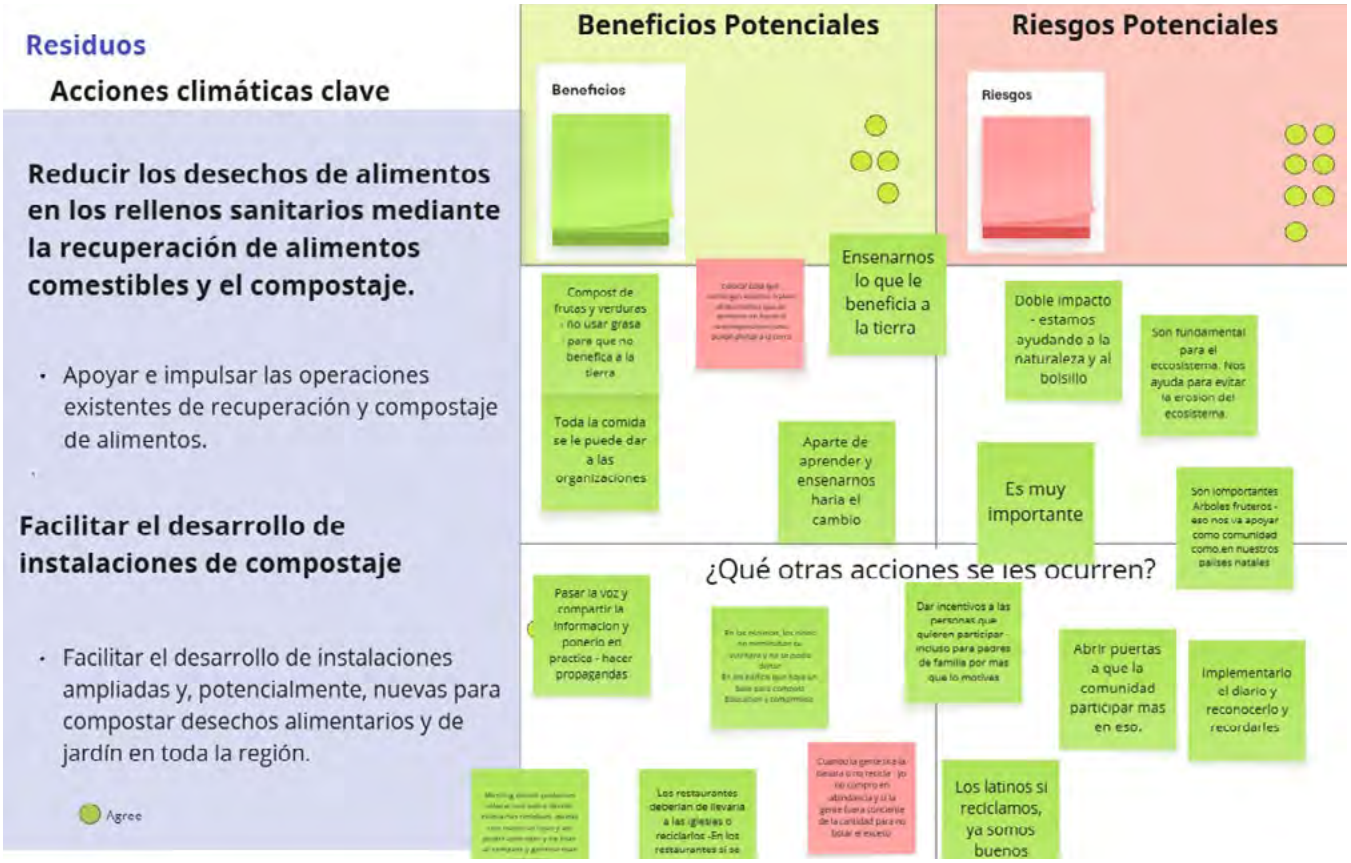




Figure 4-5: Key frontline community themes



Workshop participants also provided feedback on design principles used to guide measure development. The design principles were initially developed in 2023 in partnership with a roundtable of climate justice and equity organizations that served environmental justice communities: Emerald Cities Collaborative Northern California, The Greenlining Institute, PODER, and Transform. The principles were also informed by input from local governments and regional agencies based on what they have heard directly from their communities. Once updated to reflect feedback obtained through the workshops, the Air District assessed BARCAP measures against the revised design principles to ensure alignment with the underlying concepts. The full list of updated design principles can be found in Table 5-1 in Chapter 5- GHG Reduction Measures.

The Air District incorporated findings from the frontline community workshops, particularly the equity concerns, into draft BARCAP measures. The results are measures interwoven with language to center and advance equity, minimize unintended consequences, and lift up and amplify values and priorities identified by communities.

More information on key findings, community feedback, and the process for measure updates from each workshop is available in Appendix E.

4.4 LOCAL GOVERNMENTS

The Air District conducted extensive engagement with local governments in the BARCAP region, recognizing they are key stakeholders that may benefit from the BARCAP and also may serve as key implementation partners. Local governments provided unique insights into opportunities for the BARCAP to advance local climate action by addressing obstacles

and scaling solutions regionally while avoiding unnecessary duplication of efforts. They also shared important equity and implementation considerations. In total, 63 cities, towns, and counties (or roughly 71 percent of the total 88 cities, towns, and counties in the BARCAP region) participated in at least one engagement effort.

AWG members invited the Air District to attend regularly occurring local governments meetings between July and December 2024, including the Contra Costa County Sustainability Exchange, the Marin Clean Energy Partnership, San Mateo County Regional Climate Action Planning Suite Program, Sonoma Regional Climate Protection Authority, and StopWaste's Technical Advisory Group in Alameda County. The Air District attended nine meetings in total to present on BARCAP development and learn about local governments' specific needs and challenges that could be addressed at the regional level to advance local climate action. The Air District also asked local governments for input on what climate actions are more appropriately addressed on a regional scale versus at the individual jurisdiction level.

Local governments participated in other public engagement efforts including the public workshops and public survey, and the Technical Working Groups (working groups) (see member list in Appendix E). The Air District also hosted a virtual Local Government Input Session in April 2025 to garner feedback from local government staff on the preliminary draft measures, particularly asking about measure alignment with city and county efforts, potential local government roles in implementation, and identification of potential implementation challenges. Local governments provided comments during the public review process on the draft measures as well.



4.5 TECHNICAL WORKING GROUPS

To support the development of draft measures and actions for each sector, the Air District assembled and convened sector-level working groups. Members were invited based on subject matter expertise, their potential role as an implementation partner, and geographic diversity. Members included: regional agencies, local governments, community organizations, community choice aggregators and utilities, regional conservation districts, food recovery organizations, ports, subject matter experts, and others.

These working groups fostered broad-ranging conversations among practitioners that generated key insights and important perspectives to help shape measure development and implementation considerations. They supported the co-development of measures and actions for each sector, basing them in on-the-ground realities and identifying areas to advance regional collaboration and leadership. The working group process also helped ensure the measures aligned with BARCAP design principles, would lead to GHG reductions, achieve equity benefits, build on existing efforts, and were advantageous to implement at the regional scale. The working groups leveraged foundational desktop research conducted by the Air District in summer of 2024 assessing the existing policy, programmatic, and funding landscape for each sector (e.g., local climate action plans, the 2022 Scoping Plan, relevant state policies and programs), sectoral GHG emission profiles, key equity considerations, and potential sectoral gaps and opportunities for climate action.

Each working group met three to four times from Fall 2024 through Spring 2025, with smaller group discussions held between meetings as needed to explore and deliberate on specific topics in greater detail. Members for each sector's working group are listed in Appendix E.

4.6 PUBLIC ENGAGEMENT

Several avenues of engagement were made available to the general public to learn about and contribute to the development of the BARCAP, including public workshops, a survey, and a public review and comment period for the draft measures. The project team designed these engagement opportunities to gather information from the public on their perspectives and values related to climate action, cultivate a shared understanding around climate change and key actions, and seek their input on measure development. All public engagement opportunities were shared through the BARCAP listserv (voluntary email sign up list), existing networks (Air District and Advisory Working Group), and the Air District's social media channels. Materials were translated into Spanish and Chinese, and interpretation services were made available to encourage and facilitate participation by non-English speakers.

The project team convened three public workshops, which were held virtually in the early

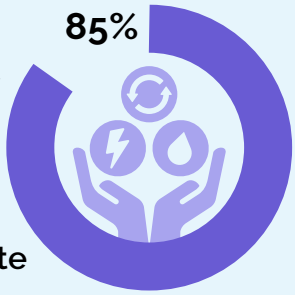
evening and focused on an overview of the BARCAP goals, vision, process, and timeline (September, 2024), a review of early measure concepts (February, 2025), and a deep dive into the draft measures and overview of the public review and comment online platform (July 2025). Strong support for aggressive climate action was expressed consistently at all three workshops. Participants voiced a sense of urgency to maximize all local government and programmatic levers to address climate change, while expressing concern over general affordability and rising costs of living.

To hear from a wider swath of the eight-county BARCAP region, beyond the reach of the frontline community and public workshops, the project team launched a public survey in Spanish, Chinese, and English. The survey was used to better understand community climate action values across the BARCAP region and gather feedback on priorities and concerns regarding the BARCAP's goals and early measure concepts. Across all respondent categories, climate resilience and public health were the most appealing benefits of climate action. More detailed information on survey results is available in Appendix E.

Once draft measures were developed, the project team launched a public review and comment period, utilizing an interactive online platform. Through this platform, the general public was able to review all draft measures and provide comments directly into the document. Comments were viewable by other commenters to enable discussions and deeper input. The public was also able to submit comments via email.

KEY ENGAGEMENT SURVEY FINDINGS

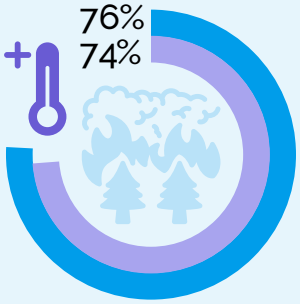
#1 action taken by respondents to support the climate and environment:
Save resources by using less energy, water, or reducing waste



Most observed local climate, environment, and weather pattern changes:

Increased frequency of regional wildfires and days affected by wildfire smoke

More frequent or intense heatwaves and hotter days



Strategies the Bay Area Regional Climate Action Plan should focus on:

59%
Produce energy for electricity using clean, carbon-free energy sources (e.g., solar, wind, geothermal)

★ *Top strategy for respondents across income levels*

49%
Expand and protect green spaces, urban trees, and natural ecosystems

★ *Top strategy for respondents across income levels*

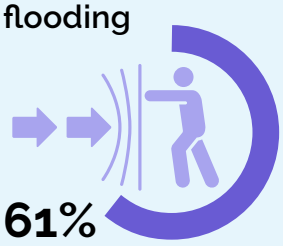
Top strategy for Hispanic, Latino, Latina, or Latinx respondents
***67%** support*

Top strategy for Black/African American respondents
***48%** support*

42%
Shift from driving an automobile to alternative transportation modes (walking, bicycling, transit)

Top strategy for Asian or Asian American respondents
***56%** support*

Top life improvements from actions to reduce GHGs and protect climate:
Communities that are better able to withstand climate impacts, such as extreme heat and flooding



Low-income households are more concerned about **additional cost burden** from climate action than wealthier households, especially where it may **contribute to displacement.**



Most appealing benefits of climate action:
Climate resilience and public health

Lower and middle-income households are:

More supportive of promoting local food production and **consumption, reducing food waste, and strengthening food security** than wealthier households

Less interested in transitioning to EVs than any other strategy

ENDNOTES

1 The BARCAP vision is "Together, we envision a Bay Area where achieving our climate goals fosters thriving communities, healthy natural systems, and a sustainable and prosperous economy. On the path to that future, we will create family-sustaining jobs, inspire innovation, improve air quality and public health, and prioritize environmental justice."

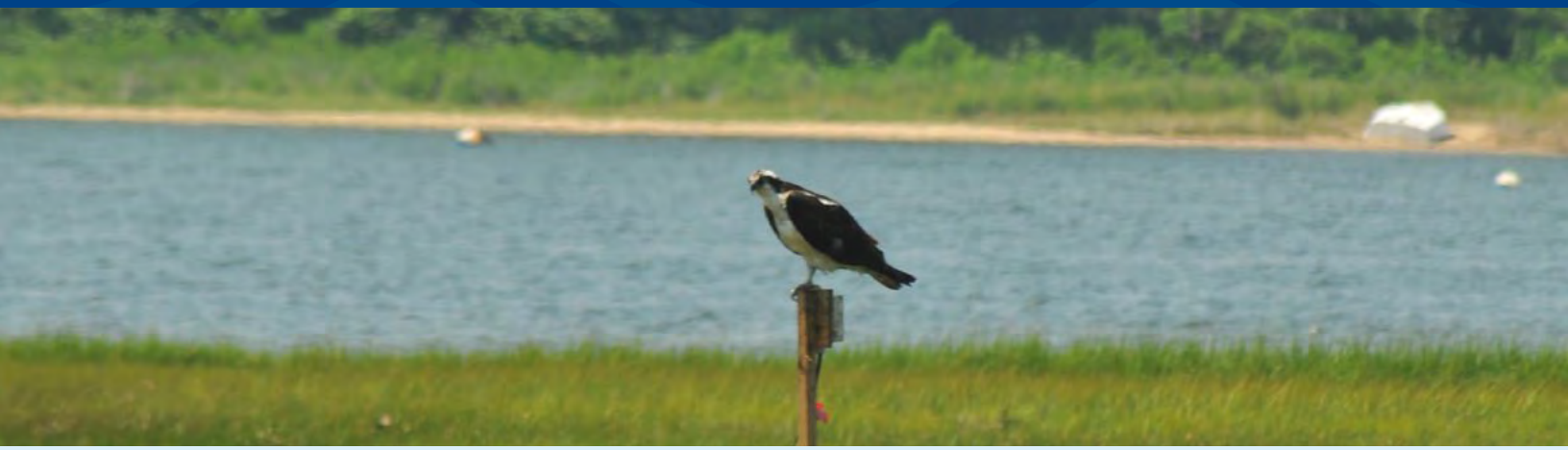
2 Frontline communities bear the brunt of the impact from fossil fuel dependence- and often experience climate impacts first and worst.

3 "Plan for Language Services to Limited English Proficient Populations," Bay Area Air Quality Management District, September 2023, https://www.baaqmd.gov/~/media/files/administration/non-discrimination/final_limited-english-proficiency-and-language-access-plan-lap_103123-pdf.pdf?rev=c62454abcf1346509de7b5fea9482c77&sc_lang=en.

4 This count includes climate action plans, resilience plans, adaptation plans, and climate change chapters in general plans. It also includes plans that may be outdated.

5 US EPA determined planning regions for the Climate Pollution Reduction Grant based on Metropolitan Statistical Area designations.

6 Frontline communities within the BARCAP region: https://experience.arcgis.com/experience/57bdb412b26e4f2eaf8fa762b735652f/page/Map/. For more information on the Air District's other mapping tools for healthy and equitable communities, please visit: https://www.baaqmd.gov/en/plans-and-climate/healthy-and-equitable-communities.



PLANNING FOR CLIMATE RESILIENCE IN THE BARCAP REGION

The BARCAP region is already experiencing the impacts of climate change, presenting urgent challenges for the region's environment, people, economy, and critical infrastructure. These impacts – extreme heat, wildfires and smoky air, sea level rise, heavy precipitation and flooding, and drought – are increasing in frequency and intensity.[1] Local governments, regional agencies, and community networks are responding with collaborative efforts to increase resilience to these climate impacts. The BARCAP, while focusing on reducing GHG emissions, also aims to maximize climate resilience benefits associated with implementation of the plan measures and actions.

Climate adaptation is how natural and human systems adjust to a new or changing climate.[2] This is frequently combined with the term "climate resilience" which is the capacity for individuals, communities, organizations or natural systems to prepare for disruptions, recover from shocks and stresses, and adapt and learn from them. Climate adaptation can include policies, programs, and on-the-ground projects that reduce projected hazard impacts.[3]

In response to these increasing threats, the Bay Area is building climate resilience through regional and local initiatives that emphasize benefits such as increasing workforce development, achieving air pollution reductions, and long-term sustainability measures. At the regional level, Metropolitan Transportation Commission/Association of Bay Area Governments' (MTC-ABAG) Plan Bay Area 2050+ and MTC's Multi-Jurisdictional Hazard Mitigation Plan guide long-term strategies for housing, transportation, and reducing risk from climate.[4] The Bay Area Climate Adaptation Network (BayCAN) further strengthens regional resilience by connecting local governments, agencies, and community partners to share best practices, coordinate, and advance equitable climate solutions across all nine counties.[5] In addition, most counties and cities in the Bay Area have climate adaptation plans and/or local hazard mitigation plans that aim to increase climate resilience. These plans ensure that resilience efforts are responsive to local needs while supporting broader regional goals.



There are also planning efforts tailored to specific, local conditions. Wildfire risk is addressed through county and multi-county prevention plans that focus on reducing hazardous fuels, enhancing emergency response capabilities, and prioritizing resources for the most at-risk communities. While there is no single regional plan for extreme heat, local governments and agencies have implemented a range of strategies, such as integrating climate action and hazard mitigation plans with mapping tools to identify and protect the most vulnerable neighborhoods. On a local scale, heat and climate action plans recognize the importance of urban greening, energy-efficient building retrofits, and resilience hubs to provide immediate cooling, improve air quality, and support community well-being.[6] The Bay Area Regional Energy Network's (BayREN) Extreme Heat Pilot Report provides data and recommendations to support partnerships and education on energy-efficient cooling solutions, while San Francisco's Heat and Air Quality Resilience Plan outlines targeted actions to reduce health risks from heat and poor air quality.[7]

Bay Area jurisdictions have also placed significant focus on sea level rise adaptation planning efforts. The San Francisco Bay Conservation and Development Commission released the Regional Shoreline Adaptation Plan, which lays out guidelines and standards for subregional shoreline adaptation plans and highlights priorities for sea level rise adaptation on a regional level.[8] Similarly, regional and local agencies are advancing extreme precipitation and flooding resiliency through coordinated planning and funding efforts, including the Bay Area Integrated Regional Water Management Plan, developed with the San Francisco Estuary Partnership.[9] To address drought, the East Bay Municipal Utility District and partner agencies have outlined a Drought Contingency Plan focusing on strengthening water supply, reliability, and emergency response.[10]

While the BARCAP focuses on climate mitigation, the resilience design principle emphasizes the plan's commitment to increase resilience in the region. Many climate resilience strategies outlined in the BARCAP—such as building decarbonization and nature-based solutions—not only reduce GHG emissions but also deliver public health and economic benefits. For example, building electrification can improve air quality and heat safety, while urban greening can reduce local temperatures and stormwater runoff. These strategies can also support job creation and equitable economic opportunity through workforce development programs, such as California Jobs First. By maximizing the climate resilience benefits of mitigation-focused measures, implementers of the BARCAP and partners can ensure the Bay Area strengthens both climate action and community well-being. Ongoing collaboration and proactive action across the BARCAP region are essential to safeguard people, the economy, and the environment for generations to come.

ENDNOTES

1 Louise Bedsworth et al., "California's Fourth Climate Change Assessment San Francisco Bay Area Summary Report," California Natural Resources Agency, 2018, https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-005_SanFranciscoBayArea_ADA.pdf; "Climate Change 2023 Synthesis Report Summary for Policymakers," IPCC, 2023, https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf.

2 California Governor's Office of Land Use and Climate Innovation.

3 Bay Area Regional Collaborative provided this description of climate adaptation and resilience.

4 "Final Plan Bay Area 2050, 2021," Plan Bay Area 2050+, Updated January 27, 2025, https://planbayarea.org/finalplan2050; MTC, "Multi-Jurisdictional Hazard Mitigation Plan (MJHMP)," Metropolitan Transportation Commission (MTC), Accessed August 5, 2025, https://mtc.ca.gov/operations/programs-projects/emergency-management/multi-jurisdictional-hazard-mitigation-plan-mjhmp.

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6 "2025 Hazards and Climate Resilience Plan," Office of Resilience and Capital Planning, City and County of San Francisco, July 29, 2024, https://onesanfrancisco.org/sites/default/files/inline-files/2025_HCR_PublicReviewDraft_0.pdf.

7 "Heat Mitigation Pilot Research Final," Bay Area Regional Energy Network (BayREN), January 10, 2024, https://pda.energydataweb.com/api/view/3910/Final%20BayREN%20Heat%20Mitigation%20Report_2024_01_10.pdf; "HAQR The Heat and Air Quality Resilience Plan," San Francisco Department of Emergency Management, San Francisco Department of Public Health, and One SF, May 2023, https://media.api.sf.gov/documents/HAQR-2305221_0.pdf.

8 "Regional Shoreline Adaptation Plan: One Bay Vision, Strategic Regional Priorities, and Subregional Shoreline Adaptation Plan Guidelines," San Francisco Bay Conservation and Development Commission (BCDC), December 2024, https://www.bcdc.ca.gov/wp-content/uploads/sites/354/2024/12/regional-shoreline-adaptation-plan-spreads.pdf.

9 "Home," Bay Area Integrated Regional Water Management Program, Accessed October 16, 2025, http://bayareairwmp.org/.

10 "Bay Area Regional Reliability Drought Contingency Plan: Final Report," Bay Area Regional Reliability Partnership, December 19, 2017, https://www.bayareareliability.com/uploads/BARR-DCP-Final-12.19.17-reissued.pdf.



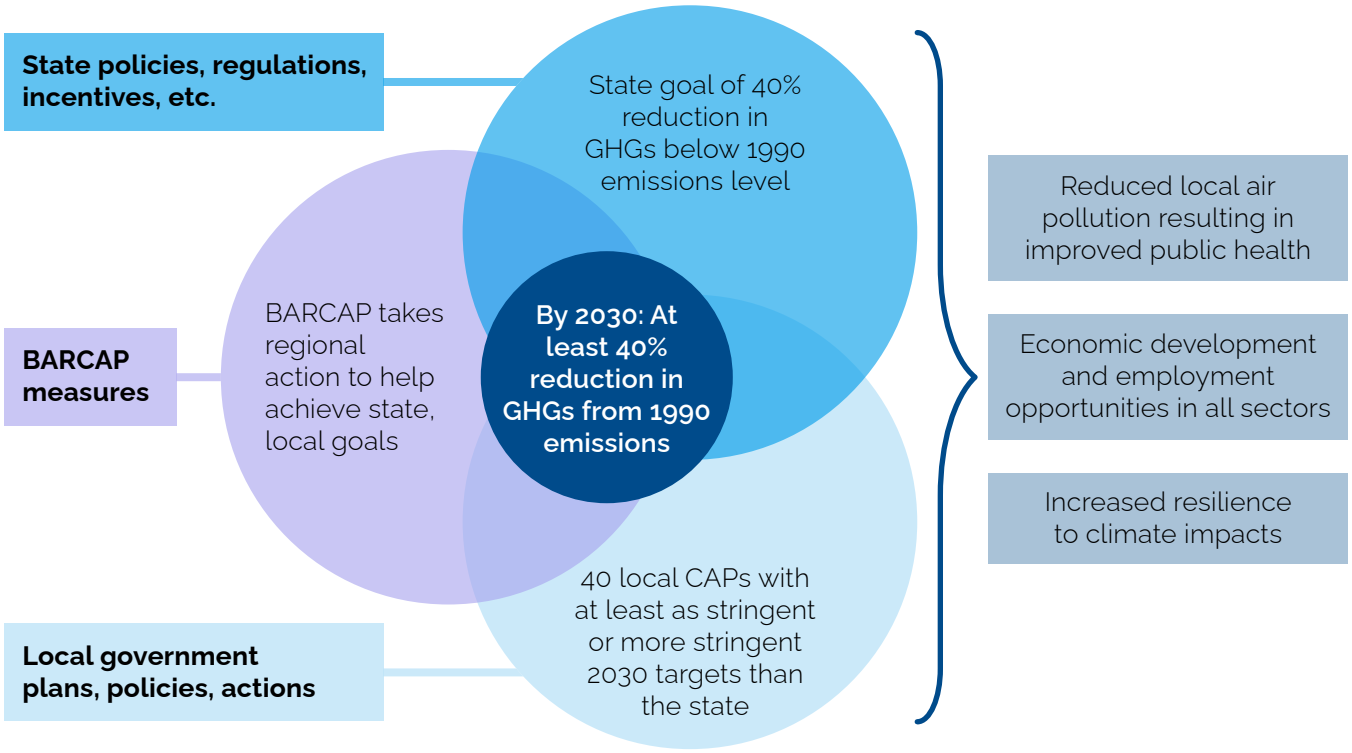
5 Greenhouse Gas Reduction Measures Overview

5.1 OVERVIEW

The Bay Area Regional Climate Action Plan (BARCAP) focuses on the following sectors where local governments and regional agencies have implementing authority: buildings, power, transportation, waste, and natural and working lands.[1] The BARCAP measures are designed to create enabling conditions that help make specific state and local government climate policies and goals more achievable in the BARCAP region and make implementation of regional and local actions more efficient, effective, and equitable. Some measures focus on what must happen regionally to support successful local implementation of state policies and initiatives and ensure that implementation is equitable and brings benefits to the BARCAP region. Other measures focus on removing barriers and building capacity to support local action and scale promising approaches regionally.

Figure 5-1 illustrates how the BARCAP fits into the existing climate action landscape of the eight-county BARCAP region, which already has ambitious goals and measures identified in the state's Scoping Plan and 80+ local climate change plans. The BARCAP seeks not to duplicate efforts, but to complement state and local actions to achieve shared goals. Together, measures from the state's 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan), the 80+ local climate action plans in the Bay Area, and the BARCAP will facilitate meeting the statewide target of reducing greenhouse gas (GHG) emissions 40% below 1990 levels by 2030. The measures and strategies used to achieve this goal will bring a host of additional benefits to the BARCAP region, particularly to frontline communities.

Figure 5-1: How the BARCAP fits in with state and local actions to achieve shared goals and outcomes



The measures in this plan are not an exhaustive list of all GHG emission reduction actions that can be taken in the BARCAP region. Instead, they are feasible, actionable, and broadly supported strategies that complement existing efforts, and when taken together with state and local action and sufficient funding, will help the BARCAP region achieve the state's 2030 emissions reduction target and accelerate its transition to carbon neutrality by 2045. The measure development process was guided by specific criteria (outlined on the following page) and informed by foundational research, the current implementation landscape, and robust stakeholder engagement to identify needs, priorities, concerns, and solutions.

The BARCAP is a plan that contains voluntary strategies and measures; it has not been adopted by the Air District's legislative body—the Board of Directors—and is not a regulatory plan. The Air District acknowledges that the measures or actions described in this plan may ultimately be implemented differently than described, due to changing circumstances including insufficient available funding or shifting political dynamics.

5.1.1 Measure criteria and design principles

All measures in the BARCAP meet the following criteria:

- Results in or enables **meaningful state, regional, and/or local GHG reductions** that might not be achieved otherwise;
- **Advantageous to be implemented regionally** and not duplicative of existing efforts;
- **Achieves key equity benefits** and advances the guiding values, or design principles on the following page (see Table 5-1);
- **Implementation ready** (i.e., implementation leads have been identified or the measure is in an approved plan or resolution, there is a realistic pathway to implementation, community/stakeholder acceptance and buy-in, etc.).

A set of nine design principles guided measure development. They were first developed in 2023 in partnership with a roundtable of climate justice and equity organizations that serve environmental justice communities: Emerald Cities Collaborative Northern California, The Greenlining Institute, PODER, and Transform. The principles were also informed by input from local governments and regional agencies based on what they have heard directly from their communities. The Air District further refined the design principles based on feedback in workshops with frontline communities and then assessed each potential measure and action against the principles to ensure alignment with the underlying concepts.



Table 5-1: Measure Development Design Principles

DESIGN PRINCIPLE
Climate equity: Provide direct, meaningful, desired, and assured benefits to frontline communities.
Cooperative: Build upon and integrate existing efforts to expand impact, rather than introduce duplication.
Coordinated: Build cooperation and peer working relationships among local government and community-based organizations that builds community capacity and empowers community leadership within and across counties, in consultation with community members through culturally relevant, multi-lingual, trusted-messenger-delivered outreach to reach frontline communities and other vulnerable groups including recent immigrants, Indigenous communities, and youth.
Funding & financing: Increase access to critical financing and funding mechanisms (including operations and maintenance) and identify alternative financing mechanisms that provide sustained benefits for frontline communities.
Genuine affordability & access: Increase access to housing, transportation, and other community benefits like green spaces, reduces or does not increase costs (e.g., housing, transportation, energy) and consider options to expand and improve access and affordability.
Health & safety: Improve living and/or working conditions (e.g., indoor and outdoor air quality, safety in green spaces, traffic safety, and pedestrian safety), especially in frontline communities.
Housing & community stability: Support people, especially renters and low-income homeowners, to be housed and remain in their homes. Consider how communities use and connect to spaces.
High-quality jobs & local entrepreneurship: Create lasting, high-quality, family-sustaining jobs and other pathways to economic sovereignty in frontline communities.[2]
Resilience: Build resilience especially for frontline communities to withstand changing climate conditions in the near and long term, increasing preparedness to respond to climate-related emergencies.

5.1.2 Measure development process

The measures were developed over a year and a half period, from May 2024 to September 2025. The Air District began the measure development process with foundational research to understand the existing policy, programmatic, and funding landscapes for each sector (e.g., local climate action plans, the 2022 Scoping Plan, relevant state policies and programs, funding opportunities and gaps) along with key equity considerations. When this research was combined with GHG emissions profiles for each sector, specific potential focus areas, gaps, and opportunities for action began to emerge.

The Air District and subject matter experts convened in technical working groups to consider the measure criteria and design principles, knowledge of the implementation landscape, and input from various engagement activities (as described in Chapter 4) to develop draft measures for the potential focus areas. The draft measures were refined with input from other potential implementing partners, frontline community benefits analysis, and other technical analyses.

5.2 IMPACTS OF MEASURES ON EMISSIONS AND COMMUNITIES



Implementation of the measures will result in GHG emission reductions and less air pollution in the BARCAP region. The measures are designed to help improve the daily lives and health of frontline communities by aiming to maximize potential benefits across five categories: public and community health, jobs and workforce development, climate resilience, decreased cost burdens, housing quality and security, and community engagement, awareness, and capacity.

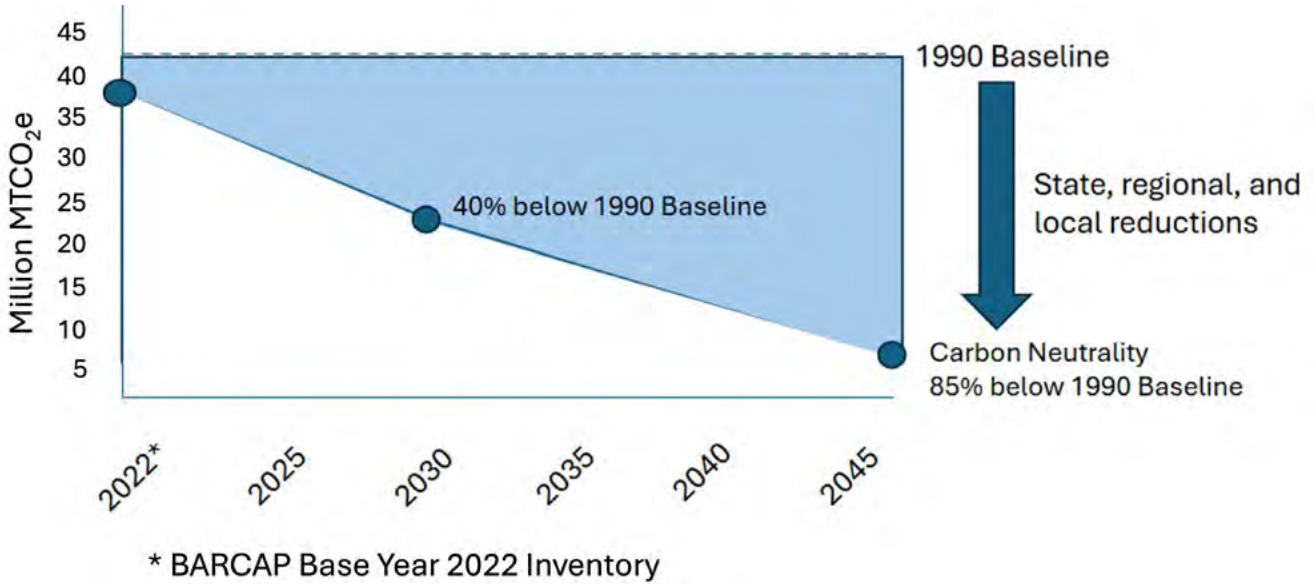
5.2.1 GHG emissions reductions

If the ambitious GHG reduction strategies in the state's Scoping Plan and local climate action plans are realized, the Bay

Area should be on target to reduce GHG emissions by 40% below 1990 levels by 2030 and achieve carbon neutrality by 2045. The BARCAP therefore focuses on complementing and enabling these strategies and filling gaps, rather than proposing duplicative actions in order to claim its own GHG reductions. Though some measures will have a direct GHG emission reduction on their own, emphasis was placed on removing barriers at the local level or complementing work at the state level. For example, in the transportation sector, installation of sufficient EV chargers for light duty vehicles is necessary to support successful implementation of the state's Advanced Clean Cars II (ACC II) regulation. The authority to permit chargers lies with local governments. BARCAP measures aim to support achieving the GHG emission reductions expected from ACC II by incentivizing the deployment of EV chargers and supporting local governments in developing and implementing policies that help accelerate the EV transition, such as permit streamlining. In addition, incentivising the lease or purchase of EVs, especially in frontline communities, will speed up the adoption of EVs, going beyond what is expected from state policies, resulting in direct GHG emission reductions when EVs replace internal combustion engines.

When taken together, the direct GHG emission reductions from the BARCAP measures plus additional reductions from state and local policies and programs – that are enabled by BARCAP measures – will result in meeting the state's GHG emission reduction goals, as shown in Figure 5-2. Put another way, policies, programs, and incentives at the state, regional, and local levels each play vital and complementary roles that contribute to a carbon neutral future.

Figure 5-2: BARCAP measures contribute to meeting GHG emission reduction targets through direct emission reductions and enabling reductions from state and local actions



5.2.2 Criteria air pollutant emission reductions

The BARCAP measures will also reduce emissions of criteria air pollutants, which pose serious risks to public health and the environment. These pollutants, which include ozone, particulate matter ($PM_{2.5}$ and PM_{10}), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and lead, are common pollutants with widespread public health impacts, causing respiratory and cardiovascular diseases, asthma aggravation, and premature death. Their reductions are directly linked to clear public health benefits and regulatory air quality standards.

Criteria air pollutant emissions reductions associated with the BARCAP measures are shown in Table 5-2. These reductions are primarily the result of using less fossil fuels, such as natural gas in buildings and gasoline and diesel in vehicles. In contrast, reductions from natural and working lands (NWL) are not due to decreased emissions, rather they are primarily the result of removal (absorption) of air pollutants from other sectors.[3]

Table 5-2: Cumulative Changes in Criteria Air Pollutant Emissions in metric tons (MT), 2025-2045

POLLUTANT	CUMULATIVE REDUCTIONS FROM CHANGE IN ENERGY USE	REMOVALS FROM NWL
NO_x	11,463	85,554
SO_2	123	20,300
PM_{10}	630	143,734
CO	245,971	14,827
Lead	0.01	0

For more information on criteria air pollutant emission reductions and the quantification methodology see Appendix C.

Unlike criteria air pollutants, direct exposure to ambient levels of GHGs does not directly harm human health. Instead, GHGs have a secondary impact on human health by contributing to climate change which causes negative impacts on air quality and health. For example, rising temperatures due to global warming accelerate ozone and secondary particulate matter formation, and more severe wildfires due to warmer and drier conditions increase human exposure to harmful air pollutants. Additional discussions about climate and air quality-related health impacts are summarized in the textbox on page 74.

5.2.3 Frontline community impacts

The BARCAP measures are designed to generate meaningful benefits for frontline communities. Engaging these community members was critical in embedding equity into BARCAP measures, and developing the design principles that guided measure development, as frontline communities across the region often bear the brunt of

climate change impacts first and worst, while contributing the least to climate pollution. During the BARCAP engagement community members and community-based organizations (CBOs) uplifted how climate action must improve daily lives of Bay Area communities, especially those in frontline communities. These non-GHG benefits are often the primary motivation for these communities and those that serve them to support or take climate action. They shared specific benefits (and unintended consequences) that were most important to them, which helped inform refinement of the design principles and the scope of the frontline communities impacts analysis. At the same time, community members highlighted the urgent need to take climate action, and desire to be a part of advancing climate solutions. These considerations are woven throughout the BARCAP measures and actions, and an analysis was conducted to understand their potential impacts on frontline communities.

The potential benefits generally fall into one of five categories: housing quality and security, public and community health, jobs and workforce development, climate resilience, decreased cost burdens, and community engagement, awareness, and capacity. Implementation can also result in unintended consequences in these areas. While measures have been designed to maximize the benefits and minimize the unintended consequences to the extent feasible, the specific outcomes largely depend on how the measures are implemented. Embedding equity in implementation will be essential in avoiding unintended consequences. Potential benefits and unintended consequences for each measure are described in Chapters 6 to 10. For a more detailed analysis of potential frontline community impacts, see Appendix D. For a detailed description of the role of CBOs in workshops in frontline communities, and in creating design principles, see Appendix E.



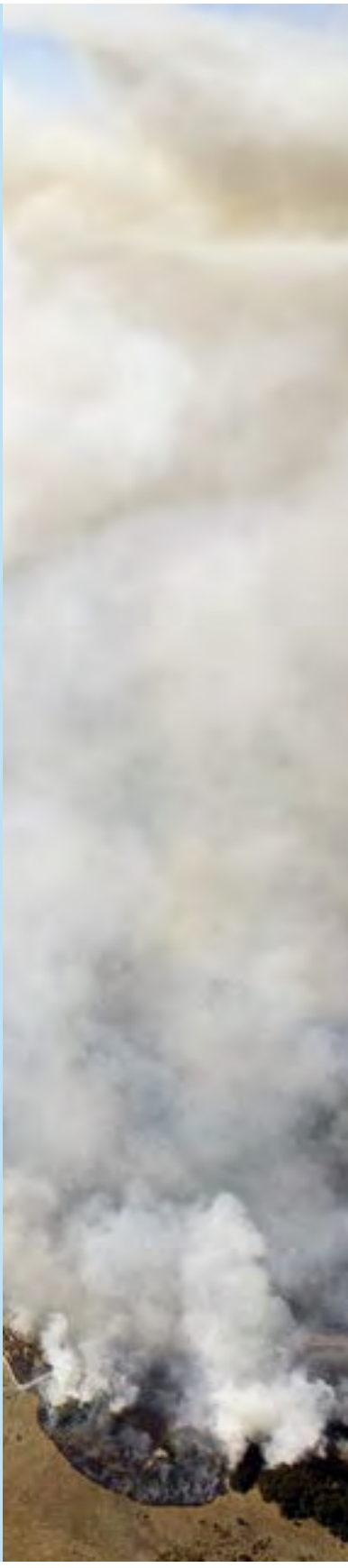
Greenhouse gases and public health

While direct exposure to the GHGs covered by the BARCAP at levels normally found in the outdoor air is not usually harmful to human health, these GHGs are the primary drivers of climate change.[4] **Climate change in turn can negatively affect public health and air quality in the Bay Area through multiple pathways.** Several are highlighted below; more complete information can be found in the Climate Change and Health Equity resources published by the California Department of Public Health, or Appendix G of the Scoping Plan published by the California Air Resources Board (CARB).[5]

Rising temperatures are increasing the frequency, intensity, and duration of extreme heat events. Heat exposure poses direct risks such as heat exhaustion, heat stroke, and cardiovascular stress. Higher temperatures also tend to worsen air quality, accelerating the evaporation of reactive organic gases and the photochemical reactions that produce ground-level ozone and secondary particulate matter (PM). Exposure to elevated ozone and PM levels leads to a wide range of serious and well-documented population health impacts, such as worsened asthma and other lung disease, hospitalizations, and even premature death.

Wildfires cause dramatic short-term spikes in pollution levels and significantly increase population exposure to PM and harmful combustion-related gases, including toxic air contaminants such as benzene. Smoke from wildfires causes a variety of short-term and longer-term impacts, including irritation of the eyes and respiratory tract, reduced lung function, bronchitis, asthma attacks, premature death, and worsened pregnancy outcomes. Wildfires can also impact human health through additional pathways, including psychological stress, physical injury, service disruptions, damage to housing, economic hardship, displacement, and loss of community cohesion. GHG emissions are intensifying the conditions that fuel wildfires, which are having more frequent and severe impacts on the Bay Area.

In addition to heat and wildfire-related impacts, climate change influences other health-relevant factors. For example, shifts in temperature and precipitation patterns and ecosystem health also affect water availability, food security, economic stability, infectious diseases, and the built environment in ways that indirectly shape public health outcomes. Climate-related disasters can result in school and work absences and impact mental health as well.





Not all Bay Area residents experience climate-related health impacts equally. **Communities of color, lower-income neighborhoods, working-class residents, and other historically marginalized groups and communities** often face both greater exposure to climate and air pollution hazards and greater susceptibility due to underlying social and health inequities.

For example, neighborhoods with predominantly Black or Latino residents tend to have fewer trees and more paved surfaces, making them hotter on average than wealthier, whiter neighborhoods. Similarly, asthma rates are disproportionately high among Black children, increasing the risks posed by wildfire smoke. These disparities reflect longstanding structural inequities such as housing discrimination, occupational segregation, and unequal access to resources including affordable healthcare and adaptive infrastructure.

Other populations who are particularly sensitive to the health impacts of climate change include older adults, infants and children, people with disabilities, individuals with chronic health conditions, unhoused people, outdoor laborers, immigrants, and people with limited English proficiency. The Air District is committed to working with communities and adopting policies and programs to address air quality and health disparities due to climate change.

5.3 SUMMARY OF MEASURES

Measures and actions are organized by **sector**: Buildings, Power, Transportation, Waste and Materials, and Natural and Working Lands. **Measures** outline the high-level strategy (e.g., expand and maintain urban green spaces), while **actions** describe the specific steps and initiatives needed to achieve the overall aim of the measures. Taken together, these measures and actions chart a path to reduce GHG emissions in each sector, as well as increase carbon sequestration in natural and working lands, and realize many other important benefits for the BARCAP region. Communities across the Bay Area expressed clearly during engagement efforts that these non-GHG benefits are often the primary motivation for action.

5.3.1 How to read the measure descriptions

For each **measure** in the following chapters, the BARCAP highlights the following points:

- **Summary:** description of the measure and how the measure helps address related challenges
- **Milestones for initiation:** key dates and next steps to initiate measure implementation during the next two years

GHG reductions in 2045: the expected GHG reductions from completing all actions under the measure in 2045 and/or accomplishing the overall aim of the measure.[6] GHG reductions are organized as:

Low **Medium** **High** **Supporting/not estimated**

Potential regional benefits: non-GHG reduction benefits likely to result from measure implementation

Design principles: identifies which design principles are advanced by the measure and actions

- Climate equity
- Cooperative
- Coordinated
- Funding & Financing
- Genuine Affordability & Access
- Health & Safety
- High-quality Jobs & Local Entrepreneurship
- Housing & Community Stability
- Resilience

Climate resilience benefits: highlights climate resilience benefits likely to result from measure implementation

Estimated costs of implementation: cost to implement from 2025-2045 as total cost to society[7]

✚ = Net savings
NE = Not estimated
S = Supporting (cost not estimated)
$ = $0-$100M
$$ = $100-$250M
$$$ = $250-$1B
$$$$ = $1B+

Proposed metrics: data to track for implementation of the measure

For each implementation **action** under a measure:

Action Title

Description to implement part of the measure

Lead Implementers: lead implementers will coordinate or manage the overall implementation of an action and/or lead one or more core components of an action.

Supporting Implementers: supporting implementers will participate in the implementation but will not take a leading role.

Timeframe to begin implementation: each action can start in the short-, medium-, or long-term (even though full implementation of the action may occur over a longer time period), depending on sufficient funding and staff resources



Short-term = all or part of the action can begin implementation within two years from plan finalization



Medium-term = all or part of the action can begin implementation within two to five years



Long-term = all or part of the action can begin implementation after five years



Ongoing = all or part of the action are already underway

5.3.2 Measure summary tables

The BARCAP is composed of 16 measures and 57 actions across five sectors, as shown in the tables below and described in more detail in the following chapters.

Table 5-3: Transportation sector measures and actions

Measure/ Action	Description
Measure T-1:	**Accelerate Light-Duty Electric Vehicle Adoption**
T-1.1	Expand incentives for the purchase or lease of EVs
T-1.2	Provide monetary and non-monetary incentives to deploy EV charging stations at strategic locations to help fill gaps in the existing charging network
T-1.3	Partner with community organizations to provide community outreach, awareness, and technical support for low-income households and small business/nonprofits in navigating incentives
T-1.4	Expand support for local governments in developing and implementing policies that help accelerate the transition to EVs, such as zoning and building code updates, permit streamlining, and parking and curbside policies
Measure T-2	**Accelerate Medium- and Heavy-Duty Vehicle and Equipment Decarbonization**
T-2.1	Expand incentives and loan assistance for the purchase of medium- and heavy-duty zero-emission (ZE) vehicles and equipment
T-2.2	Encourage large fleets (e.g., municipal, transit, or corporate fleets) to serve as anchor tenants for charging and clean-fuel fueling hubs
T-2.3	Develop and disseminate technical design guidance for fleets on how to right-size charging infrastructure
Measure T-3	**Accelerate Decarbonization of Goods Movement**
T-3.1	Pilot policies that expedite the transition to ZE last-mile delivery for goods to identify feasibility and best practices
T-3.2	Explore regulatory and non-regulatory approaches to incentivize or mandate ZE trucks and off-road mobile operations at truck-attracting businesses, such as warehouses
Measure T-4	**Support Implementation of Plan Bay Area 2050+**
T-4.1	Support alternatives to driving alone through land use, transit, biking, and walking strategies identified in Plan Bay Area 2050+

Table 5-4: Building sector measures and actions

Measure/ Action	Description
Measure B-1:	**Support Implementation of the Air District's Zero-NO_x Building Appliances Rules by Addressing Key Opportunities and Challenges**
B-1.1	Leverage partnerships and coordinate with key supply chain entities to develop together a suite of activities to increase zero-NO_x appliance awareness and adoption to support high levels of compliance and equipment performance
B-1.2	Support policy development efforts and disseminate best practices that streamline permitting of heat pump installations and promote electrification readiness in Bay Area jurisdictions
B-1.3	Promote and increase awareness of low-power appliance options and other panel optimization strategies with multi-language communications that will help people avoid unnecessary electrical service upgrades
B-1.4:	Explore new funding and financing opportunities to augment existing sources to further reduce financial burdens, especially for low-income building owners and tenants
B-1.5	Develop and deliver culturally competent and multilingual information, outreach, and marketing campaign about the zero-NO_x building appliance rules, focusing on low-income and overburdened homeowners and renters, and multifamily building owners
B-1.6	Expand engagement with affordable multifamily housing owners (deed-restricted and naturally-occurring) to address technical, financial, and community challenges related to zero-NO_x appliance rules, and co-develop solutions to ensure owners get the resources and support they need so residents and owners benefit from the transition to clean appliances
B-1.7	Provide education regarding best practices for those that choose to self-install heat pump water heaters (i.e., Do-It-Yourself'ers, or DIY'ers)
B-1.8	Collaborate with Northwestern Energy Efficiency Alliance (NEEA) and others to support the development and piloting of split-system heat pump water heaters that can address constrained space installation challenges for Rule 9-6

Measure/ Action	Description
Measure B-2	**Advance Decarbonization and Public Health Goals by Integrating Electrification Incentives with Home Repair and Weatherization Services and Other Non-Energy Programs Targeted Toward Low-Income and Frontline Communities**
B-2.1	Explore new funding and financing opportunities for home repair, public health, energy efficiency, and decarbonization programs to augment existing sources
B-2.2	Make home decarbonization retrofits more affordable and accessible through coordinated efforts to use all capital and programmatic options
B-2.3	Partner with PG&E to map ideal locations for decommissioning, work with counties to coordinate and conduct outreach
B-2.4	Pilot a mini-BACHI retrofit program that combines home repair, energy efficiency, and decarbonization services and incentives
B-2.5	Based on lessons learned from pilot (B-2.4), secure funding to expand the mini-BACHI pilot retrofit program to all Bay Area counties with a focus on partnering with affordable housing programs and owners to identify sites and project opportunities
Measure B-3	**Support Collaborations and Partnerships to Ensure the Building Decarbonization Workforce is Successful, Skilled, and Diverse Enough to Serve the Entire Region Effectively and in a Culturally Competent Manner**
B-3.1	Highlight and promote contractors who hold established certifications and credentials that indicate they are skilled and knowledgeable about heat pumps, and partner with incentive program administrators and other organizations to communicate their value proposition for customers
B-3.2	Explore partnerships to expand education, training, business growth and other targeted support of Minority/Women/ Disadvantaged Business Enterprises (MWDBE) contracting companies to become active in building decarbonization program and project opportunities
B-3.3	Explore the creation of a contractor mentorship program that leverages the experiences and knowledge of high-performing heat pump installers ("volume installers") to share information and tips that explain the business opportunity to gas-centric contractors so they get interested in electric heat pump upskilling and training opportunities
B-3.4	Assemble a regional information-sharing network/directory to increase awareness and opportunities for contracting businesses to connect with training providers and new workers who have demonstrated a commitment to pursuing a career in the field. Integrate information about project and funding opportunities, requests for proposals, and incentive program updates as appropriate

Table 5-5: Power sector measures and actions

Measure/ Action	Description
Measure P-1:	**Increase Development of Local Clean Energy and Storage Projects (with a Focus on Small- to Medium-Scale Projects), Including Behind-the-Meter and Distributed Energy Resources**
P-1.1	Support local governments to promote and incentivize development of clean energy projects on preferred sites in their jurisdiction that are well-suited for small- to medium-scale clean energy development and have community and business support
P-1.2	Develop a roadmap for community solar and brownfield-to-brightfield projects, especially projects serving multifamily renters and frontline communities, and identify options to fund and pilot projects at key sites
P-1.3	Identify and disseminate best practices for local governments to simplify permitting of clean energy and storage projects
P-1.4	Monitor - and explore how to address - key funding and financing gaps for behind-the-meter and in front-of-the-meter small clean energy and storage projects that benefit frontline communities, low-income and moderate-low-income households, small businesses, and community organizations
Measure P-2	**Equitably Expand Customer Programs and Deploy Power System and Grid Technologies More Widely**
P-2.1	Increase the number of critical public facilities with reliable clean backup power and key community facilities with clean resilient energy resources (e.g., solar+storage, microgrids), such as resilience hubs, in coordination with local government emergency response managers and plans. In some cases, solar+storage hybrid may be necessary depending on end use
P-2.2	Accelerate scaling up of different load flexibility solutions across the region in an equitable manner to improve grid reliability, help control costs, and align with state load shift goals to shift electricity usage
P-2.3	Explore mechanisms to minimize or eliminate health risks from fossil-fuel based backup generation (BUG) for large commercial facilities in ways that maximize the GHG co-benefits
P-2.4	Modernize transmission and distribution lines to increase efficiency and improve reliability (e.g., grid-enhancing technologies, reconductoring)

Table 5-6: Waste and materials sector measures and actions

Measure/ Action	Description
Measure W-1:	**Enable Food Access and Clean Compost**
W-1.1	Develop funding and asset-sharing mechanisms to support edible food recovery operations
W-1.2	Coordinate regional efforts to improve sorting of organics discards, including reducing common contaminants of the organics stream
W-1.3	Increase the region's understanding of lifecycle and health impacts of food and goods consumption and the opportunity for community-scale solutions
Measure W-2	**Advance Low-Carbon Building Materials and Reuse**
W-2.1	Collaborate with the state and local governments to implement the California Green Building (CALGreen) and CARB embodied carbon code requirements
W-2.2	Work with construction teams and suppliers to increase availability and adoption of low-carbon building materials and practices
W-2.3	Conduct local assessments to identify opportunities for the region's existing buildings
Measure W-3	**Reduce Methane Emissions from Waste Management Facilities**
W-3.1	Explore rulemaking to minimize emissions of methane, volatile and toxic organic compounds, and odorous substances from organic waste handling facilities, including large composting facilities

Table 5-7: Natural and working lands sector measures and actions

Measure/ Action	Description
Measure NWL-1:	**Accelerate Implementation of Nature-Based Solutions through Regional Funding and Data Analysis**
NWL-1.1	Provide technical assistance for NWL data analysis to support project implementation, results tracking, and incorporation of emerging science
NWL-1.2	Increase long-term funding for nature-based solutions through dedicated support for regional-scale grant writing and exploration of emergent sources of long-term funding

Measure/ Action	Description
Measure NWL-2	**Prevent Losses of Carbon Held in NWL through Land Conservation, Wildfire Management, and Ecosystem Restoration**
NWL-2.1	Support conservation of lands at the regional scale through the Priority Conservation Area (PCA) Program
NWL-2.2	Increase fuel management and reduce wildfire risk on natural and working lands and at the wildland-urban-interface (WUI) through new funding and financing mechanisms, workforce development, and innovation
NWL-2.3	Incentivize private landowners managing large land areas to manage fuel at scale through innovations in cost sharing and financing
NWL-2.4	Protect carbon held in the Bay Area's wetlands through protection, restoration, and enhancement of tidal marsh habitat
NWL-2.5	Contribute to emergent science on blue carbon through research on blue carbon fluxes and beneficial sediment reuse
NWL2.6	Support efforts to protect riparian forests, advancing land and water management strategies that maintain and increase carbon storage
Measure NWL-3	**Enhance Carbon Sequestration and Reduce Greenhouse Gas Emissions through Management and Restoration of Agricultural and Working Lands**
NWL-3.1	Scale climate-beneficial agriculture and catalyze widespread adoption of practices that increase or maintain above- and below-ground carbon stocks, and achieve climate resilience on working lands
NWL-3.2	Increase local implementer capacity by conducting a regional needs assessment and 'shovel-worthy' project portfolio
NWL-3.3	Support integration of climate-beneficial agriculture into climate-related plans and policies through a planning toolkit and training
NWL-3.4	Explore establishment of more renewable energy on agricultural lands
NWL-3.5	Reduce energy-related emissions and increase groundwater recharge through adoption of sustainable water management practices
Measure NWL-4	**Expand and Maintain Urban Green Spaces While Advancing Environmental Justice Outcomes**
NWL-4.1	Expand urban green spaces and prevent loss through new regional funding and technical support, prioritizing green spaces that benefit frontline communities
NWL-4.2	Advance environmental justice-centered approaches for urban greening through policy innovation, community-led planning, and support for frontline community land stewardship

ENDNOTES

1 The BARCAP does not include new measures or actions for the industrial sector as state law prohibits local air districts from mandating carbon dioxide reductions from facilities covered by the state's Cap-and-Invest program (formerly called Cap-and-Trade). The vast majority (85%) of industrial sector's GHG emissions in the BARCAP region are covered by the program.

2 According to the State of California's Future of Work Commission "Quality jobs provide a living wage, stable and predictable pay, control over scheduling, access to benefits, a safe and dignified work environment, and opportunities for training and career advancement"; Institute for the Future, "A NEW SOCIAL COMPACT for work and workers," California Future of Work Commission, March 2021, https://www.labor.ca.gov/wp-content/uploads/sites/338/2021/02/ca-future-of-work-report.pdf#:~:text=Ensure%20that%20more%20workers%20have%20quality%20jobs.,workers%20report%20being%20in%20a%20quality%20job.

3 Criteria air pollution emissions reductions were calculated using the EPA's i-Tree Landscape Module which estimates ecosystem services provided by increasing tree cover. The criteria air pollution emissions reductions for NWL do not include the impacts of wildfire reduction, climate beneficial agriculture (e.g. nitrogen fertilizer reduction), or other benefits from NWL measures.

4 Methane is a precursor for ozone, which is a health-damaging air pollutant.

5 "CLIMATE CHANGE AND HEALTH EQUITY," California Department of Public Health, Accessed November 18, 2025, https://www.cdph.ca.gov/Programs/OHE/Pages/Climate-Health-Equity/Health-Impacts.aspx.

6 For estimates of GHG reductions from measures in 2030, see Appendix C.

7 More information on estimated costs can be found in Appendix C.

6 Transportation Sector

6.1 Vision for 2045

6.2 Sector overview

6.3 Context

6.4 How proposed measures were developed

6.5 Transportation sector measures and actions

6.6 Funding implementation





6 Transportation Sector

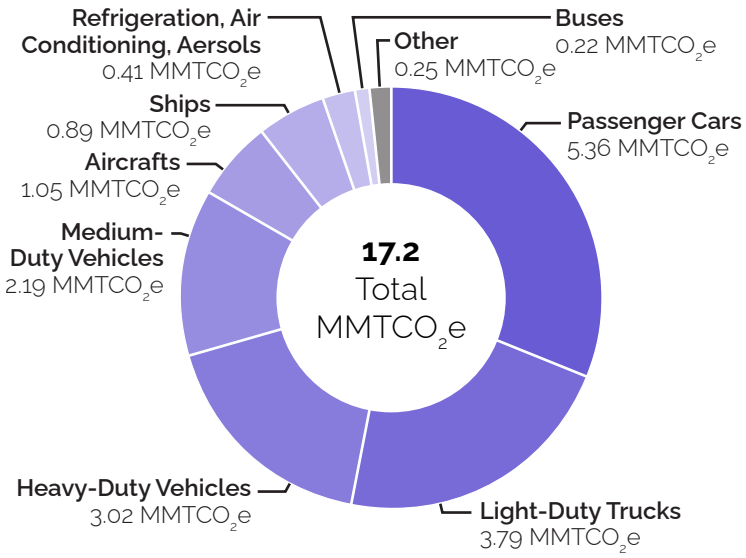
6.1 VISION FOR 2045

In 2045, the transportation sector is a well-connected, safe, and multimodal regional transportation network that prioritizes transit and active transportation, allowing people to connect more easily with where they live, work, and shop. Vehicles and equipment are zero-emission and fossil fuel use in the transportation sector is minimal.[1]

6.2 SECTOR OVERVIEW

The transportation sector includes on-road mobile sources (such as light-duty automobiles, drayage and heavy-duty trucks) and off-road mobile sources (such as transportation refrigeration units, locomotives, ships, and aircraft) whose primary objective is to transport people or goods from one place to another. Although locomotives, ships, and aircraft are included in the inventory for the sector, they fall under the regulatory authority of the state or federal government and have not been explicitly included in the measures for the Bay Area Regional Climate Action Plan (BARCAP). Additionally, greenhouse gas (GHG) emissions from off-road sources whose primary purpose is provide a service (such as lawn and garden equipment, construction equipment, ground support equipment, forklifts, and agricultural tractors) are included in other sectors.

Figure 6-1: GHG emissions by transportation sub-sector for BARCAP region in 2022



GHG emissions from the transportation sector were 17.2 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2022 (or 32% of regional emissions). These emissions are predominantly from fuel combustion in on-road mobile sources, with passenger cars, light-duty trucks, heavy-duty vehicles, and medium-duty vehicles, the largest contributors accounting for approximately 31%, 22%, 18%, and 13% of total emissions from the sector, respectively (see Figure 6-1). GHG emissions from this sector decreased by 29% (7.1 $MMTCO_2e$) between 1990 and 2022 within the BARCAP region.

GHG emissions from on-road mobile sources are not the only emissions that can be credited to the transportation sector. When accounting for all transportation-related emissions, emissions from the refining of transportation fuels should also be considered. The inventory attributes these emissions to the industrial sector (refinery processes and direct combustion at refineries) and power sector (refinery-related cogeneration facilities). Given that these emissions are driven by fossil fuel use in vehicles, the full impact of transportation-related emissions in the BARCAP region in 2022 is higher than from combustion alone, an additional 11.3 $MMTCO_2e$, for a total of 28.6 $MMTCO_2e$ (or 53% of regional emissions). Chapter 2.1.3 and Appendix A describe the contribution of emissions from the refining of transportation fuels in more detail.

On-road mobile source GHG emissions have declined significantly over the past few decades despite a growing vehicle population and long-term increase in vehicle miles travelled (VMT) in the BARCAP region. This is largely due to more efficient vehicles. At the end of 2024, the BARCAP region had made progress electrifying the transportation sector. The BARCAP region is home to approximately 365,000 light-duty zero-emission vehicles which is approximately 10% of all light-duty vehicles in the BARCAP region and almost 26,000 public and shared, Level-2 and



direct current (DC) fast chargers to support those vehicles.[2] The number of medium- and heavy-duty vehicles in the BARCAP region is also growing with over 900 vehicles and over 1,500 private charging stations and over 90 public charging stations to support medium- and heavy-duty vehicles.

Even though progress has been made to electrify the sector, much work is needed to reduce vehicle miles traveled (VMT) throughout the BARCAP region as many of the area's highways cut through frontline communities, and this contributes to the health burden of these communities through increases in air pollution that result from tailpipe exhaust, brake and tire wear, and road dust. Additionally, although private vehicle trips have rebounded since the COVID-19 pandemic – as demonstrated by the Bay Bridge toll crossing numbers – transit ridership across the Bay Area is still greatly suppressed, with Bay Area Rapid Transit (BART) for the first six months of 2025 at only 43% of the average monthly ridership of the year before the pandemic.[3] This new reality for transit agencies across the Bay Area is one that creates significant funding challenges as they work to attract new and previous riders to their services.[4]

In order for the transportation sector to support population and economic growth in the BARCAP region into the future while protecting the health of the environment and our communities, there needs to be a transition to a transportation system primarily powered by zero-emission vehicles (ZEV) and zero- and low-carbon fuels coupled with increased opportunity for trips to be completed through biking, walking, and use of high-quality public transit.



Mobility hubs at affordable housing pilot

The Mobility Hubs at Affordable Housing pilot, led by Transform in partnership with from MTC-ABAG and Shared Use Mobility Center and funding from CARB, demonstrates how community-driven solutions can make sustainable transportation more accessible and equitable across the Bay Area. Located near affordable housing in San Jose, Richmond, and Oakland, the hubs bring together transit, bicycling, EV car share, and ride-hailing credits to meet residents' everyday travel needs. What sets this project apart is its deep community engagement: mobility offerings were determined by a community needs assessment and residents served on paid site level teams, acting as trusted ambassadors to design outreach, beta test services, and connect their neighbors with reduced-fare passes and shared mobility options.

With more than 4,600 residents served, over 13,000 free AC Transit rides taken, and $200,000 in travel incentives distributed, the hubs have already delivered tangible benefits. By pairing strong cross-sector partnerships with grassroots leadership, this model is both scalable and adaptable to other communities across the BARCAP region, offering a proven framework for expanding clean, affordable, and convenient mobility options.

6.3 CONTEXT



The primary method for reducing climate and air quality pollutants from on-road mobile source has been through vehicle emission and fuel economy standards, which have historically been set by three agencies at the federal and state level – U.S. Environmental Protection Agency (US EPA), the National Highway Traffic Safety Administration, and the California Air Resources Board (CARB). In addition to these regulations the state has a variety of funding programs aimed at ZEVs and equipment as well as the associated charging and alternative fueling infrastructure. These incentive programs are primarily through CARB and the California Energy Commission (CEC) and include Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project, Energy Infrastructure Incentives for Zero-Emission Commercial Vehicles Project, California Electric Vehicle Infrastructure Project and others.

Transportation solutions to reduce GHG emissions can be grouped into one of three categories, per CARB's 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan): vehicle miles traveled, fuels, and technology.[5]

- ***Vehicle Miles Traveled (VMT)*** refers to the measure of distance a vehicle travels;
- ***Fuels*** refer to the source of energy used to power vehicles and equipment;
- ***Technology*** refers to vehicles as well as the associated charging or fueling infrastructure.

Reducing the miles people need to drive daily from their homes to work, school, or key services is critical for a more sustainable, zero-carbon, and multi-modal transportation future. Land use, transit, bicycle, and pedestrian policies can reduce VMT, GHG emissions, and air pollution emissions.

The Bay Area is a leader in transportation planning that favors transit and active modes of transportation and considers environmental and equity impacts. The Bay Area is unique in that it has a visionary long-range integrated transportation, housing, economic, and environmental plan – Plan Bay Area (PBA) 2050+, developed by the Metropolitan

Transportation Commission and Association of Bay Area Governments (MTC-ABAG).[6] PBA 2050+ aims to have nearly half of all Bay Area residents (and 70% for low-income households) living within one half-mile of frequent transit by 2050, in order to make the Bay Area more affordable, connected, diverse, healthy, and vibrant, with a focus on equity outcomes.[7] Implementation of PBA 2050+ strategies, especially those that focus on active and shared travel modes, combined with the transit-supportive land use pattern in PBA 2050+, are forecasted to significantly decrease per-capita GHG emissions, meeting the state-mandated 19% reduction in per-capita GHG emissions from transportation below 2005 levels by 2035 for the Bay Area region.

The state is focusing on ensuring that an adequate supply of zero-carbon alternative fuels and distribution infrastructure is available to meet the needs of ZEVs into the future. Electricity and hydrogen are currently the primary fuels for ZEVs and both must be produced using low-carbon technology and feedstocks to minimize emissions. The transition to ZEVs will not happen overnight and the state expects conventional vehicles from legacy fleets to remain on the road for some time. As such, in addition to building the production and distribution infrastructure for zero-carbon alternative fuels, the state plans to continue to support low-carbon liquid fuels during this period of transition and for more challenging functions for ZEV technology such as aviation, locomotives, and marine applications. The state is addressing this through investments in the production and distribution of low- and zero-carbon fuels and through the Low Carbon Fuel Standard.



The state's Executive Order N-79-20 calls for 100 percent ZEV sales of new light-duty vehicles by 2035; sets targets for transitioning the medium- and heavy-duty fleet to zero emissions by 2035 for drayage trucks and by 2045 for buses and heavy-duty long-haul trucks, as feasible; and 100 percent sales of new off-road vehicle and equipment by 2035, as feasible. The Scoping Plan reflects these targets, and CARB has a number of regulations to fulfill these goals that serve as the primary mechanism to help deploy ZEVs. Specifically for light-duty EVs, the state has set a goal of 7.1 million EVs sold by 2030 and the Air District has set a target of 90% of vehicles in the Bay Area being zero-emission by 2050.[8] Efforts at the federal level in 2025 to repeal waivers granted to California through the Clean Air Act to facilitate the state in meeting these targets has demonstrated the importance of regional and local governments continuing to focus on zero to low emission solutions for the transportation sector to ensure we meet our climate goals.



Deploying sufficient charging and fueling infrastructure to support ZEVs is critical in meeting these targets. It is also critical to focus on equity to ensure that the transition to ZEVs is affordable for low-income households and frontline communities and that those communities benefit most from the air quality co-benefits of the transition. The Scoping Plan identifies this as a key role for local governments.

Based on feedback from public engagement conducted during the development of the BARCAP, there is strong regional support for active transportation (public survey results ranked this third out of 13 potential focus areas for climate action). The transition to electric vehicles was comparatively less popular among survey respondents (public survey results ranked this tenth out of 13 potential focus areas for climate action).[9] Members of the BARCAP region's frontline communities who participated in the BARCAP engagement process expressed concerns around EV charging reliability and accessibility, costs of EVs, range anxiety, and theft of parts. Additionally, while interested in expanded access to transit, biking, and walking, they had concerns about bike safety. Projects to expand roadways and increased e-commerce leading to increased VMT from goods movement were also concerns.

Embedding equity into the core of transportation sector measures is essential to ensure that the benefits of decarbonization and mobility improvements are shared across all communities. Historically, low-income residents and communities of color in the Bay Area have experienced disproportionate exposure to air pollution, higher portion of their income going toward transportation costs, and limited access to safe, reliable mobility options. As the BARCAP region transitions toward zero-emission vehicles, low- and zero-carbon fuels, and expanded active and public transit, policies must be designed to reduce barriers for frontline communities and prioritize investments that improve air quality, affordability, safety, and connectivity.

6.4 HOW PROPOSED MEASURES WERE DEVELOPED

As described in Chapter 4, measures and actions for the transportation sector were developed with extensive input from the public, frontline community members, Advisory Work Group members, and members of a technical stakeholder working group. The technical stakeholder working group was comprised of 11 subject matter experts representing local governments, Community Choice Aggregators, regional agencies, and community-based organizations. These technical experts grounded measures in the current implementation landscape (including key hurdles and areas for action) and helped develop and refine the proposed measures and actions in collaborative meetings over six months. See Chapter 4 for an overview of BARCAP's sector-level technical working groups.

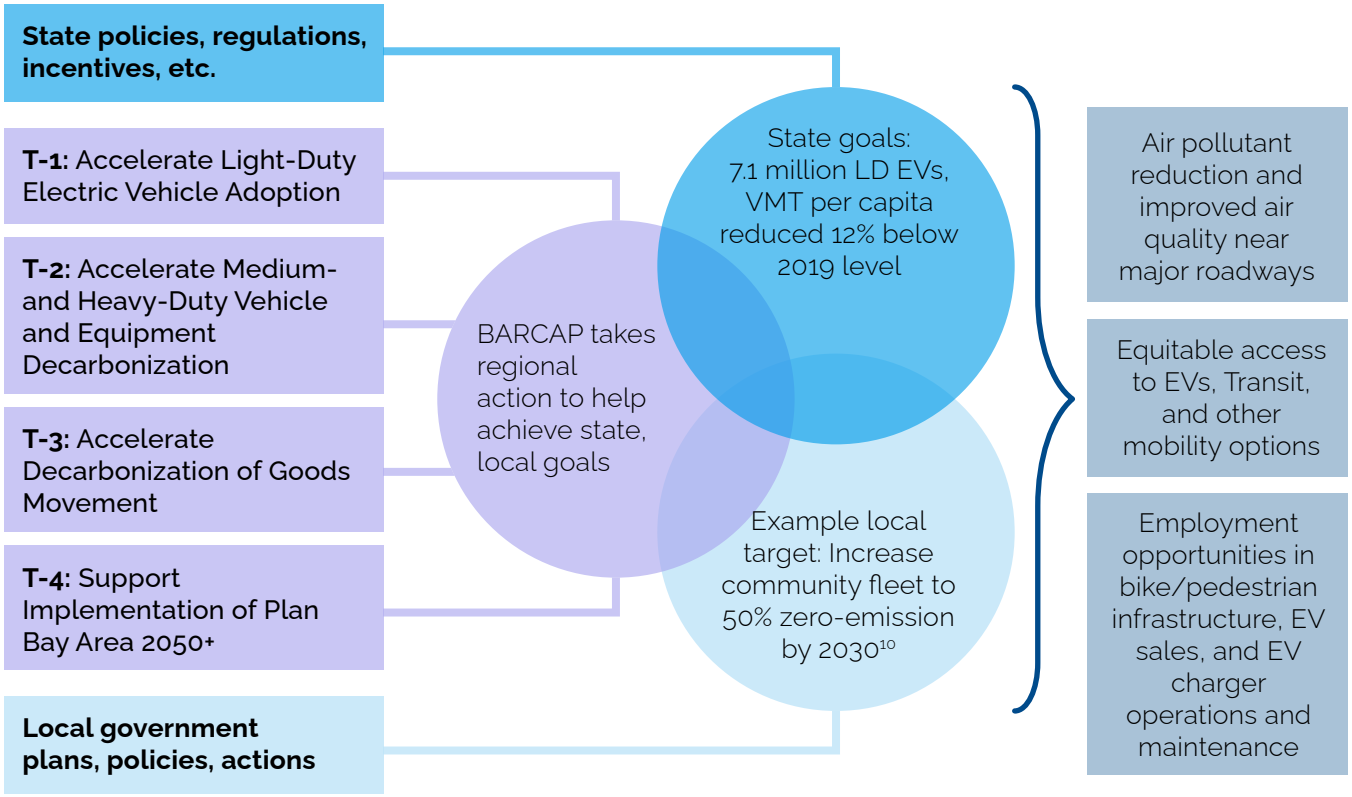
The measures described on the following page can be implemented with implementing partners' existing authorities.



The BARCAP focuses on accelerating the decarbonization of vehicles and equipment through policies and programs that incentivize zero-emission vehicles and deploy the charging and fueling infrastructure to support those vehicles, including vehicles and equipment used for goods movement. Additionally, the BARCAP supports implementation of Plan Bay Area 2050+, focused on per-capita VMT reductions through land use, transit, biking, and walking strategies for the BARCAP region.

6.5 TRANSPORTATION SECTOR MEASURES AND ACTIONS

Figure 6-2: Transportation measures contributing to state and local goals



The measures and actions for the transportation sector contribute to achieving state and local goals for the sector and result in many other key benefits. As shown in Figure 6-2 they complement, rather than duplicate, state and local actions in important ways. The measures and actions support successful local implementation of state policies and initiatives in ways that are equitable and bring benefits to the BARCAP region. They also help remove barriers and build capacity to accelerate local action and scale promising approaches regionally.



Measure T-1: Accelerate Light-Duty Electric Vehicle Adoption

GHG reductions in 2045:
Low *(see Figure 6-2 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:
- \+ Reduced exposure to air pollution
- \+ Health benefits
- \+ Reduced cost burden
- \+ Increased access to services
- \+ Job creation

Design principles:

Climate resilience benefits:
Charging locations should be at sites that have been evaluated for resilience and that support community access to essential services during or after a climate event

Estimated costs of implementation:
$$$$

Proposed metrics:
Percentage of registered light-duty EVs in the BARCAP region, number of Level-2 and DC fast chargers installed (total and in frontline communities)

SUMMARY

Support the acceleration of light-duty electric vehicle (EV) adoption through expanded incentives for EVs, coordinated planning for EV charging locations and installation of EV chargers to meet expected demand across the BARCAP region, and expanded support for low-income residents, frontline communities, and local governments in adopting EVs.

This measure helps to address issues related to the cost of vehicle electrification in low-income residents and frontline communities, ensuring they aren't left behind in the transition to clean transportation.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- ★ **Q3 2026 –** Obtain additional funding
- ★ **Q3 2026 –** Update funding programs to include e-micromobility
- ★ **Q3 2026 –** Expand funding availability for the purchase of EVs and EV charging
- ★ **2027 –** Expand community outreach, education, and technical assistance to increase participation in EV funding programs

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Public and Community Health

✚ Reduced exposure to health-damaging pollution from fossil fuel-powered vehicles

✖ *Does not reduce exposure to other vehicle-related emissions, e.g., brake and tire wear and road dust, which are already occurring with current vehicles*

Jobs and Workforce Development

✚ Employment opportunities in e-micromobility, EVs, and electric infrastructure

✖ *Reduced employment in servicing internal combustion engine vehicles and fleets as well as at fueling/gas stations*

✖ *Employment opportunities could be challenging for low-income and disadvantaged jobseekers to secure without the necessary training for this new market*

Community Engagement, Awareness, and Capacity

✚ Increased understanding, awareness and engagement in climate solutions, improved trust between communities and government

✖ *Outreach may only engage people in one area, one language, or those with more time and resources, and omit many individuals with possibly greater vulnerabilities*

Climate Resilience Co-Benefits

✚ Increased access during climate-related emergencies if charging infrastructure is sited at trusted local institutions (e.g., schools, community centers)

Housing Quality and Security

✖ *Risk of displacement or gentrification where charger deployment and EV adoptions are concentrated*

Costs Burden

✚ Decreased transportation cost burden

✚ Cost savings when gas prices rise

✖ *High electricity rates can reduce savings achieved*

✖ *Higher upfront costs for EVs*

✖ *Reliance on public charging can be more expensive*

✖ *Limited benefit for non-car owners since many low-income residents rely on transit, walking or biking*

ACTIONS

T-1.1: Expand incentives for the purchase or lease of EVs

Include e-micromobility (e-bikes, e-scooters, etc.) and pre-owned EVs, especially in frontline communities and for low-income residents to lower upfront costs of EV purchase.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
Air District, Community Choice Aggregators, MTC, CARB

Timeframe to start implementation:
Medium-term



T-1.2: Provide monetary and non-monetary incentives to deploy EV charging stations at strategic locations to help fill gaps in the existing charging network

Include a focus on deploying DC fast and multifamily charging in charging deserts and key commute routes to accelerate the adoption and use of EVs and to help reduce range anxiety and provide greater accessibility, especially in frontline communities. Actions may include:

- **Exploring the feasibility of municipalities or Community Choice Aggregators providing non-monetary incentives,** such as subsidized or lower lease rates, providing make-ready infrastructure subsidies, and guaranteeing power availability in areas served by publicly owned utilities;
- **Securing funding for planning/technical assistance** or direct-install programs for multifamily properties and smaller businesses/nonprofits interested in hosting public or workplace charging sites;
- **Securing funding for ongoing maintenance** to keep chargers available and operational;
- **Securing funding for low-cost, Level-1 charging** at multifamily properties;
- **Exploring including charger uptime requirements** when funding public charging stations to improve availability, performance, and accessibility;
- **Working with communities to identify trusted institutions** for locating low-cost, community-facing EV charging.

Proposed Lead Implementer:
Regional agency

Proposed Supporting Implementers:
Air District, MTC, Community Choice Aggregators, CARB, CEC, county transportation agencies, SCTCA, local governments, utilities

Timeframe to start implementation:
Medium-term



T-1.3: Partner with community organizations to provide community outreach, awareness, and technical support for low-income households and small business/ nonprofits in navigating incentives

Actions may include:

- **Expanding programs** to directly assist low-income households, affordable housing developers, and community-based organizations with funding applications and grant writing;
- **Supporting light-duty fleet electrification** for small merchants, Transportation Network Company drivers (e.g., Uber, Lyft), etc.; support charger installation site hosts such as community centers;
- **Ensuring community outreach and support is culturally relevant and multi-lingual**; include information about comparative costs for operations and maintenance of EVs, EV safety issues, theft issues, and range-anxiety;
- **Working to better understand immigrant community needs** for incentives support including how submitting required paperwork could negatively impact their lives.

Proposed Lead Implementer:
Grid Alternatives

Proposed Supporting Implementers:
Air District, MTC, Community Choice Aggregators, community organizations

Timeframe to start implementation:
Short-term/Medium-term

T-1.4: Expand support for local governments in developing and implementing policies that help accelerate the transition to EVs, such as zoning and building code updates, permit streamlining, and parking and curbside policies

Include local government approaches that may involve strengthening local requirements for new developments or parking facilities to include EV charging infrastructure; simplifying and expediting the permitting process for charger installations to reduce delays and costs; designating EV charging zones, prioritizing public right-of-way access for chargers, or implementing preferential parking policies.

Proposed Lead Implementer:
Regional Agency

Proposed Supporting Implementers:
MTC, SCTCA, local governments, community organizations

Timeframe to start implementation:
Short-term/Medium-term



Measure T-2: Accelerate Medium- and Heavy-Duty Vehicle and Equipment Decarbonization

GHG reductions in 2045:
Low *(see Figure 6-2 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:
- \+ Reduced exposure to air pollution
- \+ Health benefits
- \+ Job creation

Design principles:

Climate resilience benefits:
A more resilient transportation system that is less vulnerable to disruptions in fuel supply chains

Estimated costs of implementation:
+

Proposed metrics:
Number of zero-emission medium- and heavy-duty vehicles replaced and/or purchased, number of charging and fueling hubs deployed

SUMMARY

Accelerate zero-emission medium- and heavy-duty vehicles and equipment adoption through expanded incentives, coordinated deployment of EV chargers and fueling infrastructure to meet expected demand across the BARCAP region, while incorporating the needs of low-income and frontline communities.

This measure helps to ensure that medium- and heavy-duty vehicles continue to electrify given that the state has withdrawn the request for a federal waiver and authorization of the Advanced Clean Fleets rule. The measure leverages existing programs such as the Carl Moyer Program to ensure there is continued funding to expedite the transition to clean vehicles and equipment.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- ★ **Q4 2026 –** Identify opportunities to expand funding
- ★ **Q4 2026 –** Develop programs to fund the purchase of medium- and heavy-duty EVs and charging/fueling infrastructure
- ★ **Q4 2026 –** Identify fleets that could act as anchor tenants at charging/fueling hubs
- ★ **2027 –** Outreach to fleets identified to encourage them to be anchor tenants

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Public and Community Health

✚ Reduced exposure to health-damaging pollution from fossil fuel powered vehicle tailpipe emissions

✚ Noise reduction in neighborhoods where diesel trucks and equipment operate

✖ *Does not reduce exposure to other vehicle-related emissions, e.g., brake and tire wear and road dust, which are already occurring with current vehicles*

✖ *Potential air quality impacts from additional brake and tire wear or road dust if charging/fueling hubs are located in frontline communities*

✖ *Incentives for the purchase of new trucks, instead of replacing existing trucks, could lead to the expansion of EV fleets and increased truck traffic*

Jobs and Workforce Development

✚ Employment opportunities in electric truck maintenance and electric infrastructure

✖ *Employment opportunities could be challenging for low-income and disadvantaged jobseekers to secure without the necessary training for this new market*

✖ *Existing internal combustion engine fleet maintenance jobs would become obsolete*

Climate Resilience Co-Benefits

✚ Local charging and fueling hubs may increase energy resilience by reducing dependence on fossil fuel supply chains

Costs Burden

✚ Potential lower long term maintenance costs for fleet operators

✖ *Unstable or increased fueling/charging increase risk, especially for small fleet operators*

✖ *Electricity cost and reliability concerns if high power demand from large charging hubs raise local utility costs or stress the grid*

ACTIONS

T-2.1: Expand incentives and loan assistance for the purchase of medium- and heavy-duty zero-emission (ZE) vehicles and equipment

Actions may include:

- **Targeting incentives** to electrify equipment at marine ports and airports;
- **Creating a streamlined voucher incentive program** to electrify small fleets of heavy-duty trucks;
- **Increasing participation from operators** of older and dirty heavy-duty diesel vehicles and equipment that operate in frontline communities.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
Community Choice Aggregators

Timeframe to start implementation:
Medium-term



T-2.2: Encourage large fleets (e.g., municipal, transit, or corporate fleets) to serve as anchor tenants for charging and clean-fuel fueling hubs

Increase economic feasibility of independent charging/fueling hubs by sharing charging among multiple fleets domiciled or operating in the same neighborhood/logistics hub. Work regionally to identify and engage with fleets that operate regionally but may frequently stop/fuel in specific neighborhoods to inform this effort.

Proposed Lead Implementer:
Regional agency

Proposed Supporting Implementers:
MTC, Community Choice Aggregators, counties, SCTCA, local governments, ports, private fleets

Timeframe to start implementation:
Medium-term



T-2.3: Develop and disseminate technical design guidance for fleets on how to right-size charging infrastructure

Provide technical design guidance to fleets, especially private fleets, to ensure charging infrastructure build out matches the fleets needs more closely to prevent overbuilding, keeping costs of electrification down and avoiding unnecessary service infrastructure upgrades that would result in increased costs for rate payers.

Proposed Lead Implementer:
Regional agency

Proposed Supporting Implementers:
Community Choice Aggregators, SCTCA, state agencies

Timeframe to start implementation:
Medium-term





Measure T-3: Accelerate Decarbonization of Goods Movement

GHG reductions in 2045:
Low *(see Figure 6-2 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:
+ Reduced exposure to air pollution
+ Health benefits

Design principles:

Climate resilience benefits:
A more resilient transportation system less vulnerable to disruptions in fuel supply chains

Estimated costs of implementation:
$$$

Proposed metrics:
Number of pilots deployed, development, and dissemination of policy for warehouses

SUMMARY

Pilot and implement policies that accelerate decarbonization of goods movement and deliveries of goods and reduce emissions that result from increased e-commerce.

This measure helps to ensure that medium- and heavy-duty vehicles continue to electrify given that the state has withdrawn the request for a federal waiver and authorization of the Advanced Clean Fleets rule. This measure is aimed at requiring EVs for last mile delivery as well as at warehouses to continue to expand the use of EV medium- and heavy-duty vehicles and equipment.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

★ **Q3 2026 –** Develop pilot projects with local governments to pilot ZE delivery zones and/or ZE loading zones

★ **Recently initiated –** Begin rule development process for an indirect source rule for warehouses and/or policy guidance for local governments

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Public and Community Health

- ✚ Reduced exposure to health-damaging pollution from fossil fuel powered vehicle tailpipe emissions
- ✚ Noise reduction in neighborhoods where diesel trucks and equipment operate
- ✖ *Does not reduce exposure to other vehicle-related emissions, e.g., brake and tire wear and road dust, which are already occurring with current vehicles*
- ✖ *Potential air quality impacts from additional brake and tire wear or road dust if charging/fueling hubs are located in frontline communities*

Jobs and Workforce Development

- ✚ Employment opportunities from building and maintaining micro-hubs, ZE delivery infrastructure, and supporting new delivery technologies
- ✖ *Risk for warehouse and truck drivers if jobs shift from diesel fleets to electrified fleets without work force transition and retraining support*
- ✖ *Employment opportunities could be challenging for low-income and disadvantaged jobseekers to secure without the necessary training for this new market*

Costs Burden

- ✚ Lower cost to energize transportation compared to fueling
- ✖ *High electricity rates can reduce savings achieved*

ACTIONS

T-3.1: Pilot policies that expedite the transition to ZE last-mile delivery for goods to identify feasibility and best practices

Actions may include:

- **Piloting ZE delivery zones and/or ZE loading zones** in frontline communities and urban centers to facilitate and promote the use of ZE delivery trucks or e-cargo bikes for last-mile delivery of goods;
- **Piloting urban micro-hubs** to encourage last-mile ZE deliveries with ZE vehicles or e-cargo bikes (a micro-hub is a small-scale, strategically located facility equipped with basic storage facilities and loading docks that act as an intermediary point for the consolidation and distribution of goods);
- **Developing and disseminating best practices and technical assistance** that is informed by pilots to increase deployment of urban distribution centers and ZE delivery zones more broadly.

Proposed Lead Implementer:
Regional agency, local governments

Proposed Supporting Implementers:
Air District, SCTCA, counties

Timeframe to start implementation:
Medium-term



T-3.2: Explore regulatory and non-regulatory approaches to incentivize or mandate ZE trucks and off-road mobile operations at truck-attracting businesses, such as warehouses

Actions may include:

- **[Non-regulatory] developing and disseminating model policies** for local governments that require the use of ZE trucks and ZE off-road mobile operations at new or expanded warehouses;
- **[Regulatory] investigating the feasibility of a Bay Area indirect source (magnet source)** rule similar to the South Coast Air Quality Management District's Warehouse Actions and Investment to Reduce Emission (WAIRE) Rule Program to address NO_x and diesel particulate matter from warehouses. The rule concept is a phased approach that incorporates a WAIRE style rule along with robust reporting requirements that will support future refinements and a more targeted disparity-reduction strategy.[11]

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
Local governments, SCTCA, warehouse operators, private fleets

Timeframe to start implementation:
Medium-term





Measure T-4: Support Implementation of Plan Bay Area 2050+

GHG reductions in 2045:
Supporting *(See MTC-ABAG Plan Bay Area 2050+ for GHG reductions from the plan)*

Potential regional benefits:

+ Reduced exposure to air pollution
+ Health benefits
+ Bike/ped safety improvements
+ Increased access to multiple transportation options
+ Improved signage and wayfinding

Design principles:

Climate resilience benefits: Urban greening along pedestrian, bike, and transit infrastructure can help shade surfaces and reduce travelers' discomfort and risk of heat illness during periods of extreme heat. It can also reduce risk to infrastructure of flooding during heavy rains. Expanded public transit options can increase accessibility to critical infrastructure during or ahead of climate events like extreme heat waves.

Estimated costs of implementation:
See MTC-ABAG Plan Bay Area 2050+

Proposed metrics: VMT reductions, change in transit ridership, change in bike/pedestrian activity

SUMMARY

Reduce per-capita GHG emissions from passenger vehicles through supporting implementation of the land use, transit, bike, and pedestrian strategies included in Plan Bay Area 2050+.

This measure supports implementation of Plan Bay Area 2050+ and helps to enable a shift from passenger vehicle travel to trips being made using transit, biking, and walking, reducing VMT and therefore emissions from vehicles. This is done through reducing transportations costs, improving first-mile, last-mile connections to transit, creating a seamless transit experience across different transit agencies in the BARCAP region, etc.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- **Q1 2026 –** MTC-ABAG adopt Plan Bay Area 2050+
- **Q2 2026 –** Begin Implementation of Plan Bay Area 2050+

MEASURE T-4

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Public and Community Health

- ✚ Reduced exposure to health-damaging pollution from fossil fuel powered vehicle tailpipe emissions
- ✚ Accessible and safe active transportation (biking and walking) options encourage people to exercise as part of their day
- ✚ Road safety improvements reduce fatalities and severe injuries due to collisions

Increased Transportation Access

- ✚ Increased mobility options and connectivity results in increased use of transportation alternatives
- ✚ Public transportation and active transportation offer a more affordable mode of transport
- ✖ *Increased safety risks due to more cyclists on roadways*
- ✖ *Uncertainty of funding for public transportation could result in transit service uncertainty*

Jobs and Workforce Development

- ✚ Potential to produce and sustain high roads jobs and improve access to employment opportunities
- ✖ *Employment opportunities could be challenging for low-income and disadvantaged jobseekers to secure without the necessary training for this new market*

Community Engagement, Awareness, and Capacity

- ✚ A community-informed approach can build awareness of transit upgrades and interest in transit options
- ✚ Transit, bike, and pedestrian accessibility and safety upgrades can help meet community needs
- ✖ *Outreach may only engage people in one area, one language, or those with more time and resources, and omit many individuals with possibly greater vulnerabilities*

Climate Resilience Co-Benefits

- ✚ Urban greening along pedestrian, bicycle, and transit infrastructure can help shade surfaces and reduce travelers' discomfort and risk of heat illness during periods of extreme heat
- ✚ Nature based solutions can reduce the risk of infrastructure flooding during heavy rains
- ✖ *Higher water usage to maintain new plants and trees*
- ✖ *Invasive species or species that are not right for the location could be planted*

Housing Quality and Security

- ✖ *Potential for transit-induced gentrification that could lead to displacement*

ACTIONS

T-4.1: Support alternatives to driving alone through land use, transit, biking, and walking strategies identified in Plan Bay Area 2050+

Support the implementation of policies and projects that promote multimodal transportation options, while enhancing urban design and connectivity across communities. Advance land use changes consistent with the Transit-Oriented Communities (TOC) policy, active transportation initiatives, and transportation demand management (TDM) efforts.

Actions may include:

- **Implement and monitor the Transit-Oriented Communities (TOC) policy** to foster transit-supportive development and high-quality urban design;
- **Advance Complete Streets implementation** to ensure safe and comfortable travel for people biking, walking, rolling, driving and taking transit, including peer exchanges and workshops on best practices for roadway safety, data management, enforcement, street design, and equity-driven strategies;
- **Design active transportation projects** that accommodate all ages and abilities and close network gaps.
- **Integrate multimodal projects into local plans** and deliver projects that improve experience and connectivity for people biking, walking, rolling, and taking transit.
- **Assess and optimize transportation demand management (TDM) initiatives** based on recent travel trends.

Proposed Lead Implementer:
MTC

Proposed Supporting Implementers:
Air District, cities, counties, county transit agencies, SCTCA, regional organizations

Timeframe to start implementation:
Medium-term



6.6 FUNDING IMPLEMENTATION

Implementation of the transportation sector measures can be supported in part through existing funding and financing approaches. For example, the CEC's California Electric Vehicle Infrastructure Project 2.0 and Communities in Charge programs provide incentives for purchasing and installing light-duty EV charging stations that are available to the public, with prioritization for projects in disadvantaged communities and at multifamily housing. Additionally, the Bay Area Air District administers the Carl Moyer Program, which supports the transition of heavy-duty diesel fleets to ZE and funds the ZE infrastructure to support those vehicles, and the Transportation Fund for Clean Air which funds projects that reduce on-road motor vehicle emissions. The Air District's Clean Cars for All program also provides incentives to replace old vehicles with ZEVs, EVs, or public transit. Furthermore, the CEC's Energize Commercial Vehicles' Energy Infrastructure Incentives for Zero-Emission Commercial Vehicles Project Transit Set Aside program provides funding for medium- and heavy-duty electric vehicle charging infrastructure. The programs listed above are not a comprehensive list of available funding. See Appendix G for other funding and financing sources, programs and partners, and examples of successful implementation. Additional funding and financing mechanisms will be needed to fully achieve the goals of this sector.

ENDNOTES

1 "Zero Emission Vehicle and Infrastructure Statistics Collection," California Energy Commission, Accessed July 15, 2025, https://www.energy.ca.gov/zevstats; Data includes all of Sonoma County and Solano County.

2 Includes battery electric, plug-in hybrid, and fuel cell electric light-duty vehicles, "Zero Emission Vehicle and Infrastructure Statistics Collection," California Energy Commission.

3 "Monthly Transportation Statistics," MTC-ABAG, Accessed September 11, 2025, https://mtc.ca.gov/tools-resources/data-tools/monthly-transportation-statistics.

4 In April 2020, the Metropolitan Transportation Commission (MTC) established the Blue Ribbon Transit Recovery Task Force to help transit agencies rebound from suppressed ridership in the wake of the COVID-19 pandemic.

5 "CARB 2022 Scoping Plan for Achieving Carbon Neutrality," California Air Resources Board, December 2022, https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf.

6 "Plan Bay Area 2050+" MTC-ABAG, Accessed September 15, 2025, https://planbayarea.org/.

7 Plan Bay Area 2050+ defines frequent transit as any of the following: (1) a rail or bus rapid transit station; (2) a ferry terminal served by either bus or rail transit service; or (3) a bus stop served by a route with a headway of 15 minutes or less during the a.m. peak (6-10 a.m.) and p.m. peak (3-7 p.m.) periods.

8 "Assembly Bill 2127 Second Electric Vehicle Charging Infrastructure Assessment: Assessing Chargin Needs to Support Zero-Emission Vehicles in 2030 and 2035," California Energy Commission, Accessed December 4, 2025, https://www.energy.ca.gov/publications/2024/assembly-bill-2127-second-electric-vehicle-charging-infrastructure-assessment; "2017 Bay Area Clean Air Plan," Bay Area Air District, 2017, https://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf.

9 More information can be found in the Appendix E.

10 "Contra Costa County Climate Action and Adaptation Plan 2024 Update," Contra Costa County, November 5, 2024, https://www.contracosta.ca.gov/DocumentCenter/View/84967/Contra-Costa-County-2024-Climate-Action-and-Adaptation-Plan-PDF?bidId=.

11 The WAIRE Program is an indirect source rule that regulates warehouse facilities to reduce emissions from the goods movement industry. For more information: https://www.aqmd.gov/home/rules-compliance/compliance/waire-program.

Gentrification and housing affordability

The Bay Area's housing and affordability challenges are well-known, persistent, and deeply entrenched. There is a high percentage of renters (~40%) in the region who face some of the most expensive rents in the nation, with nearly half considered to be "rent-burdened" (i.e. spend more than 30% of monthly income on rent). Multiple factors intertwining over the past decades have led to housing insecurity and lack of affordable housing in the Bay Area today. Recent plans and policies such as those found in Plan Bay Area 2050, Assembly Bill 1482 (2019), newly mandated regional housing production targets established by the State of California, and the recent passage of California Environment Quality Act (CEQA) reform legislation (intended to remove barriers to creating new housing) reflect the growing sense of urgency to address these challenges, but more action is needed.[1]

Efforts to reduce greenhouse gas (GHG) emissions from the built environment largely depend on physical and social changes, which themselves result in benefits that improve communities and quality-of-life. For example, energy efficiency reduces emissions by cutting energy consumption, increases comfort and lowers utility bills, saving money in the long term. However, if implemented without thoughtful consideration, planning, and engaging with affected communities, actions to reduce GHGs could result in unintended consequences. For instance, upgrading housing units with new, efficient appliances and equipment could result in rent increases and evictions due to gentrification and displacement.

Minimizing potential unintended consequences for the large population of renters in the Bay Area requires intentional and thoughtful implementation of GHG reduction strategies. For example, landlords installing zero-NO_x appliances could be incentivized or compelled by local authorities to minimize passing through the costs for upgrades to tenants.[2] The same would go for other upgrades like rooftop solar and battery storage and adding electric vehicle charging. Similarly, financial incentive programs that lower costs for building owners could include provisions that establish protections for existing tenants (e.g., provision of temporary relocation assistance and "right to return" policies after work is completed).



ENDNOTES

1 "Plan Bay Area 2050+" MTC-ABAG, Accessed November 18, 2025, https://planbayarea.org/plan-bay-area-2050-plus; California Congress, House, Tenant Protection Act of 2019: tenancy: rent caps, AB-1482, Approved by Governor October 8, 2019, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB1482; "California's Housing Future 2040, The Next Regional Housing Needs Allocation (RHNA)," California Department of Housing and Community Development, April 2024, https://www.hcd.ca.gov/sites/default/files/docs/planning-and-community/rhna/cahf-2040-rhna-report-2024.pdf; "Governor Newsom signs into law groundbreaking reforms to build more housing, boost affordability," Governor Gavin Newsom, June 30, 2025, https://www.gov.ca.gov/2025/06/30/governor-newsom-signs-into-law-groundbreaking-reforms-to-build-more-housing-affordability/.

2 For a recent and comprehensive analysis of the Bay Area's complex landscape of local renter protection laws, how they interact with state laws, and the challenges related to their implementation as well as recommendations to mitigate risks, please see this "Renter Protections Policy Landscape Summary" report, which was completed in 2024 as part of the Zero-NO_x Building Appliance Rule Implementation Working Group.

7 Building Sector

7.1 Vision for 2045

7.2 Sector overview

7.3 Context

7.4 How proposed measures were developed

7.5 Building sector measures and actions

7.6 Funding implementation





7 Building Sector

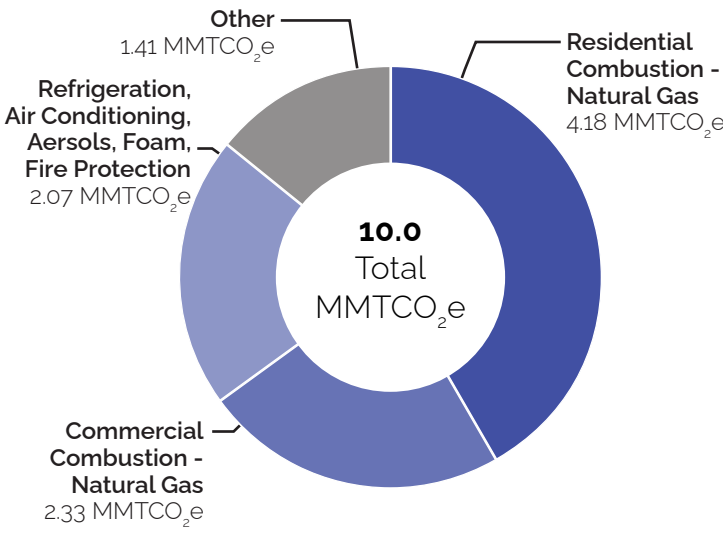
7.1 VISION FOR 2045

In 2045, there are healthy, zero emission homes for all through the equitable implementation of existing regulations, integrated programs to reduce emissions while improving housing conditions for those most in need, and a successful, well-trained, and diverse workforce to serve the entire community.

7.2 SECTOR OVERVIEW

The building sector includes homes, commercial businesses, office spaces, places of worship, entertainment venues, etc. Greenhouse gas (GHG) emissions in this sector primarily result from the direct combustion of natural gas for space and water heating, clothes drying, and cooking, as well as leaks of refrigerants from building equipment such as air conditioning and refrigeration units, and leaks from the natural gas distribution system. Although the GHG inventory for this sector includes lawn and garden equipment, airport ground support equipment, and off-road recreation vehicles, they together account for under 4% of sector-level emissions and are not explicitly addressed in the Bay Area Regional Climate Action Plan (BARCAP).

Figure 7-1: GHG emissions by buildings sub-sector for BARCAP region in 2022



Total emissions from the building sector (as defined above) were 10.0 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2022 (or 18% of regional GHG emissions), as shown in Figure 7-1. Combustion of natural gas in residential and commercial buildings are the largest contributors, accounting for approximately 42% and 23% of total emissions from the sector, respectively. GHG emissions from this sector increased by 15% (1.14 $MMTCO_2e$) between 1990 and 2022 within the BARCAP region.

California buildings constructed over the past century – including most Bay Area homes – mainly rely on natural gas for space and water heating, which together comprise the vast majority of the building sector's GHG emissions. Therefore, for the BARCAP, the building sector focuses on the GHG emissions generated by the combustion of fossil fuels from space heating, water heating, cooking, and clothes washing and drying, primarily in residential buildings. As the state's supply of renewable electricity continues to increase toward a goal of 100% by 2045, a larger share of remaining building emissions will be attributable to natural gas usage. Switching natural gas burning appliances to clean, efficient, electric alternatives like heat pumps is commonly referred to as building decarbonization or building electrification.

State and local governments in the Bay Area have made considerable progress towards building decarbonization (as described in the paragraph above) over the past decade. Successful approaches include developing and implementing local building codes that go beyond state requirements to advance building decarbonization, funding and operating innovative heat pump incentive programs (such as the "Technology and Equipment for Clean Heating" or "TECH Clean California" program), and delivering effective public outreach education about the multiple benefits of electric appliances. New regulatory efforts, such as the Air District's zero nitrogen oxides (NO_x) building appliance rules (further described below), are currently expected to significantly reduce GHG emissions from natural gas combustion in the residential sector. Still much more needs to be done in the building sector to help achieve state and local climate goals.



7.3 CONTEXT



At the state level, the California Air Resources Board's 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan) scenario for the building sector reflects the following policy goals established by Governor Newsom.[1]

- ***Install six million heat pumps by 2030*** (water and space heating);
- ***Deliver three million "climate ready" (all-electric and electric-ready) homes with heat pumps by 2030*** (seven million by 2035);
- ***Direct 50% of state climate funding*** to low-income and disadvantaged communities.

In 2023, the Bay Area Air District adopted amendments to Rules 9-4 and 9-6 ("appliance rules") which phase in requirements to reduce nitrogen oxides (or "NO_x," which worsens air quality and harms public health when released to the atmosphere) from space and water heating appliances.[2] While these rule amendments establish limits on air pollutants to protect public health, they are also expected to dramatically reduce GHG emissions by displacing natural gas with electricity. While the rules do not require the use of electric equipment, it is expected that most property owners will choose efficient electric heat pump technologies to meet the regulatory requirements. If everyone chooses electric appliances, at full implementation (i.e., when all NO_x-emitting appliances covered by the rules have been replaced with zero-NO_x options), the appliance rules could reduce residential and commercial building natural gas combustion emissions by approximately 70% below 2022 levels.

Also, as noted earlier, local governments play a vital role in piloting bold and innovative policies, programs, and partnerships that can establish new models and best practices for others to learn from and adopt widely. While Assembly Bill 130 (passed in 2025) will impede the development of local residential reach codes until 2031, cities and counties will continue to seek other ways to advance equitable and impactful building decarbonization.[3]

It is important to note that energy efficiency, which has been a staple of state and local efforts to reduce building sector emissions over the past several decades, is currently being addressed by programs administered by the Bay Area Regional Energy Network (BayREN). So, while not explicitly its own measure, the BARCAP acknowledges energy efficiency as a critical tool to achieve building sector goals and takes a strategic and targeted approach to driving its benefits to traditionally underserved Bay Area populations (see measure B-2 and supporting actions).

Based on feedback from public engagement conducted during the development of the BARCAP, there is strong regional support for transitioning buildings from gas to all-electric (public survey results ranked this fifth out of 13 potential focus areas for climate action). That said, members of the BARCAP region's frontline communities who participated in the BARCAP engagement process expressed concerns about how renters would be financially impacted by implementation of the appliance rules and perceived challenges with finding skilled contractors for zero-NO_x appliances. They also expressed support for a simplified permit process for zero-NO_x appliances, increasing the availability of multilingual contractor training, and expanding efforts to combine health and safety retrofits with electrification and energy efficiency upgrades.

El Concilio of San Mateo County

El Concilio is a non-profit, community-based organization committed to increasing education, employment, and access to quality-of-life services for underserved communities in San Mateo County, which experiences deep social and racial inequities despite being one of the richest counties in the country. While climate action programs are easily accessible to many in the county, El Concilio aims to close the gap for low-income and non-English speaking households who face financial and language barriers. El Concilio recently partnered with Peninsula Clean Energy (PCE) to provide multilingual outreach to promote programs aimed at helping people save energy, money and reduce emissions such as their Green Access Program. By partnering with trusted community organizations like El Concilio, PCE can better serve households in frontline communities and equitably distribute resources and benefits. El Concilio delivers written, oral, and in-person workshops entirely in Spanish, ensuring that target audiences get the information in a way they can use.

The Bay Area is rich with community organizations that are deeply trusted and well-positioned to partner with government agencies so that more people across the spectrum can participate in important and beneficial climate initiatives.

Because buildings and homes play a direct role in the daily lives of communities everywhere, equity must be a central consideration when developing and implementing building decarbonization programs and policies. Key issues include protecting low-income owners and renters from economic hardship, housing insecurity, and displacement risks; supporting workforce readiness and increasing employment opportunities for disadvantaged workers; ensuring that financial incentives are directed to those most in need; and prioritizing culturally appropriate communications and inclusive stakeholder engagement so that marginalized communities are not left behind in the transition to healthy, low emission buildings. Any and all measures aimed at reducing building emissions must include implementation mechanisms that do not exacerbate housing displacement.



The BARCAP focuses addressing key challenges with implementing regional zero-NO_x appliance rules; supporting low-income households by integrating home repair, energy efficiency and weatherization services with building decarbonization incentives; and growing the building decarbonization workforce by connecting employers with diverse and well-trained personnel.

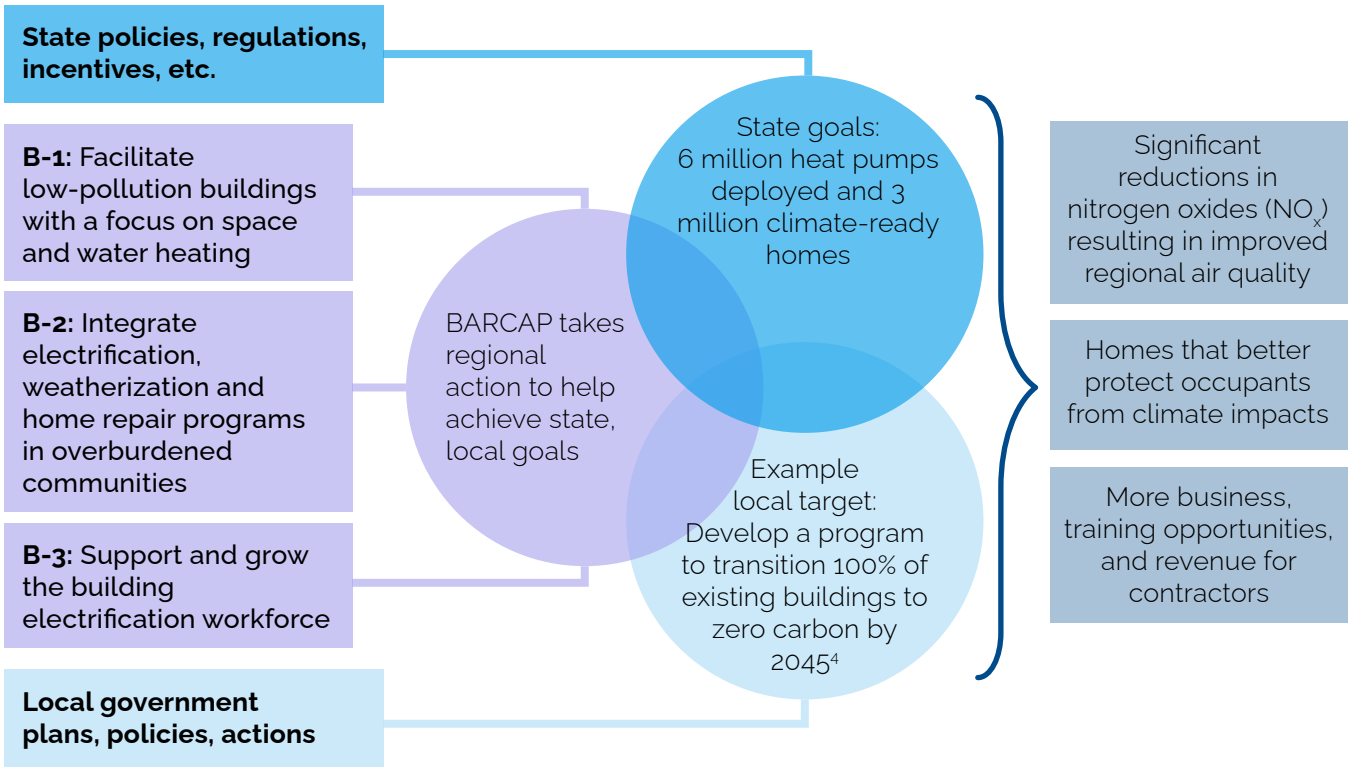
7.4 HOW PROPOSED MEASURES WERE DEVELOPED

As described in Chapter 4 on Engagement, measures and actions for the building sector were developed with extensive input from the public, frontline community members, Advisory Work Group members, and members of a technical working group. The technical working group was comprised of 17 subject matter experts representing local governments, Community Choice Aggregators, incentive program administrators, affordable housing providers, workforce specialists, and others knowledgeable about the opportunities and challenges of the sector. These experts grounded measures in the current implementation landscape (including key hurdles and areas for action) and helped develop and refine the proposed measures and actions in collaborative meetings over a six-month period. See Chapter 4 for an overview of BARCAP's sector-level technical working groups.

The measures described on the following page can be activated with implementing partners' existing authorities.

7.5 BUILDING SECTOR MEASURES AND ACTIONS

Figure 7-2: Building measures contributing to state and local goals



The measures and actions for the building sector contribute to achieving state and local goals for the sector and result in many other key benefits. As shown in Figure 7-2, they complement, rather than duplicate, state and local actions in important ways. The measures and actions support successful local implementation of state policies and initiatives in ways that are equitable and bring benefits to the BARCAP region. They also help remove barriers and build capacity to accelerate local action and scale promising approaches regionally.



Measure B-1: Support Implementation of the Air District's Zero-NO_x Building Appliances Rules by Addressing Key Opportunities and Challenges

GHG reductions in 2045:
Low *(see Figure 7-2 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:
- + Reduced exposure to air pollution
- + Climate resilience
- + Job creation
- + Reduced energy costs
- + Improved housing quality
- + Enhanced community engagement

Design principles:

Climate resilience co-benefits:
The transition to zero-NO_x appliances will provide air conditioning in addition to space heating which can protect communities from extreme heat.

Estimated costs of implementation:
$$$

Proposed metrics: Number of new outreach activities and/or information resources provided (including how the information was delivered), particularly in or for overburdened communities. Examples include tabling at events, sending online communications, or presenting at industry gatherings about appliance rules and/or sharing resources regarding supportive strategies e.g., low-power appliance options, permit streamlining approaches. Number of jurisdictions adopting the model code or streamlined permitting for zero-NO_x appliances.

SUMMARY

Support an equitable and affordable transition to healthy, zero-NO_x water and space heating for buildings in the BARCAP region by addressing key implementation challenges of the Air District's appliance rules, which go into effect for small gas residential water heaters in 2027 and gas furnaces in 2029. Actions are informed by the Air District's Implementation Working Group in addition to BARCAP stakeholder engagement.

This measure addresses key challenges such as increasing awareness of the rules among contractors and building owners by creating innovative partnerships and solutions to help realize the important air quality, health, and climate benefits of the appliance rules.

Milestones for Initiation:

- ★ **Q2-Q3 2026 –** Solidify key partnerships, secure commitments and develop work plans for key actions, including supply chain collaboration and increased engagement with affordable housing providers
- ★ **Q3 2026 –** Work with key partners to conduct outreach to local governments about permit streamlining best practices
- ★ **Q4 2026 –** Launch broad public awareness campaign about zero-NO_x appliance rules, including DIY-installation best practices
- ★ **Q1 2027 –** Work with partners to pilot small form factor heat pump water heaters (HPWHs)

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Housing Quality and Security

✚ Improved housing conditions and increased comfort

✖ *Increased housing costs due to cost of appliance installation*

Public and Community Health

✚ Reduced exposure to health-damaging indoor and outdoor air pollution

✖ *Limited funding and financing could reduce benefits to low-income building owners and tenants*

Jobs and Workforce Development

✚ More employment opportunities in zero-NO_x appliance installation

✖ *Reduced work in gas appliance installation*

Community Engagement, Awareness, and Capacity

✚ Increased awareness and engagement in solutions builds trust between communities and the government

✖ *Outreach may only engage people in one area, one language, or those with more time and resources, and omit many individuals with possibly greater vulnerabilities*

Climate Resilience Co-benefits

✚ Reduced exposure to wildfire smoke and extreme heat contributes to improved health outcomes

✖ *Lack of engagement and financial support for low-income and disadvantaged communities excludes them from cooling and air filtration benefits*

Cost Burden

✚ Decreased energy cost burden from more efficient appliances

✖ *High electricity rates can reduce savings achieved*

ACTIONS

B-1.1: Leverage partnerships and coordinate with key supply chain entities to develop a suite of activities to increase zero-NO_x appliance awareness and adoption to support high levels of compliance and equipment performance

Example activities could include:

- **Coordinate and deliver consistent outreach and marketing campaigns** through distribution networks regarding zero-NO_x appliance benefits, products, and services;
- **Promote aligned/consistent contractor training and sales tools** (aligns with and supports Measure B-3);
- **Support the provision of non-equipment retrofit materials at distribution centers** such as duct kits/terminations, insulated flex duct, grilles, louvered doors, enclosures, etc.;
- **Collect and share data regarding contractor installations** (models, Unified Energy Factor (UEF) ratings, voltage, etc.) to help distributors fine-tune inventory stocking to best match local housing stock and to inform incentive program design.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
CA Heat Pump Partnership (CAHPP), Energy Solutions' Trade Ally Management Program

Timeframe to start implementation:
Short-term

B-1.2: Support policy development efforts and disseminate best practices that streamline permitting of heat pump installations and promote electrification readiness in Bay Area jurisdictions

Coordinate local development and implementation of supportive policies with regional partners such as BayREN and Community Choice Aggregators. Collect and disseminate model code language to support local code updates that focus on preparing buildings for future electric appliances.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
BayREN, Community Choice Aggregators, SPUR, Sonoma County Transportation and Climate Authorities (SCTCA) and other local governments

Timeframe to start implementation:
Short-term

B-1.3: Promote and increase awareness of low-power appliance options and other panel optimization strategies with multi-language communications that will help people avoid unnecessary electrical service upgrades

Reduce upfront costs for zero-NO_x appliance replacements by helping avoid expensive panel upgrades by propagating the knowledge and use of low power appliance options like 120 Volt heat pump water heaters (HPWH) and panel optimization strategies (e.g., circuit splitters and/or smart electric panels which can balance home electric loads in real-time to make the most of existing service capacity). Collaborate with key partners to spread knowledge and best practices to a range of key audiences.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
CAHPP, SPUR, POWER group, Community Choice Aggregators, utilities, community organizations

Timeframe to start implementation:
Short-term

B-1.4: Explore new funding and financing opportunities to augment existing sources to further reduce financial burdens, especially for low-income building owners and tenants

Seek out new capital sources and mechanisms, including easy-to-use financing options with strong consumer protections, which solve upfront cost barriers.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
Community Choice Aggregators, BayREN, State of California, specialty lenders

Timeframe to start implementation:
Short-term

B-1.5: Develop and deliver culturally competent and multilingual information, outreach, and marketing campaign about the zero-NO_x building appliance rules, focusing on low-income and overburdened homeowners and renters, and multifamily building owners

Develop an awareness-building communications campaign to ensure stakeholders in the Bay Area know about the upcoming compliance dates for the zero-NO_x appliance rules. Partner with key organizations and community partners to leverage their networks and ensure a wide reach.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
BayREN, local governments, Community Choice Aggregators, Building Decarbonization Coalition, CAHPP, community organizations

Timeframe to start implementation:
Short-term

B-1.6: Expand engagement with affordable multifamily housing owners (deed-restricted and naturally-occurring) to address technical, financial, and community challenges related to zero-NO_x appliance rules, and co-develop solutions to ensure owners get the resources and support they need so residents and owners benefit from the transition to clean appliances[5]

Work with key agencies and other partners to engage closely with affordable housing owners to increase shared understanding of opportunities and constraints regarding the transition to healthy zero-NO_x appliances.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
BayREN, local governments, affordable housing providers, community-based organizations who serve residents in affordable housing

Timeframe to start implementation:
Short-term

B-1.7: Provide education regarding best practices for those that choose to self-install heat pump water heaters (i.e., Do-It-Yourself'ers, or DIY'ers)

Provide helpful guidance that promotes safe and correctly done installations by homeowners who have the technical ability and motivation to install their own zero-NO_x appliance, to increase the likelihood that units perform as intended.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
SCTCA and other local governments, Community Choice Aggregators, community-based organizations

Timeframe to start implementation:
Short-term

B-1.8: Collaborate with Northwestern Energy Efficiency Alliance (NEEA) and others to support the development and piloting of split-system heat pump water heaters that can address constrained space installation challenges for Rule 9-6

Collaborate with key partners in the BARCAP region to support market adoption of new small form-factor HPWH designs through pilot projects, performance reporting, and outreach and education activities to share lessons learned.

Proposed Lead Implementer:
Air District

Proposed Supporting Implementers:
Community Choice Aggregators, TECH Clean CA, building owners

Timeframe to start implementation:
Short-term



Measure B-2: Advance Decarbonization and Public Health Goals by Integrating Electrification Incentives with Home Repair and Weatherization Services and Other Non-Energy Programs Targeted Toward Low-Income and Frontline Communities

GHG reductions in 2045:

Low *(see Figure 7-2 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:

+ Reduced exposure to air pollution
+ Climate resilience
+ Reduced energy costs
+ Improved housing quality and comfort
+ Enhanced community engagement

Design principles:

Climate resilience co-benefits: Weatherized and insulated homes provide better protection from extreme heat and cold. Highly efficient electric heat pumps provide air conditioning in addition to space heating. Homes that address needed repairs and deferred maintenance are safer and healthier for occupants.

Estimated costs of implementation: $

Proposed metrics: Number of homes receiving remediation and energy efficiency upgrades, number of homes electrified and receiving solar power.

SUMMARY

Perform holistic building retrofits that include energy efficiency, electrification, and home repair and remediation by braiding together and augmenting funding, services, and other assistance from existing programs. Focus retrofits in the BARCAP region's low-income and frontline communities. This measure builds upon the Air District's Bay Area Healthy Homes Initiative, and the initial buildings-focused program concept first articulated in the Priority Climate Action Plan (called the "Bay Area Clean Homes Initiative," or "BACHI").[6] The implementation of this measure is highly dependent on seeking and obtaining other funding sources (per B-2.1). BayREN and the Air District are committed to leading this exploration in partnership with other key organizations as noted below.

This measure addresses the need for many building owners to address non-energy compliance and other issues before being able to take advantage of assistance and incentives for energy upgrades. By augmenting and leveraging existing resources with new partnerships and approaches, this measure will help address multiple critical challenges facing Bay Area frontline communities.

Milestones for Initiation:

- **Q2 2026 –** Explore relevant funding and partnership opportunities to support the implementation of all measures
- **Q1 – Q2 2026 –** Work with the California Public Utilities Commission (CPUC), Pacific Gas & Electric Company (PG&E) and county governments to inform the design of voluntary pilot programs for priority neighborhood decarbonization zones
- **Q3 – Q4 2026 –** Work with Rebuilding Together and other partners to design a partnership and funding structure for a pilot program that integrates energy efficiency and remediation
- **Q1 2027 –** Initiate the pilot program and begin to document lessons learned to inform future expansion

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Housing Quality and Security

✚ Improved housing conditions and increased comfort; deferred maintenance remediation

✖ *Increased housing costs due to cost of building retrofits and electrification*

Public and Community Health

✚ Reduced exposure to health-damaging air pollution

Jobs and Workforce Development

✚ More employment and training opportunities in building retrofitting and electrification for frontline communities

Community Engagement, Awareness, and Capacity

✚ Increased awareness and engagement in solutions builds trust between communities and the government

✖ *Outreach may only engage people in one area, one language, or those with more time and resources, and omit many individuals with possibly greater vulnerabilities*

Climate Resilience Co-benefits

✚ Improved home insulation, ventilation and filtration systems reduce wildfire smoke and extreme heat or cold impacts

Cost Burden

✚ Decreased energy cost burden from more efficient appliances and better insulation

✖ *High electricity rates can reduce savings achieved; inaccessibility or inability to leverage incentive programs or cost-saving initiatives*

ACTIONS

B-2.1: Explore new funding and financing opportunities for home repair, public health, energy efficiency, and decarbonization programs to augment existing sources

Identify new, additive financial resources to support the planning, integration, and execution of integrating existing programs that will lead to positive health and climate outcomes and improved housing conditions for frontline communities.

Proposed Lead Implementer:
BayREN

Proposed Supporting Implementers:
Air District, Community Choice Aggregators, PG&E

Timeframe to start implementation:
Short-term/Ongoing



B-2.2: Make home decarbonization retrofits more affordable and accessible through coordinated efforts to use all capital and programmatic options

Braid together existing resources (funding, technical assistance, outreach) to ensure the benefits of building decarbonization are made available to those with the fewest means to participate and who can benefit the most.

Proposed Lead Implementer:
BayREN

Proposed Supporting Implementers:
Community Choice Aggregators, Air District, PG&E, and municipal electric utilities

Timeframe to start implementation:
Short-term/Ongoing



B-2.3: Partner with PG&E to map ideal locations for decommissioning, work with counties to coordinate and conduct outreach

Advance early-stage planning efforts to pilot targeted neighborhood-scale natural gas distribution system decommissioning that can scale-up building electrification and offset future investments in GHG-and-capital intensive gas infrastructure.

Proposed Lead Implementer:
BayREN, PG&E

Proposed Supporting Implementers:
SCTCA and other local governments

Timeframe to start implementation:
Short-term



B-2.4: Pilot a mini-BACHI retrofit program that combines home repair, energy efficiency, and decarbonization services and incentives

Work with Rebuilding Together and Habitat for Humanity to leverage programmatic resources (funding, technical assistance, outreach) to implement holistic home retrofits for low-income and frontline communities within two to three counties.

Proposed Lead Implementer:
BayREN, Rebuilding Together

Proposed Supporting Implementers:
Habitat for Humanity Bay Area, Association for Energy Affordability (AEA), SCTCA and other local governments, Community Choice Aggregators, PG&E

Timeframe to start implementation:
Medium-term



B-2.5: Based on lessons learned from pilot (B-2.4), secure funding to expand the mini-BACHI pilot retrofit program to all Bay Area counties with a focus on partnering with affordable housing programs and owners to identify sites and project opportunities

Use lessons learned from initial pilot experiences (from B-2.4) to adjust and expand efforts to additional Bay Area counties with an added emphasis to work with and support distinct types of affordable housing sites (deed-restricted and naturally occurring).

Proposed Lead Implementer:
BayREN, Rebuilding Together

Proposed Supporting Implementers:
Affordable housing owners, Habitat for Humanity Bay Area, and Association for Energy Affordability (AEA), SCTCA and other local governments, Community Choice Aggregators, PG&E

Timeframe to start implementation:
Long-term





Measure B-3: Support Collaborations and Partnerships to Ensure the Building Decarbonization Workforce is Successful, Skilled, and Diverse Enough to Serve the Entire Region Effectively and in a Culturally Competent Manner

GHG reductions in 2045:
Supporting

Potential regional benefits:

- \+ Reduced exposure to air pollution
- \+ Job creation
- \+ Professional development and employment opportunities
- \+ Enhanced community engagement
- \+ More capitol flowing in the local economy

Design principles:

Climate resilience benefits: More local capacity and knowledge of how to install, maintain and service clean and electric zero-NO_x building appliances, which provide resilience benefits such as air conditioning and better air quality. A well-trained workforce that better represents the members of the community can provide improved service, improve compliance, and support the equitable distribution of the benefits of clean electric appliances.

Estimated costs of implementation:
S

Proposed metrics: Number of activities (such as specialized heat pump trainings, peer-to-peer mentorship sessions).

SUMMARY

Support the transition to healthy, emissions-free buildings by ensuring there is a trained and sufficient contractor workforce equipped with the new skills and knowledge required to install efficient, electric heat pumps.

While public funding for incentives has set a foundation for early adopters in the field, the building decarbonization contractor base needs to scale up significantly to effectively implement the zero-NO_x appliance rules and achieve state, regional, and local building decarbonization goals. This is especially important considering the transition from gas to electric appliances and as incumbent workers age-out of the workforce. These actions support this outcome by creating an attractive and sustainable business environment that highlights today's heat pump contractors, increasing their overall numbers, and focusing on building the next generation of workers that reflects the diverse and multilingual communities of the Bay Area.

Milestones for Initiation:

- ★ **Q2 2026 –** Solidify key partnerships, secure commitments, and develop work plans for key actions, including seeking funding for B-3.2 (recruiting incumbent and new minority and women owned contractors to building decarbonization training and professional development opportunities) and collecting data for B-3.4 (regional workforce information sharing network)
- ★ **Q3 2026 –** Begin piloting B-3.1 (promoting well-trained contractors) and B-3.3 (implementing a contractor mentorship program) and refine based on early experiences
- ★ **Q4 2026 –** Formal launch of regional workforce information sharing network

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Jobs and Workforce Development

✚ More employment and training opportunities in building retrofitting and electrification for frontline communities

✖ *Lack of investment in upskilling incumbent workers in new technologies leads to job losses for them*

Community Engagement, Awareness, and Capacity

✚ Increased awareness and engagement in solutions builds trust between communities and the government

✖ *Lack of sufficient engagement and outreach results in reduced trust and disinterest in programs*

Housing Quality and Security

✚ Improved housing quality from more available trained workers deploying projects in their own communities

Public and Community Health

✚ Improved public and community health from more available trained workers deploying projects in their own communities

ACTIONS

B-3.1: Highlight and promote contractors who hold established certifications and credentials that indicate they are skilled and knowledgeable about heat pumps, and partner with incentive program administrators and other organizations to communicate their value proposition for customers[7]

Provide easy-to-access training that "meets contractors where they are" and focuses on enabling quality installations are key to a successful transition to zero-NO_x appliances. Collaborate with key partners to highlight contractor designations obtained through training programs that promote quality installation practices for consumers.

Proposed Lead Implementer:
State and regional organizations

Proposed Supporting Implementers:
Community Choice Aggregators, Sonoma County Transportation and Climate Authorities and other local governments, community organizations

Timeframe to start implementation:
Short-term

B-3.2: Explore partnerships to expand education, training, business growth and other targeted support of Minority/Women/Disadvantaged Business Enterprises (MWDBE) contracting companies to become active in building decarbonization program and project opportunities

Facilitate collaborations with Bay Area entities that empower minority, women-owned and other disadvantaged companies to increase their opportunities and participation in the growing building decarbonization sector.

Proposed Lead Implementer:
Regional organizations

Proposed Supporting Implementers:
Community Choice Aggregators, local nonprofit workforce training organizations

Timeframe to start implementation:
Short-term

B-3.3: Explore the creation of a contractor mentorship program that leverages the experiences and knowledge of high-performing heat pump installers ("volume installers") to share information and tips that explain the business opportunity to gas-centric contractors so they get interested in electric heat pump upskilling and training opportunities

Contractors trust other contractors for good industry advice. Develop and implement a "mentorship-style" program that leverages peer-to-peer learning and information sharing that inspires contractors who have been hesitant to shift to heat pumps to engage in training and business opportunities, and include in-language engagement to ensure non-English speaking contractors are included.

Proposed Lead Implementer:
Regional organization

Proposed Supporting Implementers:
TECH Clean CA, CAHPP, Community Choice Aggregators, SCTCA and other local governments

Timeframe to start implementation:
Short-term

B-3.4: Assemble a regional information-sharing network/directory to increase awareness and opportunities for contracting businesses to connect with training providers and new workers who have demonstrated a commitment to pursuing a career in the field. Integrate information about project and funding opportunities, requests for proposals, and incentive program updates as appropriate

Collaborate with key partners in the BARCAP region to build out an accessible directory that lays out the regional building decarbonization workforce ecosystem in a way that increases transparency and the ability to access information to aid in hiring, employment, training, and project opportunities.

Proposed Lead Implementer:
Regional organization

Proposed Supporting Implementers:
Training and education providers, industry associations/contractor networks, manufacturers, community organizations

Timeframe to start implementation:
Medium-term



7.6 FUNDING IMPLEMENTATION

Implementation of the building sector measures can be supported in part through existing incentive and financing programs. Most notable is the statewide TECH Clean CA program, which offers direct cash rebates to qualified homeowners for high-efficiency heat pumps.[8] BayREN's EASE Program provides technical assistance and financial incentives for energy efficiency measures that can lower energy bills, improve home comfort, and increase the performance of electric heat pumps.[9] The California Energy Commission's Equitable Building Decarbonization program provides and installs similar projects at no cost to low-income households in under-resourced communities.[10] Regarding financing options, both the GoGreen Multifamily Energy Financing and GoGreen Home Energy Financing programs (both backed by the state treasurer's office) leverage credit enhancements to provide low-interest loans for building owners to install a wide range of energy upgrades, including heat pumps.[11] A number of the Bay Area's Community Choice Aggregators are launching 0% interest loan programs for heat pumps as well. The programs listed above are not a comprehensive list of available funding. See Appendix G for other funding and financing sources, programs and partners, and examples of successful implementation. Additional funding and financing mechanisms will be needed to fully achieve the goals of this sector.

7.7 ENDNOTES

1 "Governor Newsom Calls for Bold Actions to Move Faster Toward Climate Goals," Governor Gavin Newsom, Accessed November 18, 2025, https://www.gov.ca.gov/2022/07/22/governor-newsom-calls-for-bold-actions-to-move-faster-toward-climate-goals/.

2 "FAQ ABOUT AIR DISTRICT APPLIANCE RULES," Bay Area Air District, n.d., https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-9-rule-4-nitrogen-oxides-from-fan-type-residential-central-furnaces/2021-amendments/documents/20230522_faq_appliance-rules_final-pdf.pdf?rev=e2d8ff126b8d4e458d611ee5bfe480fb&sc_lang=en; When released to the atmosphere, NO_x reacts with other chemicals in the air to form both fine particulate matter (PM2.5) and ozone (O3), both which contribute significantly to poor air quality and can cause and exacerbate respiratory illnesses such as asthma.

3 California Congress, House, Committee on Budget, Housing, AB-130, Approved by Governor June 30, 2025, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202520260AB130; AB 130, which was added as trailer bill in the California legislature's vote to approve the 2025-25 state budget, included language to freeze certain changes to state and local building codes, including the ability for cities to adopt local "reach codes" for building energy efficiency and decarbonization that go beyond what the state code requires until 2031.

4 Napa County, "Public Draft Regional Climate Action and Adaptation Plan," Napa County, August 2025, https://climateactionnapa.konveio.com/draft-regional-climate-action-and-adaptation-plan.

5 Matt Alvarez-Nissen et al., "324,000 Naturally-Occurring Affordable Homes at Risk," California Housing Partnership, March 2023, https://chpc.net/wp-content/uploads/2023/03/NOAH-2023_final-3.23.pdf

6 "Bay Area Healthy Homes Initiative (Program is now closed)," Bay Area Air District, Bay Area Healthy Homes Initiative, Accessed November 19, 2025, https://www.baaqmd.gov/en/community-health/bay-area-healthy-homes-initiative

7 U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, "DOE-Google Collaboration Will Help Consumers Identify Qualified Technicians for Home Energy Upgrades," U.S. Department of Energy, December 18, 2024, https://www.energy.gov/eere/articles/doe-google-collaboration-will-help-consumers-identify-qualified-technicians-home.

8 "Single Family Incentives," TECH Clean California, Accessed November 18, 2025, https://techcleanca.com/incentives/single-family-incentives/.

9 "Efficiency and Sustainable Energy (EASE) Home Program," BayREN, Accessed November 18, 2025, https://www.bayren.org/ease-home.

10 "EBD Statewide Direst Install Program," California Energy Commission, Accessed November 18, 2025, https://www.energy.ca.gov/programs-and-topics/programs/equitable-building-decarbonization-program/ebd-statewide-direct.

11 "Elevate your multifamily property," GoGreen Financing, Accessed November 18, 2025, https://www.gogreenfinancing.com/multifamily/.

8 Power Sector

8.1 Vision for 2045

8.2 Sector overview

8.3 Context

8.4 How proposed measures were developed

8.5 Power sector measures and actions

8.6 Funding implementation





8 Power Sector

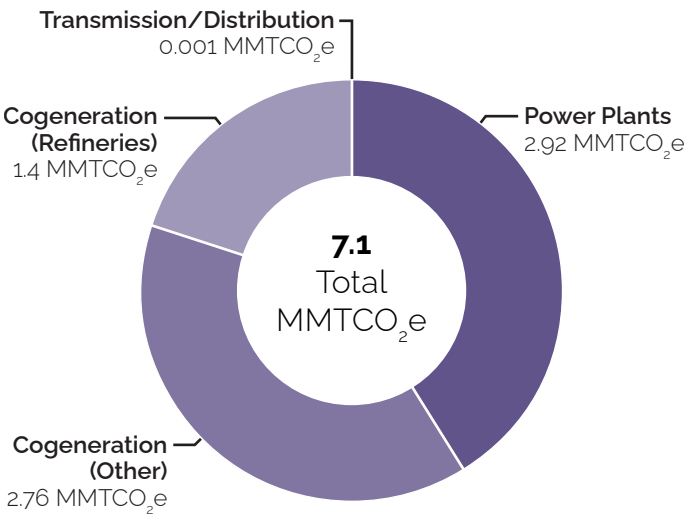
8.1 VISION FOR 2045

In 2045, the electricity produced and consumed in the Bay Area Regional Climate Action Plan (BARCAP) region is 100% clean and affordable for everyone, including frontline communities.[1] The grid is resilient and reliable, able to continuously meet growing electrification needs and support decarbonization in sectors such as buildings and transportation. This is achieved while minimizing rate impacts and in a manner that benefits frontline communities.

8.2 SECTOR OVERVIEW

The power sector includes both the generation and consumption of electricity in the BARCAP region. Because natural gas is the primary fossil fuel used to generate electricity in the BARCAP region, shifting to carbon-free fuels like renewable energy and storage will help reduce greenhouse gas (GHG) emissions for this sector. Shifting electricity demand to periods when renewable energy is abundant can help lessen reliance on polluting fossil fuel-based power plants, reducing GHG emissions even further.[2]

Figure 8-1: GHG emissions by power sub-sector for BARCAP region in 2022



Greenhouse gas emissions from the generation of electricity in the BARCAP region have decreased since 1990, due to requirements under the state Renewables Portfolio Standard that are driving decarbonization of the region's electric power generation mix by increasing the portion of electricity supplied by clean resources. Total emissions from the generation of electricity were 7.1 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) (or 13% of regional GHG emissions) in 2022, as shown in Figure 8-1. These emissions are predominantly from natural gas-fired power plants and cogeneration facilities. (Cogeneration facilities produce electricity on-site and utilize thermal energy, or heat, released during the generation of electricity for other processes.) Approximately 1.4 MMTCO2e of cogeneration emissions (or 2.6% of regional GHG emissions) are from cogeneration at transportation fuel refining facilities (see Figure 9-1). These emissions are associated with the transportation sector when accounting for all transportation-related emissions. Chapter 2.1.3 and Appendix A describe the contribution of emissions from the refining of transportation fuels in more detail.

Some of the electricity consumed in the Bay Area is produced within the region, and some is produced outside the region. The BARCAP inventory focuses on the GHG emissions produced from electricity generated within the BARCAP region and does not include emissions from electricity generated outside the BARCAP region. In this way, the inventory aligns with the state's GHG inventory approach and highlights the impact of local power plants and cogeneration facilities on GHG emissions as well as other air pollutant emissions that impact communities near these facilities (see the co-pollutants analysis in Chapter 5). While the BARCAP inventory focuses on emissions from the generation of electricity in the BARCAP region, it is important to note that state law prohibits local air districts from regulating carbon dioxide (CO2) emissions from sources covered by the state's Cap-and-Invest program, including most of the CO2 emissions from power plants and cogeneration facilities.[3] Therefore the Air District is limited in its ability to directly address these emission sources.



However, the BARCAP region can and is forging ahead by deploying clean energy. In 2022, renewable energy sources in the BARCAP region provided nearly half of the region's total power capacity (or five Gigawatts (GW)).[4] Wind and geothermal provided roughly 27% and 25% of the renewable capacity, respectively, while small-scale solar photovoltaic (PV) supplied 45% and large-scale solar PV resources provided 3%.[5] There were roughly 460 megawatts (MW) of battery storage in the region in 2022 as well.[6] Total renewable energy and storage capacity grew to six GW in 2025.

Electricity providers serving the BARCAP region have ambitious clean energy goals, as shown in Table 8-1, which affect the GHG emissions from electricity consumed in the Bay Area. The BARCAP region is home to five Community Choice Aggregators (CCAs), which purchase electricity on behalf of the residents and businesses in their communities, and two municipal utilities, all of which provide clean electricity at reduced rates. Many local climate action plans include actions to encourage resident and business participation in CCAs and to opt for the 100% renewable power option provided by CCAs. The CCAs, municipal utilities, and the investor-owned utility serving the BARCAP region, Pacific Gas & Electric (PG&E), also provide rebate and incentive programs to support electrification.

Table 8-1: BARCAP region electricity provider clean energy goals

ELECTRICITY PROVIDER	GOAL
Alameda Municipal Power (AMP)	Provide 100% clean energy to all customers (achieved)
Ava Community Energy	Provide 100% carbon-free electricity to all customers by 2030
CleanPowerSF (CPSF) and Hetch Hetchy Power	Provide 100% renewable energy to all customers (achieved)
MCE	Light Green service is 85% renewable energy by 2029 (Deep Green service is 100% renewable energy today)
Peninsula Clean Energy (PCE)	Provide 100% renewable electricity by 2030
PG&E	Net-zero energy system by 2040
Sonoma Clean Power (SCP)	Supply 80% of load with clean resources in winter evenings by 2030

While the BARCAP region has made significant headway, more action is needed to meet state and local clean energy goals. The BARCAP measures focus on helping meet state and local clean energy goals by addressing challenges to deploying small- to medium-scale clean energy (including behind-the-meter) in ways that benefit the BARCAP region, and particularly frontline communities, including increased resilience and access to local clean energy and potential affordability and job creation benefits. The measures also focus on creating a more flexible, efficient, and resilient grid with clean backup power, which can provide cost savings opportunities and help lessen reliance on fossil-fuel-based power plants to meet peak energy demands.



8.3 CONTEXT

The California Air Resources Board's 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan) projects electricity demand will increase 76% from 2022 levels in 2045. (This includes projected electricity needs for building and vehicle electrification efforts, which the state and electricity providers then incorporate into energy planning and procurement efforts to help ensure these efforts do not overwhelm the grid.[7]) In addition, Senate Bill (SB) 100 (2018) and SB 1020 (2022) require that 100% of the electricity sold in California comes from renewable energy and zero carbon sources by 2045, with interim milestones of 90% by 2035 and 95% by 2040, helping drive reductions in power plant emissions.[8] CCAs and utilities in the BARCAP region have even more ambitious clean energy goals as shown above. The state also projects 52,000 MW of battery storage will be needed statewide in 2045.[9] Currently, there is a statewide goal of shifting 7,000 MW of electricity consumption to 'off-peak hours' by 2030. Title 24 Energy Code requires all new low-rise residential construction to have solar PV systems installed.[10] State policies influence development of local clean energy projects like microgrids and community solar as well. In addition, the Scoping Plan contains a goal of reducing cogeneration emissions to zero by 2040.[11]

Feedback from public engagement conducted during the development of the BARCAP showed strong regional support for generation of more clean energy (public survey results ranked as the top

strategy among 13 focus areas for climate action). At the same time, members of the BARCAP region's frontline communities who participated in the BARCAP engagement process expressed concern about rising electricity rates and the reliability of the grid. They also expressed interest in more education and outreach to increase their understanding of their electricity bills and opportunities to reduce them.

Based on this input and similar input from local governments and other stakeholders, affordability, rising electricity rates, and the need for resilient and reliable power were key considerations for measure development. Many factors contribute to rising electricity rates in the BARCAP region, including transmission and distribution costs, cost of procuring power, and wildfire mitigation efforts, among others.[12] Distributed energy resources - like solar paired with storage, standalone storage, load flexibility, and energy efficiency - have the potential to lessen the amount of new transmission and generation that is needed, which in turn can help contain future cost increases. They can also help reduce stress on the grid and improve its resilience. In addition, several new state laws focus on addressing affordability, lowering costs to ratepayers, and the reliability and resilience of the energy system, including SB 254 (2025) and Assembly Bill (AB) 825 (2025).

Community decarbonization hub: Glad Tidings church in South Hayward

Glad Tidings International C.O.G.I.C, in South Hayward, is the first of four Black churches in the Bay Area co-developing Community Decarbonization Hubs.[13] These hubs are resilient revenue-generating microgrids owned and operated by key community anchors that support the congregation and community during power outages and advance decarbonization efforts in the surrounding community. The church's microgrid – South Hayward Energy - includes a 0.3MW solar array, 1MWh of energy storage, electrification, energy efficiency, and nine electric vehicle charging stations in a frontline community with few current charging options. It supplies the church's energy needs with emissions-free electricity and the surplus energy powers EV chargers, generating revenue for the church on the order of $500,000 annually that can be invested back into the community through additional clean technologies and other services. The Community Decarbonization Hub model also includes training for local residents to maintain the microgrid.

This model is deployed by Gemini Energy Solutions and Green The Church Renewable Energy Development (GTC R.E.D.), with financial support from a revolving loan by the Kresge Foundation and financing from Freedman Green Bank & Trust. This collaboration is currently working with three other Bay Area churches. These resilient revenue-generating microgrids highlight the vital roles of community anchors in the clean energy transition and the innovative partnerships that can support them.

Not all communities experience energy-related impacts the same, so equity must be at the forefront when developing and implementing energy policies and solutions. Affordability is especially key for many low-income households who are particularly impacted by rising electricity rates, especially if they live in older energy inefficient homes. Those struggling to afford energy bills face the risk of utility service shut off for late or non-payment. Barriers to accessing clean energy technologies and incentives must be addressed, such as language, privacy concerns, and restrictive structural and financial requirements. Renters may also face the additional challenge of landlords who are not motivated to pay for clean energy and resilience upgrades. Ensuring frontline communities are energy resilient during Public Safety Power Shutoffs and blackouts can prevent food from spoiling, which would disproportionately impact low-income household budgets, and ensure cooling and medical devices continue working and medications stay refrigerated. Intentional efforts must be made to ensure these communities have access to the family-sustaining jobs generated by local clean energy and storage projects.



The BARCAP focuses on regional efforts that support small- to medium-scale clean energy and storage projects that can strengthen the resilience of the grid, support local jobs, help lower energy bills for subscribers of these projects, and speed up delivery of clean energy and storage.[14] It also focuses on efforts to equitably expand consumer programs that help customers adjust the timing and amount of their electricity consumption and deploy clean backup power and grid technologies more widely. These strategies can help support integration of new clean energy power and storage resources onto the regional grid to meet growing electricity demand for electrification in the BARCAP region and may help apply downward pressure on rates and GHG emissions.

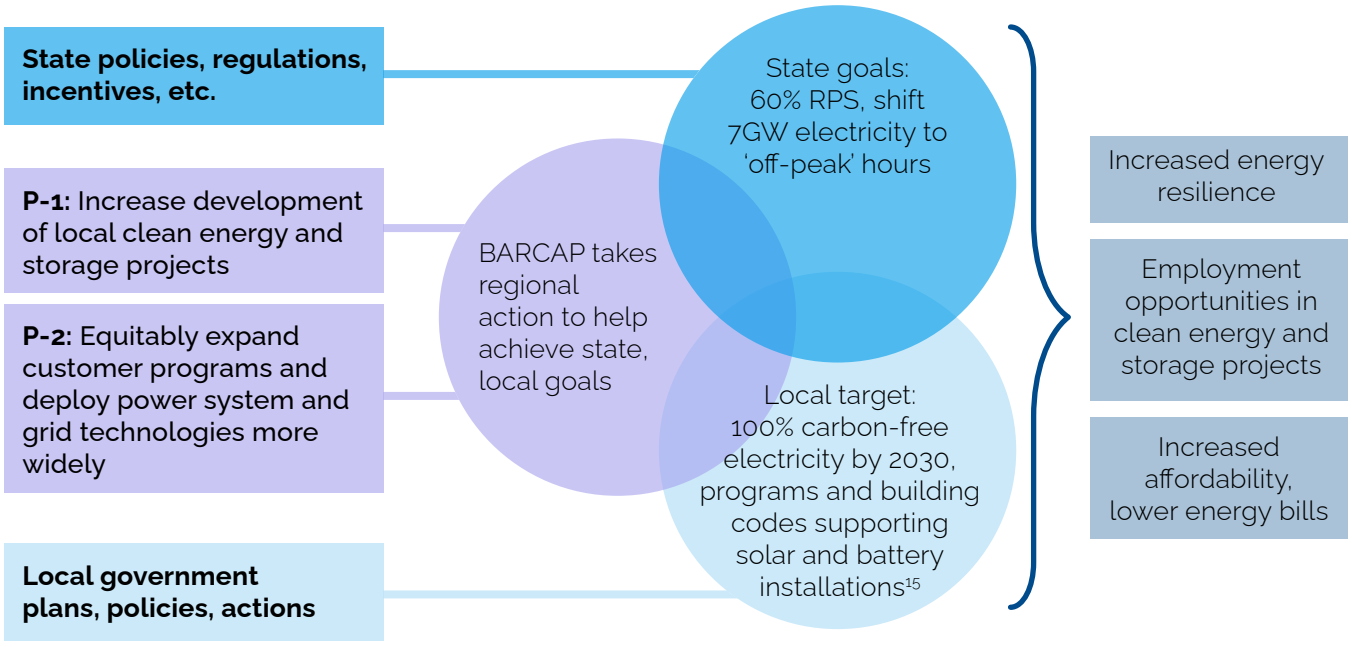
8.4 HOW PROPOSED MEASURES WERE DEVELOPED

As described in Chapter 4, measures and actions for the power sector were developed with extensive input from the public, frontline community members, Advisory Work Group members, and members of a technical stakeholder working group. The technical stakeholder working group was comprised of 14 subject matter experts representing local governments, community choice aggregators, utilities, regional agencies, and community-based organizations. These technical experts grounded measures in the current implementation landscape (including key hurdles and areas for action) and helped develop and refine the proposed measures and actions in collaborative meetings over six months. See Chapter 4 for an overview of BARCAP's sector-level technical working groups

The measures described below can be implemented with implementing partners' existing authorities.

8.5 POWER SECTOR MEASURES AND ACTIONS

Figure 8-2: Power measures contributing to state and local goals



The measures and actions for the power sector contribute to achieving state and local goals for the sector and result in many other key benefits. As shown in Figure 8-2, they complement, rather than duplicate, state and local actions in important ways. The measures and actions support successful local implementation of state policies and initiatives in ways that are equitable and bring benefits to the BARCAP region. They also help remove barriers and build capacity to accelerate local action and scale promising approaches regionally.

Measure P-1: Increase Development of Local Clean Energy and Storage Projects (with a Focus on Small- to Medium-Scale Projects), Including Behind-the-Meter and Distributed Energy Resources[16]

GHG reductions in 2045: Low *(see Figure 8-2 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:

- \+ Lower energy bills (for subscribers of on-site or community solar projects)
- \+ Strengthened regional grid resilience
- \+ Job creation potential
- \+ Increased/faster access to clean energy and storage
- \+ Reduced reliance on centralized generation and long-distance transmission

Design principles:

Climate resilience benefits: Clean backup power during outages, less strain on grid during periods of high demand by utilizing battery storage

Estimated costs of implementation: ✚

Proposed metrics: MW of clean power and storage installed in the BARCAP region with fraction on locally-identified sites (from P-1) noted, MW of community solar and/or brownfield-to-brightfield (especially serving frontline communities), percentage of low-income households with access to clean energy and storage

SUMMARY

Develop small- to medium-scale local clean energy and storage projects (<20 MW) that contribute to meeting state goals and exceed anticipated behind-the-meter deployment (BTM), and support an equitable and affordable transition to clean energy in the BARCAP region.[17] Focus projects where it is the best possible use of land given local and regional considerations (e.g., brownfields, rooftops, parking lots, capped landfills, under-utilized plots). Clean energy and storage projects might include but are not limited to BTM (including rooftop solar), community solar, microgrids, agrivoltaics, and feed-in tariffs.[18] These projects might include storage or storage might be deployed as a standalone project.

This measure encourages development of clean energy projects by addressing several obstacles and promoting a thoughtful approach to where projects are sited. These projects have the potential to lower electricity bills for subscribers and increase resilience against power outages, while reducing GHG emissions associated with electricity use.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- ★ **Q2 2026 –** Identify and convene interested local governments and refine scope of support, begin identifying incentives and development of toolkit (P-1.1)
- ★ **Q4 2026 -** Kickoff workgroup for brownfield-to-brightfield/community solar to kickstart roadmap process (P-1.2)
- ★ **Q3 2026 -** Establish research scope and kickoff research with project team (P-1.3)
- ★ **Q3 2026 -** Conduct landscape analysis to identify gaps through convening and outreach (P-1.4)

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Public and Community Health

✚ Reduced exposure to health-damaging pollution from fossil-fuel powered electricity generation, particularly during high demand periods

✖ *Funding and financing gaps for small clean energy and storage projects may limit access to benefits for frontline communities*

Jobs and Workforce Development

✚ More employment opportunities in clean energy and storage projects

✖ *Reduced work in fossil fuel-powered electricity generation*

✖ *Employment opportunities could be challenging for low-income and disadvantaged jobseekers to secure without the necessary training for this relatively new market*

Community Engagement, Awareness, and Capacity

✚ Increased awareness and engagement in solutions builds trust between communities and the government

✖ *Outreach may only engage people in one area, one language, or those with more time and resources, and omit many individuals with possibly greater vulnerabilities*

Climate Resilience Co-Benefits

✚ Increased resiliency of energy grid and households, businesses, and community organizations to power outages, which disproportionately impact frontline households, and during periods of high demand like heat waves

Costs Burden

✚ Decreased energy cost burden for frontline subscribers to on-site or community solar

✖ *Maintenance costs (i.e., roof repair)*

ACTIONS

P-1.1: Support local governments to promote and incentivize development of clean energy projects on preferred sites in their jurisdiction that are well-suited for small- to medium-scale clean energy development and have community and business support

Implementation might include:

- **Identifying monetary and nonmonetary incentives for projects** (e.g., expedited permitting, updated zoning (overlays), including projects in feed-in tariffs, novel financing approaches);
- **Developing a toolkit for local governments with case studies, policy options, and model ordinances**;
- **Providing technical support and assistance**;
- **Supporting community engagement** (in partnership with community organizations).

Sites for consideration would include commercial and industrial sites (e.g., brownfields, landfills, large commercial rooftops, parking lots, under-utilized lots, etc.) and potentially public properties. Sites that serve frontline communities, including low-income and moderate-low-income communities and multifamily buildings, as well as critical community-serving facilities, would be prioritized to receive support. Consider potential climate impacts, like sea level rise or wild-urban interface, and land conservation goals.

Proposed Lead Implementer:
Regional agency or organization

Proposed Supporting Implementers:
Regional agency, local governments, community organizations, Community Choice Aggregators, utilities

Timeframe to start implementation:
Short-term/Medium-term



P-1.2: Develop a roadmap for community solar and brownfield-to-brightfield projects, especially projects serving multifamily renters and frontline communities, and identify options to fund and pilot projects at key sites

Establish a workgroup composed of community organizations representing community interests, developers, property owners (especially brownfield or industrial sites), renewable energy financing companies, local governments and community choice aggregators, focused on identifying solutions to advance and accelerate community solar and/or brownfield-to-brightfield projects in the BARCAP region. Special emphasis would be placed on projects that benefit frontline communities and multifamily renters. Review existing funding and financing options for these projects. Identify options to pilot project(s) from the roadmap.

Proposed Lead Implementer:
Regional agency or organization or community organization

Proposed Supporting Implementers:
Community organizations, Community Choice Aggregators, utilities, local governments

Timeframe to start implementation:
Short-term/Medium-term



P-1.3: Identify and disseminate best practices for local governments to simplify permitting of clean energy and storage projects

Develop best practices for behind-the-meter and small- to medium-sized clean energy and/or storage projects. Development will be informed by a workgroup of local governments and developers and technical and policy analysis. Initial focus might be on sharing best practices for battery storage to encourage more consistency for permitting across the BARCAP region. (The state has streamlined permitting for rooftop solar.[19]) Identify mechanisms to support local governments as they update permitting.

Proposed Lead Implementer:
Regional agency

Proposed Supporting Implementers:
Local governments, project developers

Timeframe to start implementation:
Short-term



P-1.4: Monitor - and explore how to address - key funding and financing gaps for behind-the-meter and in front-of-the-meter small clean energy and storage projects that benefit frontline communities, low-income and moderate-low-income households, small businesses, and community organizations

Conduct a gap analysis or convene a work group to assess the sufficiency of current funding and financing for local clean energy and storage projects. Monitor a subset of the identified gaps. Deploy existing funding and financing in innovative ways to help close the gaps, including through increased awareness and accessibility of these programs (through coordination with Community Choice Aggregators, utilities, community organizations, and others) and potentially helping address building readiness. Explore new funding or financing mechanisms, including public private partnerships or novel financing approaches, and consider ratepayer impacts.

Proposed Lead Implementer:
Regional agency or organization

Proposed Supporting Implementers:
Community Choice Aggregators, utilities, community organizations, regional agency

Timeframe to start implementation:
Short-term





Measure P-2: Equitably Expand Customer Programs and Deploy Power System and Grid Technologies More Widely[20]

GHG reductions in 2045: Supporting *(see Figure 8-2 for an illustration of the GHG emission reductions enabled by these measures and actions)*

Potential regional benefits:

- \+ Increased resilience and reliability of the grid
- \+ Potential downward pressure on electricity rates and reduced customer costs
- \+ Increased access to consumer programs and clean backup power
- \+ Reduced reliance on fossil-fueled-backup generators (and associated noise and air pollution)

Design principles:

Climate resilience benefits: Clean backup power for continued operation of critical facilities, less grid strain during periods of high demand, enhanced wildfire resilience of reconductored power lines

Estimated costs of implementation: S

Proposed metrics: Number of critical public facilities and/or key community facilities with clean backup power, participation in demand flexibility programs and virtual power plants (especially by low-income households and frontline communities), number of local governments provided with information related to P-2.1 and P-2.2

SUMMARY

Expand consumer programs and deploy grid technologies and clean backup power resources to enhance flexibility, efficiency, reliability, and affordability of electricity delivery, while aligning with state goals and plans and reducing carbon emissions. (Consumer programs include demand flexibility solutions, such as demand-side management, virtual power plants, and vehicle-to-everything, and examples of technologies and resources include solar+battery projects that can disconnect from the grid, district geothermal heating and cooling, and grid enhancing technologies.[21]) Ensure access to and direct benefits from these programs, technologies, and resources for frontline communities, including low-income and moderate-low-income households and renters (particularly multi-family). (Note: use of residential batteries (encouraged in P-1) can provide valuable resilience benefits and support this measure).

This measure helps address the need for more resilient and reliable power in the BARCAP region and a more flexible, efficient, and reliable grid. It provides opportunities for customer cost savings through load flexibility solutions and downward pressure on electricity rates. A more efficient and modern transmission system can bring additional clean electricity into the BARCAP region and carry more locally generated clean electricity across the region.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- ★ **Q3 2026 –** Direct local governments and community resilience centers to existing programs and technical assistance, and begin to develop case studies (P-2.1)
- ★ **Q3 2026-** Electricity providers and other implementers share best practices for scaling up demand-side flexibility solutions equitably (P-2.2)

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Public and Community Health

✚ Reduced exposure to health-damaging pollution from fossil-fuel powered electricity generation, particularly during peak or high demand periods

✚ Reduced exposure to noise and health-damaging pollution from diesel backup generators

Jobs and Workforce Development

✚ More employment opportunities in storage projects

✖ *Reduced work in fossil fuel-powered electricity generation*

✖ *Employment opportunities could be challenging for low-income and disadvantaged jobseekers to secure without the necessary training for this new market*

Community Engagement, Awareness, and Capacity

✚ Increased awareness and engagement in solutions builds trust between communities and the government

Climate Resilience Co-Benefits

✚ Increased resiliency of energy grid, critical public facilities, and key community facilities to power outages, which disproportionately impact frontline households, and during periods of high demand like heat waves

✖ *Potential harmful impacts to human health if efforts to improve resilience of the grid and facilities rely solely on diesel backup generators*

Costs Burden

✚ Potential downward pressure on electricity rates and customer costs

✚ Increased access to customer programs that can reduce customer costs

ACTIONS

P-2.1: Increase the number of critical public facilities with reliable clean backup power and key community facilities with clean resilient energy resources (e.g., solar+storage, microgrids), such as resilience hubs, in coordination with local government emergency response managers and plans. In some cases, solar+storage hybrid may be necessary depending on the end use[22]

Support local governments and community organizations to identify and access funding and financing for the upfront costs and/or operation and maintenance of projects at key facilities, including resilience hubs. Coordinate this support with local government emergency response plans, managers, and networks. Collect and share case studies of successful procurement, development, and financing. In the near-term, some facilities may need hybrid systems to fully meet their reliability or resilience needs. Explore the important opportunity presented by resilient energy resources at schools to educate youth about clean power resources and clean energy jobs.

Proposed Lead Implementer:
Community Choice Aggregators, utilities, regional agency

Proposed Supporting Implementers:
County emergency operations staff, public facility staff, community organizations

Timeframe to start implementation:
Short-term



ACTIONS

P-2.2: Accelerate scaling up of different load flexibility solutions across the region in an equitable manner to improve grid reliability, help control costs, and align with state load shift goals to shift electricity usage[23]

In the near-term (zero to two years): Electricity providers scale up demand flexibility solutions by:

- **Sharing best practices** (including protecting customer privacy and data), data, and lessons learned from pilots and existing programs;
- **Exploring new incentives and tariffs**;
- **Improving and coordinating customer outreach and education efforts to increase customer enrollment** (including multilingual and culturally relevant outreach and education in partnership with community organizations);
- **Expanding pilots in additional service areas**.

In the medium term (two to five years):

- **Securing funding and financing and conduct outreach in partnership with community organizations and a regional agency**, to support the equitable scaling of virtual power plants and other critical load flexibility solutions, particularly low-income and moderate-low-income households in frontline communities and key public facilities serving these communities;
- **Scaling load flexibility solutions for commercial and industrial customers**.

Proposed Lead Implementer:
Community Choice Aggregators, utilities

Proposed Supporting Implementers:
Regional agency, community organizations

Timeframe to start implementation:
Short-term/Medium-term



ACTIONS

P-2.3: Explore mechanisms to minimize or eliminate health risks from fossil fuel-based backup generation (BUG) for large commercial facilities in ways that maximize the GHG co-benefits

Conduct source evaluation for BUGS, including:

- **Review of current BUG use and impacts**;
- **Review of emission controls and alternative technologies**;
- **Assessment of potential opportunities for rulemaking**, incentive, and/or outreach and education programs.

Lead Implementer:
Air District

Proposed Supporting Implementers:
Local governments, businesses

Timeframe to start implementation:
Medium-term

P-2.4: Modernize transmission and distribution lines to increase efficiency and improve reliability (e.g., grid-enhancing technologies, reconductoring)[24]

Update transmission and distribution lines with technologies that increase their efficiency (and therefore their ability to bring more clean energy into the BARCAP region) and their reliability. Leverage existing grants and loans to support this action.

Proposed Lead Implementer:
Utilities

Timeframe to start implementation:
TBD

Virtual power plants in Richmond

The Richmond Advanced Energy Community Project is a ground-breaking virtual power plant (VPP) pilot that provides up to 100 homes and 20 businesses the opportunity to electrify and save on their electricity bills.[25] This VPP pilot serves low-income households by providing smart, clean energy technologies including energy storage, smart thermostats, rooftop solar, heat pump space and water heating, and electric vehicle charging that are connected into one system which responds to the grid's needs. The VPP reduces appliance energy use during more expensive times of the day, provides clean electricity to the grid when needed, and stores energy from the grid when there is surplus (high generation and low demand), contributing to grid reliability and bill savings. Local small businesses are eligible for battery storage, which can provide resilience during grid outages, bill savings, and revenue generation potential.

The pilot project is a partnership of MCE and ZNE Alliance supported by a $5 million grant from the California Energy Commission and funding from the City of Richmond, CalEPA, and MCE. MCE is working to expand the VPP pilot across all MCE member communities with a priority on frontline communities along San Pablo Bay. Sonoma Clean Power Authority and Ava Clean Energy have VPP pilots as well. These projects provide replicable frameworks to expand VPPs and their significant benefits to customers and the grid.



8.6 FUNDING IMPLEMENTATION

Implementation of the power sector measures can be supported in part through existing funding and financing approaches. For example, California Public Utilities Commission's Self-Generation Incentive Program provides rebates for distributed energy systems at homes and public facilities to increase resilience and emergency preparedness. In addition, the California Energy Commission's (CEC) Electric Program Investment Charge (EPIC) funds research, supports deployment demonstrations, and addresses policy, market, and workforce barriers for clean energy technologies including energy storage projects. The CEC also offers zero- and low-interest loans for energy efficiency, generation, and storage projects.[26] Notably, PG&E's Community Microgrid Enablement Program and Microgrid Incentive Program fully fund microgrids at community facilities such as hospitals, fire stations, and markets. The programs listed above are not a comprehensive list of available funding. See Appendix G for other funding and financing sources, programs and partners, and examples of successful implementation. Additional funding and financing mechanisms will be needed to fully achieve the goals of this sector.

Data centers, air quality, and greenhouse gas emissions

The BARCAP region is home to many data centers powering the digital economy by storing, processing, and transmitting large amounts of information business and industry rely on. For example, data centers are crucial for email, e-commerce transactions, cloud-based computing and data analysis, and artificial intelligence (AI). As the use of power-intensive digital services like AI increases, data center energy demand will climb sharply with important implications for local air pollution, GHG emissions, and the electrical grid.

In California, data centers currently consume 5,580 gigawatt hours (GWh) of electricity annually (equivalent to nearly 3% of all electricity demand in 2023).[27] To meet increased energy demand from powering the digital economy, and importantly from the growth of AI, PG&E expects to add new data center load roughly equal to the demand of 2-3 million new homes in the Bay Area by 2029.[28] Growing data center energy demand may also impact the reliability and affordability of the entire energy system – key concerns for BARCAP stakeholders – when the costs of new energy infrastructure are passed onto ratepayers.[29]

Data centers also require reliable power and often depend on diesel or other fossil fuel-powered backup generators to ensure continuity, which can increase local air pollution exposure, including in areas already burdened with poor air quality. More than four-fifths of California's data centers are in the top 30% worst diesel emission zones, with nearly one-third in the top 10% worst zones.[30]

Meeting the rise in data center load growth with clean energy and backup power, while supporting a reliable grid and minimizing rate impacts, will be critical. The private and public sectors are working to identify innovative solutions to meet these objectives. For example, some local facilities will use low-carbon energy resources as primary on-site power sources and for backup generation.[31] Others are pursuing energy efficiency, demand response, and load flexibility to reduce annual electricity usage and are exploring how data centers could serve as a resource to the electric grid.[32]





ENDNOTES

1 For the BARCAP, clean energy is defined as zero-emissions technologies that produce electricity without emitting GHGs or harmful air pollution. Renewable natural gas and biodiesel are not considered clean energy sources due to air pollution impacts of combustion. Hydrogen, depending on how it is generated and used, may or may not be considered a clean energy source.

2 Load Flexibility," California Energy Commission, Accessed November 17, 2025, https://www.energy.ca.gov/programs-and-topics/topics/load-flexibility#:~:text=Load%20flexibility%2C%20also%20known%20as%20demand%20flexibility%2C,grid**%20*%20**Make%20the%20grid%20more%20resilient**."

3 Nearly all GHG emissions from this sector are CO_2 emission (99.5%), and over 95% of CO_2 emissions from the power sector are covered by the state's Cap-and-Invest program.

4 One MW (or Megawatt) can power about 750 to 1,000 homes, depending on the energy consumption profile of the home. One GW (or Gigawatt) is 1,000 MW.

5 California Energy Commission, "Solar PV Capacity and Installations for Systems 1MW and Smaller: 2022," California Open Data Portal, Accessed November 18, 2025, https://data.ca.gov/dataset/solar-pv-capacity-and-installations-for-systems-1mw-and-smaller-2022; California Energy Commission, "Utility Natural Gas Capacity and Generation by Jurisdiction and County: 2022," California Open Data Portal, Accessed November 18, 2025, https://data.ca.gov/dataset/utility-natural-gas-capacity-and-generation-by-jurisdiction-and-county-2022; California Energy Commission, "Utility Renewable Capacity by Type and County: 2022," California Open Data Portal, Accessed November 18, 2025, https://data.ca.gov/dataset/utility-renewable-capacity-by-type-and-county-2022.

6 California Energy Storage System Survey," California Energy Commission, Accessed November 17, 2025, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/california-energy-storage-system-survey#:~:text=From%202018%20through%20the%20first%20quarter%20of,battery%20storage%20will%20be%20needed%20by%202045.

7 Stephanie Bailey et al., "Final 2024 Integrated Energy Policy Report Update," California Energy Commission, October 2025, https://efiling.energy.ca.gov/GetDocument.aspx?tn=266416.

8 The state projects that achieving zero carbon electricity by 2045 will require roughly tripling annual grid-scale solar and wind build rates and an eightfold increase in battery storage installation rates; Stephanie Bailey et al., "2023 Integrated Energy Policy Report," California Energy Commission, February 2024, https://efiling.energy.ca.gov/GetDocument.aspx?tn=254463.

9 California Energy Storage System Survey," California Energy Commission, Accessed November 17, 2025, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/california-energy-storage-system-survey#:~:text=From%202018%20through%20the%20first%20quarter%20of,battery%20storage%20will%20be%20needed%20by%202045.

10 Solar PV, Solar Ready, Battery Energy Storage System (BESS) & BESS-Ready," California Energy Commission, Accessed November 17, 2025, https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/energy-code-support-center/solar.

11 Described as "combined heat and power" in the Scoping Plan.

12 Per California Public Utilities Commission, power lines are responsible for less than ten percent of wildfires, yet have been attributed as the cause of almost half of the most destructive wildfires in California history; "Wildfire and Wildfire Safety," California Public Utilities Commission, Accessed November 18, 2025, https://www.cpuc.ca.gov/industries-and-topics/wildfires.

13 Democratizing Clean Energy for All," Gemini Energy Solutions, Accessed November 19, 2025, https://www.geminiesolutions.com/; Nicole J. Caruth, "A California Network of Black Churches Is Embracing Solar Energy, EV Charging," Inside Climate News, September 7, 2025, https://insideclimatenews.org/news/07092025/california-black-churches-energy-transition/.

14 Siting utility-scale projects in the region (versus smaller projects) may raise concerns by local governments and others over land that otherwise could be used to meet housing demand or other pressing concerns. The BARCAP therefore focuses on small- to medium-scale projects that are less than 20MW.

15 City of Hayward, "Hayward Climate Action Plan," City of Hayward, January 31, 2024, https://www.hayward-ca.gov/sites/default/files/documents/CAP-Adopted-240130.pdf; City of Fairfield, "City of Fairfield Climate Action Plan," City of Fairfield, adopted December 3, 2024, https://www.fairfield.ca.gov/home/showpublisheddocument/12007/638695044261456923.

16 Behind-the-meter refers to generating power on the customer's side of the utility meter. Distributed energy resources refer to "diverse category of devices and technologies that interface with the electricity system at the distribution level, either directly connected to a distribution utility's wires or on an end-use customer's premises, behind the utility meter. Examples include distributed generation and storage, electric vehicles and charging stations, grid-interactive buildings and microgrids, as well as more traditional demand response or load flexibility resources and energy efficiency strategies"; "Distributed Energy Resources," California Energy Commission, Accessed November 18, 2025, https://www.energy.ca.gov/data-reports/california-energy-planning-library/distributed-energy-resources.

17 The capacity levels representing state goals are pulled from existing planning processes and forecasts to ensure alignment with already completed analysis and state goals. They are based on information from California Independent System Operator (CAISO) Transmission Planning Process (TPP) busbar mapping, which generally locates different utility-scale renewable energy and storage resources to various zones within CAISO's footprint to identify transmission constraints and support transmission planning needed to meet state goals. This analysis focused on two PG&E service territories (Greater Bay Area and North of Greater Bay Area. The Greater Bay Area and North of Greater Bay Area do not perfectly align with the BARCAP region. Therefore, the total increase in capacity estimate refers to the broader Bay Area region and some neighboring counties. Estimated forecasts for BTM deployment are from the CEC IEPR distribution generation forecasts (high) for the BARCAP region. For more information on the estimated combined totals for the Bay Area region and some neighboring counties based on these planning and data sources, as well as information on the approach to develop these estimates, see Appendix C.

18 A feed-in tariff (FIT) is "a standardized, long-term, guaranteed contract that allows smaller local renewable energy projects to sell power to the local utility or other load-serving entity. Market-based, cost-effective FITs with streamlined interconnection allow local businesses, residents, and organizations to install clean local energy projects in underutilized spaces…" MCE and Sonoma Clean Power currently have feed-in tariff programs.

19 State law mandates that most cities and counties implement an online, automated permitting platform for residential rooftop solar systems, SolarAPP+; "Residential Solar Permit Program Status Dashboard," California

Energy Commission, Accessed November 18, 2025, https://www.energy.ca.gov/programs-and-topics/programs/residential-solar-permit-reporting-program-sb-379/residential-solar.

20 Implementation of these measures involves voluntary actions, and no additional authority must be acquired by lead implementers to implement the measures.

21 Demand/load flexibility solutions help electricity customers "shift their energy usage to when electricity is cheaper and clean, and use less energy when the grid is under stress or running polluting power plants"; "Load Flexibility," California Energy Commission, Accessed November 18, 2025, https://www.energy.ca.gov/programs-and-topics/topics/load-flexibility; Virtual power plants are a software-based system to manage distributed energy resources - such as rooftop solar, batteries, electric vehicle chargers, and appliances (including smart thermostats, smart water heaters, smart plugs) –to support the grid and reduce costs to consumers. By aggregating distributed energy resources, they can help reduce the need for additional grid infrastructure and enhance local resilience. Vehicle-to-everything, also known as bi-directional electric vehicle charging, allows vehicle owners to use the energy stored in the electric vehicle's battery to power homes, grids, and other devices. Grid-enhancing technologies maximize the electricity transmission across the existing system through sensors, power flow control devices, and analytical tools (Department of Energy). They can reduce the need for new transmission infrastructure and enable the addition of clean, renewable power to the grid.

22 The goal is to produce as much day-to-day and resilient energy from renewable sources as possible and have some on-demand generation for critical missions for only when sun, wind or other intermittent sources or battery storage are inadequate at that time. Hybrid systems refer to including non-solar or storage-based resources along with solar power plus battery storage (and potentially other renewable generating sources like micro hydro, micro wind, etc.). These systems may be necessary if the amount or duration of power necessary to meet a facility's resilience needs cannot be met with solar+storage alone.

23 SB 786 (Dodd) requires the state to adopt a load shift goal. It is 7,000 MW by 2030.

24 Reconductoring is replacing old, existing power line conductors with newer, more efficient conductors, which can increase how much electricity they can carry.

25 MCE and Partners Unveil Virtual Power Plant, Bringing the "Home of the Future" to Life," MCE, August 7, 2024, https://cal-cca.org/mce-and-partners-unveil-virtual-power-plant-bringing-the-home-of-the-future-to-life/.

26 California Energy Commission, "Energy Conservation Assistance Act - Low-Interest Loans," *California Energy Commission, Accessed February 25, 2026, https://w*ww.energy.ca.gov/programs-and-topics/programs/energy-conservation-assistance-act/low-interest-loans.

27 Nanpeng Yu et al., "Enabling Energy Efficient Data Center in Smart Power Distribution Systems," California Energy Commission, May 2024, https://www.energy.ca.gov/sites/default/files/2024-05/CEC-500-2024-035.pdf; Average annual electricity consumption in California was 6,174 kilowatt-hours (kWh) per household in 2019; DNV GL Energy Insights USA, Inc., "2019 California Residential Appliance Saturation Study (RASS)," California Energy Commission, July 2021, https://www.energy.ca.gov/sites/default/files/2021-08/CEC-200-2021-005-PO.pdf.

28 Kristin Koenig, Data centers: energy usage reporting and modeling, U.S. Congress, House, Assembly Committee on Utilities and Energy, April 2, 2025, https://autl.assembly.ca.gov/system/files/2025-04/ab-222-

bauer-kahan.pdf.

29 Kristin Koenig, Data centers: energy usage reporting and modeling.

30 The same analysis found that census tracts in California with data centers have a median CalEnviroScreen pollution score of 7 out of 10. A score of 7 out of 10 means that communities in these census tracts experience more severe cumulative impacts from pollution and specific population characteristics than 70% of other census tracts in California; Cecilia Marrinan, "Data Center Boom Risks Health of Already Vulnerable Communities," Tech Policy Press, June 12, 2025, https://www.techpolicy.press/data-center-boom-risks-health-of-already-vulnerable-communities/.

31 Microsoft's San Jose data center will use renewable natural gas for a portion of its backup generation, and ECL's data center in Mountain View is using hydrogen as its primary power source. These power sources are not considered fully sustainable clean energy per BARCAP definition.

32 Nanpeng Yu et al., "Enabling Energy Efficient Data Center in Smart Power Distribution Systems"; Anuja Ratnayake, "Unlocking AI Potential with Data Center Flexibility," energycentral, Accessed November 18, 2025, https://www.energycentral.com/intelligent-utility/post/unlocking-ai-potential-with-data-center-flexibility-PtPoXIAuRMzs5Ff; Jason Plautz, "Study finds headroom on the grid for data centers," E&E News, February 13, 2025, https://www.eenews.net/articles/study-finds-headroom-on-the-grid-for-data-centers/.

9 Waste and Materials Sector

9.1 Vision for 2045

9.2 Sector overview

9.3 Context

9.4 How proposed measures were developed

9.5 Waste sector measures and actions

9.6 Funding implementation





9 Waste and Materials Sector

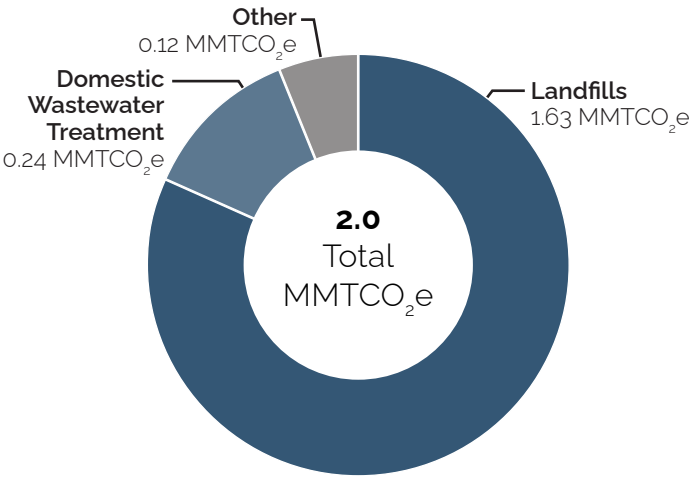
9.1 VISION FOR 2045

In 2045, very few materials are wasted. They are instead treated like valuable resources to meet community needs. Robust local food economies enable communities to thrive and eat healthy meals. Local builders use healthier, lower-carbon materials that are made regionally, and buildings are designed to be durable, adaptable, and use materials efficiently. Where materials are still not fully reused, recycled or repurposed, waste management facilities have better systems to reduce pollution and protect the air we breathe, especially in communities that have been impacted the most.

9.2 SECTOR OVERVIEW

The waste and materials sector include emissions that result from consuming and discarding food, goods, and building materials in the Bay Area Regional Climate Action Plan (BARCAP) region.

Figure 9-1: GHG emissions by waste and materials sub-sector for BARCAP region in 2022



The greenhouse gas (GHG) emissions from materials decomposing in the BARCAP region's waste management facilities were 2.0 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) (or 4% of regional GHG emissions) in 2022, as shown in Figure 9-1. GHG emissions from this sector have remained relatively stable since 1990, with landfills consistently contributing most to overall emissions. GHG emissions from the production of materials that are consumed in the BARCAP region are not included in BARCAP's GHG inventory because they occur predominantly outside the BARCAP region, but they can be as high as ten times greater than landfill emissions.[1] Therefore, the measures in this sector are designed to impact GHG emissions related to the whole lifecycle (from production to waste) of materials consumed in the BARCAP region through better material use.

This work builds on a history of leadership in sustainable materials management in the Bay Area. The BARCAP region is home to hundreds of food recovery groups that save millions of pounds of food each year. Urban and peri-urban farms and local markets help grow and share fresh food with communities. Local start-ups and innovators are making new low-carbon materials from natural materials like straw and mycelium or finding ways to safely reuse wood and other parts of buildings. Others are creating smart tools to track surplus food and measure the climate impact of building materials. Many cities in the BARCAP region include circular economy concepts in their climate action plans that highlight the multiple benefits of using materials more effectively to meet their communities' needs.





9.3 CONTEXT

California's main strategy to reduce waste-related emissions is the Short-Lived Climate Pollutants Act (Senate Bill 1383), which aims to reduce organic waste going to landfills by 75%, and recover and redirect 20% of currently wasted edible food to feed people. While Senate Bill (SB) 1383 is the state's main strategy to reduce waste-related GHG emissions, it is implemented primarily at the local level. Across the BARCAP region, food recovery organizations are rescuing millions of pounds of surplus food each year, and local governments are collecting organic waste including food scraps and yard trimmings to keep organics out of landfills. But the system still faces big challenges and local governments and food recovery organizations lack sustainable funding sources to continue and expand their work to meet the state's ambitious targets.

The United Nations estimates that food systems account for 30 percent of global GHG emissions with food loss and waste accounting for 8-10% of all emissions and costing a trillion dollars annually.[2] Food related emissions within the Bay Area is much smaller, but the BARCAP region can contribute to reducing these emissions by reducing the amount of food that is wasted and shifting consumption away from high-emission foods (meat, dairy, and highly processed foods) to those with lower emissions profiles (plant-based proteins and less processed foods).

Building materials like concrete, steel, and insulation are responsible for over 10%

of global GHG emissions.[3] Although most of these GHG emissions also occur outside of the BARCAP region, they can be reduced regionally through informed design and material selection and sourcing. California is working to cut the GHG emissions associated with the lifecycle production of building materials, or "embodied carbon," by 40% by 2035 through new rules under Assembly Bill 2446. The California Green Building Code (CALGreen) requires projects to reduce embodied carbon by reusing parts of old buildings, choosing low-carbon materials, or designing buildings to reduce overall lifecycle emissions.

Reusing materials that are yielded through deconstruction can reduce waste and pollution, including dust containing hazards such as lead and asbestos. Building for longevity through durability and resilience, retrofitting to increase energy efficiency, and planning for adapting to future uses can extend lifetimes of buildings and reduce the demand for new building materials.[4] The Bay Area's local governments have been leading the low-carbon building movement, including Marin County's low carbon concrete code and San Mateo County's requirements for construction and demolition waste reduction plans. Working with the construction industry and economic development agencies can result in more low-carbon building resources in the BARCAP region, while reducing the region's reliance on imported materials.



Marin County low carbon concrete code

Concrete is a widely used building material, whose production contributes roughly 8% of global greenhouse gas emissions. To address these emissions, Marin County adopted one of the nation's first low carbon concrete building code requirements in 2019. The ordinance places limits on the carbon intensity of concrete used in permitted projects in unincorporated Marin County.

The code was designed for feasibility, allowing a range of carbon limits tied to different concrete strengths and offering multiple compliance pathways. Supported by an Air District grant and facilitated by the Carbon Leadership Forum, development of the code included extensive engagement with stakeholders—concrete and cement producers, local governments, NGOs, architects, engineers, and contractors—as well as analysis of concrete mixes and testing on pilot projects. These steps ensured the limits were practical and effective.

Concrete mixes created to comply with Marin's ordinance are now being used across the region. Marin's process and code language have been documented as a precedent, inspiring two other Bay Area jurisdictions and influencing efforts in Southern California and other states. The ordinance predated and informed California's statewide CALGreen embodied carbon limits on concrete.

Based on the feedback from public engagement conducted during the development of the BARCAP, there is support for waste reduction, recycling, and composting. Public survey results ranked these among the top five of 13 potential focus areas for climate action by nearly a third of respondents. A similar number of respondents also ranked strengthening local food production and consumption through reduced food waste and stronger food security as a top-five strategy for potential focus areas. Members of the BARCAP region's frontline communities who participated in the BARCAP engagement process expressed the importance of having access to healthy, affordable food and buildings. They emphasized the important role of community organizations in filling gaps in the food system and strengthening their ability to grow, distribute, and compost food in their communities. Health impacts were an important concern, particularly related to plastics, toxins in building materials, and an inequitable air pollution burden from waste management facilities.

In an equitable Bay Area, all people would have adequate access to the material resources they need to live healthy lives. This means access to healthy foods, living in homes built with nontoxic materials, and access to clean, odor-free air, even near waste management facilities. It also means that the economies and supply chains that deliver those materials to Bay Area residents provide economic benefits like quality jobs and family-supporting incomes equitably to all Bay Area communities.[5] It is critical that all communities, especially those that have been historically marginalized, have a voice in developing equity-centered policy solutions.



The BARCAP focuses on regional efforts in three areas: supporting community-based initiatives for food recovery, production, distribution, and composting to address food insecurity and reduce the amount of organics sent to landfills; increasing the use of low-carbon, reused, and nontoxic building materials; and enabling proper waste sorting and treatment to decrease the amount of organics going to landfill and to manage waste-related facilities to minimize GHG emissions.

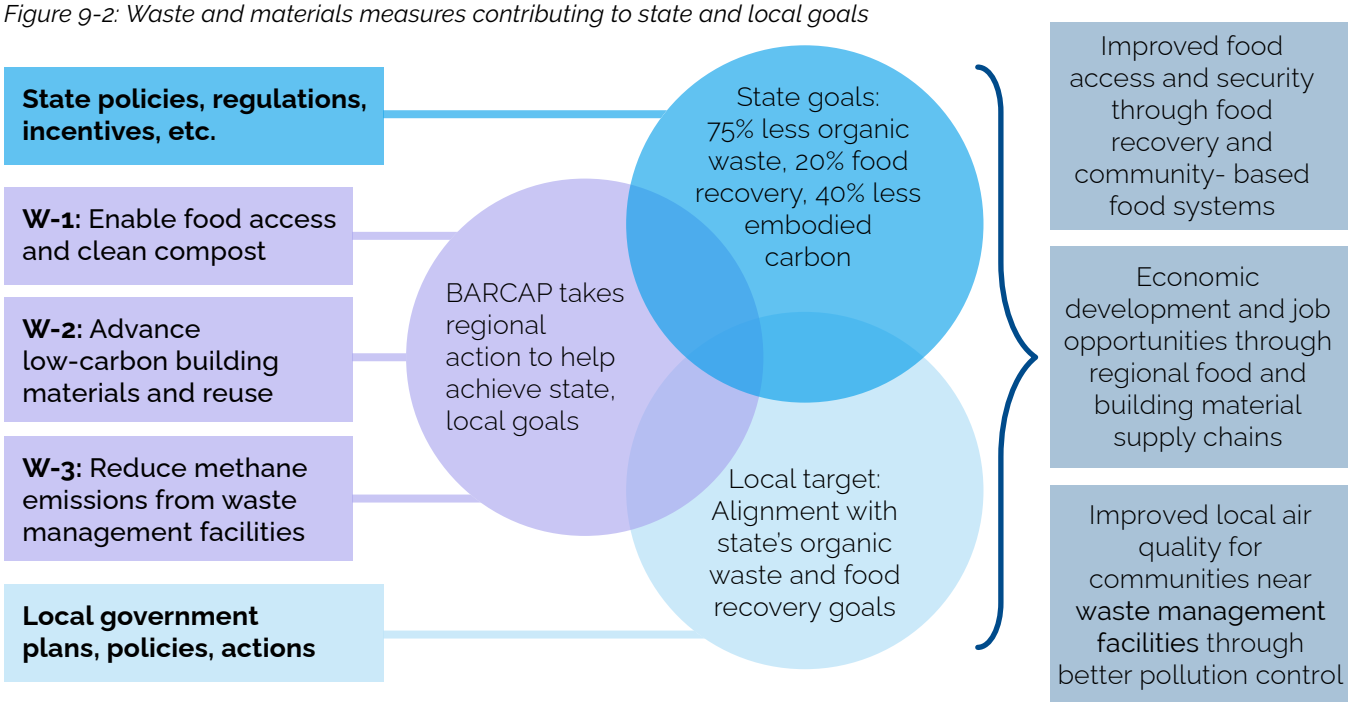
9.4 HOW PROPOSED MEASURES WERE DEVELOPED

The process to develop waste and materials sector measures leveraged existing networks addressing food recovery and building materials. These included convening a group of local governments implementing Senate Bill (SB) 1383 (2016) and their active food recovery organization partners for two conversations to design Measure W-1 Enable Food Access and Clean Compost. Measure W-2 Advance Low Carbon Building Materials built upon a round of conversations by the Bay Area Deconstruction Working Group and an additional convening of local governments considering embodied carbon policies across the Bay Area.[6] These technical experts grounded measures in the current assessment of implementation, key hurdles, and areas for action, and were foundational in shaping these measures. See Chapter 4 for an overview of BARCAP's sector-level technical working groups.

The measures described below can be implemented with implementing partners' existing authorities.

9.5 WASTE SECTOR MEASURES AND ACTIONS

Figure 9-2: Waste and materials measures contributing to state and local goals



The measures and actions for the waste and materials sector contribute to achieving state and local goals for the sector and result in many other key benefits. As shown in Figure 9-2, they complement, rather than duplicate, state and local actions in important ways. The measures and actions support successful local implementation of state policies and initiatives in ways that are equitable and bring benefits to the BARCAP region. They also help remove barriers and build capacity to accelerate local action and scale promising approaches regionally.



Measure W-1: Enable Food Access and Clean Compost

GHG reductions in 2045:
Low[7] *(see Figure 9-2 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:

- \+ Improved community health
- \+ Reduced cost burden through increased access to food
- \+ Reduced exposure to emissions near waste treatment facilities
- \+ Creation of food recovery jobs
- \+ New green spaces and community gardens

Design principles:

Climate resilience benefits: Compost added to agriculture lands to support water retention, soil structure, and stable food production; improves ability of natural lands to recover from climate shocks; creates more local, robust food recovery systems; increased food security during extreme weather

Estimated costs of implementation: $

Proposed metrics: Pounds of food recovered to feed people.

SUMMARY

Support local governments and food recovery organizations to more effectively meet their food recovery and composting goals and overcome implementation hurdles to implement Senate Bill 1383 goals to reduce landfilled organic waste by 75% and recover 20% of edible food.

This measure addresses the persistent lack of resources to fund food recovery and the common barriers to successfully sorting organic waste to create clean compost. Every county in the Bay Area is working toward meeting SB 1383 requirements and regional coordination will make this work more effective across all eight counties in the BARCAP region.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- ★ **Q2 2026:** Begin convening networks of food recovery organizations, counties, and other stakeholders to share data, best practices, and needs
- ★ **2027**: Identify potential funding mechanisms and mutual benefit arrangements for food recovery capacity
- ★ **2028**: Survey BARCAP region's educational materials on lifecycle carbon and health impacts of consumption and strategies for behavior change and community-scale solutions

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Public and Community Health

✚ Improved food access from edible food recovery

✖ *Sometimes the food recovered is highly processed and unhealthy*

Community Engagement, Awareness, and Capacity

✚ Increased awareness and engagement in solutions builds trust between communities and the government

✖ *Outreach may only engage people in one area, one language, or those with more time and resources, and omit many individuals with possibly greater vulnerabilities*

Jobs and Workforce Development

✚ Funding to enable food recovery workers to be paid instead of relying on volunteer labor

ACTIONS

W-1.1: Develop funding and asset-sharing mechanisms to support edible food recovery operations

Expand capacity for edible food recovery operations and training for businesses and institutions that generate surplus edible food to enable at least the minimum edible food recovery requirement in SB 1383 and deliver food to people experiencing food insecurity. Steps to implement this action include:

- **Assessing the funding need for food recovery**, grounded in data of actual cost of service;
- **Pursuing a sustained and dedicated funding source**, potentially paid for by the BARCAP region's largest food waste generators;
- **Designing the funding to be accessible to food recovery organizations** with effective and equitable food distribution models;
- **Strengthening regional and local networks of food recovery organizations** to enable them to pursue funding collectively;
- **Supporting these networks to develop mutual benefit arrangements for shared assets** (e.g., clean air vehicles, food processing and storage facilities and equipment ideally with low global warming potential refrigerants, and software).

Lead Implementers:
Counties

Supporting Implementers:
Food recovery organizations

Timeframe to start implementation:
Short-term

W-1.2: Coordinate regional efforts to improve sorting of organics discards, including reducing common contaminants of the organics stream

Coordinate joint efforts across counties to minimize duplication of effort and share best practices with local governments and waste haulers, including strategies to:

- **Translate informational materials and target education and incentives to multifamily residents and property owners and managers**, small mom and pop, minority-owned businesses and restaurants, and multi-tenant commercial properties;
- **Reduce single-use foodware and plastics** through regionally aligned messaging, incentives, and policies that advance reusable foodware and other alternatives;
- **Understand and advocate for materials that are truly compostable or recyclable** in current markets and infrastructure;
- **Include in waste hauler agreements the use of new technologies** that enable real-time monitoring and feedback on proper sorting (e.g., cameras in trucks and bins, artificial intelligence analysis of discard streams);
- **Receive feedback from compost users in natural and working lands** to improve strategies to reduce contamination.

Lead Implementers:
Counties

Supporting Implementers:
Waste haulers

Timeframe to start implementation:
Medium-term



W-1.3: Increase the region's understanding of lifecycle and health impacts of food and goods consumption and the opportunity for community-scale solutions

Include information about lifecycle, health, and community impacts of materials in messages distributed to communities by regional and local governments. Partner with schools to educate youth about health, climate literacy, and community-scale entrepreneurship. Impacts and benefits to highlight include:

- **Lifecycle environmental impacts and reduction actions** (such as plant-based diets);
- **Health concerns** including toxic chemicals, microplastics, and food date labeling;
- **Community resilience**, food security, and economic benefits from community-scale food production, distribution, recovery, gleaning, and composting.

Lead Implementers:
Local governments

Supporting Implementers:
Schools, food producers, food recovery organizations, community composters, health agencies

Timeframe to start implementation:
Medium-term



Measure W-2: Advance Low-Carbon Building Materials and Reuse

GHG reductions in 2045: Supporting. *In addition to supporting the reduction of materials entering landfills, this measure has the potential to reduce embodied carbon – which includes emissions outside of the BARCAP region but caused in the production of materials that are used in the region – by up to 50 million $MTCO_2e$ between 2025 and 2045 (or 2.5 million $MTCO_2e$ per year) if embodied carbon is reduced by the Assembly Bill 2446 target of 40%.*

Potential regional benefits:

- \+ Reduced exposure to health-damaging demolition dust containing asbestos, lead, etc.,
- \+ Reduced exposure to health-damaging toxins off-gassing from building materials
- \+ Improved housing quality, job creation (supply chain and deconstruction)
- \+ Anti-displacement if existing buildings are retrofitted to provide more housing units

Design principles:

Climate resilience benefits: Increased building resilience to disasters including wildfire and flooding; increased building durability and lifespans

Estimated costs of implementation: S

Proposed metrics: Amount of used building material salvaged by resellers, amount of carbon dioxide equivalent decrease in embodied carbon from a baseline measured by the California Air Resources Board

SUMMARY

Reduce waste and GHG emissions associated with building materials in alignment with Assembly Bill 2446 (2022) goals to reduce embodied carbon by 40% by 2035 through expansion of the California Green Building Code and economic development initiatives that advance deconstruction and reuse, material efficiency, and the prevalence of carbon storing, low-carbon, and healthy building materials.[8] Actions are informed by a series of convenings of the Bay Area Deconstruction Working Group.

This measure leverages the growing interest among local governments and building sector leaders advancing low carbon building materials and design across the eight counties in the BARCAP region. It is a step to ensuring compliance with Assembly Bill 2446 among the region's construction industry, for which CARB is developing embodied carbon reporting requirements of construction projects and product manufacturers. It seeks to remove barriers to low-carbon construction by providing education and supporting economic development to increase the availability and supply of low-carbon materials.

As in the buildings sector, recently passed state legislation will impede the development of local residential reach codes related to building materials until 2031.[9] Cities and counties can continue to pursue codes for nonresidential construction and shift their focus to enforcing existing codes. Delayed access to reach codes as an action pathway increases the importance of economic development actions to increase voluntary market adoption.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- ★ **2028**: Engage in CALGreen code update cycle
- ★ **2028**: Standardize deconstruction surveys and identify priority materials for salvage
- ★ **2030**: Begin study to understand existing building stock for opportunities to improve utilization rates and future material reuse

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Housing Quality and Security

✚ Improved occupant health from the use of nontoxic materials

✖ *Low-carbon materials or deconstruction practices may have higher upfront costs, passed onto renters or home buyers*

Public and Community Health

✚ Reduced exposure to demolition dust and off-gassing

Jobs and Workforce Development

✚ Employment opportunities in low-carbon building trades

✖ *Employment opportunities could be challenging for low-income, disadvantaged jobseekers to secure without the necessary training for this new market*

Community Engagement, Awareness, and Capacity

✚ Increased awareness and engagement in solutions builds trust between communities and the government

Climate Resilience Co-benefits

✚ Greater scrutiny and attention paid to building materials, including which materials are more resilient to fire and flooding

Cost Burden

✖ *Introducing new requirements can increase the cost of construction*

ACTIONS

W-2.1: Collaborate with the state and other local governments to implement the California Green Building (CALGreen) and CARB embodied carbon code requirements

Engage with local governments to implement amended building codes and CARB reporting requirements to encourage material efficient building design and lower carbon material choices, deconstruction surveys, and use salvaged materials. Increase the code's effectiveness by supporting its implementation. This action includes:

- **Providing comments and information during code development processes;**
- **Creating templates for local reach code adoption** (as allowable by the state);
- **Providing training and resources** (e.g., those developed by state agencies or architectural associations; potentially providing continuing education credits) to local building officials, engineers, and design teams to support implementation and enforcement of existing codes;
- **Coordination across jurisdictions** for regional consistency to ease compliance by construction teams that work across the BARCAP region;
- **Lead by example through government procurement** using current best practices, materials, and processes for their building and infrastructure projects, and continue to evaluate new options as they become available.

Lead Implementers:
Local governments

Supporting Implementers:
Industry associations

Timeframe to start implementation:
Medium-term



W-2.2: Work with construction project teams and suppliers to increase availability and adoption of low-carbon building materials and practices

Increase adoption of reuse and low carbon practices by project teams (consisting of developers, architects, engineers, contractors) and increase the availability of low carbon materials in the BARCAP region through:

- **Information sharing and education** through existing networks and industry associations;
- **Public recognition**, faster permitting for deconstruction or projects pursuing certifications like TRUE or Zero Carbon;
- **Identification of priority materials and products to focus on for the Bay Area;**
- **Economic development** including workforce training, entrepreneurship support, and physical infrastructure such as space for manufacturing, research and prototyping, and storing salvaged materials;
- **Collaboration with rural economic development** agencies and initiatives in natural and working lands for regeneratively sourced wood and agricultural building materials.

Lead Implementers:
Local governments

Proposed Supporting Implementers:
Industry associations, economic development agencies, research institutions

Timeframe to start implementation:
Medium-term

W-2.3: Conduct local assessments to identify opportunities for the region's existing buildings

Assess how much vacant space and reusable materials are in existing buildings in cities across the BARCAP region. Compile economic, land use, assessments of salvageable materials, and building type and age information to establish a regional understanding that will enable the BARCAP region to:

- **Identify opportunities to retrofit underused commercial and oversized residences** to accommodate more housing units or community-based economic development (e.g., pop-ups in vacant retail spaces) and designing for future adaptive reuse;
- **Identify commercial sites for storing and processing salvaged building materials**;
- **Target materials to deconstruct and salvage** when buildings are taken down or remodeled.

Lead Implementers:
Local governments

Proposed Supporting Implementers:
Regional governments, deconstruction assessors and contractors, research institutions

Timeframe to start implementation:
Medium-term



Measure W-3: Reduce Methane Emissions from Waste Management Facilities

GHG reductions in 2045:
NE

Potential regional benefits:
+ Reduction of odors and other co-pollutants

Design principles:

Climate resilience benefits:
Community health, potential improvements to hazard mitigation at affected facilities

Estimated costs of implementation:
NE

Proposed metrics: Adoption of new or amendment of existing rules

SUMMARY

Reduce methane emissions through expansion or amendment of existing Air District rules or engage in new rulemaking to address sources such as compost facilities.

California's Landfill Methane Regulation requires municipal solid waste landfills to reduce methane and other air pollutant emissions through emissions monitoring and through capturing fugitive methane. The state adopted amendments in Fall 2025 that will help reduce health effects and GHG emissions from landfills in the region.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

★ **Q4 2026**: Begin review of existing rules

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Public and Community Health

✚ Reduced methane and non-methane volatile organic compounds including odorous substances from organic waste handling facilities may improve air quality

Community Engagement, Awareness, and Capacity

✚ Increased awareness and engagement in solutions builds trust between communities and the government

ACTIONS

W-3.1: Explore rulemaking to minimize emissions of methane, volatile and toxic organic compounds, and odorous substances from organic waste handling facilities, including large composting facilities

Review regulatory mechanisms to reduce emissions. Conduct outreach to facility operators and impacted communities. Develop specific requirements for facilities. Based on findings, determine whether rule development is needed and initiate that process.

Lead Implementer:
Air District

Timeframe to start implementation:
Medium-term





9.6 FUNDING IMPLEMENTATION

Implementation of the waste sector measures can be supported in part through existing funding and financing approaches. Examples of possible opportunities include CalRecycle's Organics Grant Program which funds organic waste facility construction or expansion, and the U.S. Environmental Protection Agency's C-MORE Grant Program which offered funding to support reducing embodied GHG emissions from construction materials. The programs listed above are not a comprehensive list of available funding. See Appendix G for other funding and financing sources, programs and partners, and examples of successful implementation. Additional funding and financing mechanisms will be needed to fully achieve the goals of this sector.

ENDNOTES

1 "Documentation for greenhouse gas emission and energy factors used in the waste reduction model (WARM)," United States Environmental Protection Agency, Office of Resource Conservation and Recovery, 2020, https://www.epa.gov/sites/default/files/2020-12/documents/warm_background_v15_10-29-2020.pdf.

2 "Greenhouse Gas Emissions from Agrifood Systems," Food and Agriculture Organization for the United Nations, 2024, https://openknowledge.fao.org/server/api/core/bitstreams/111b7ee8-282b-42ff-ad95-cccecd90f8ea/content; "Food loss and waste account for 8-10% of annual global greenhouse gas emissions; cost USD 1 trillion annually," United Nations Framework Convention on Climate Change, September 30, 2024, https://unfccc.int/news/food-loss-and-waste-account-for-8-10-of-annual-global-greenhouse-gas-emissions-cost-usd-1-trillion.

3 "Bringing Embodied Carbon Upfront," World Green Building Council, 2019, https://worldgbc.org/climate-action/embodied-carbon/.

4 In some cases, replacing old buildings with new construction that is more energy efficient or space efficient and better serves the land use potential of a site may be more effective at lowering overall GHG emissions.

5 According to the State of California's Future of Work Commission "Quality jobs provide a living wage, stable and predictable pay, control over scheduling, access to benefits, a safe and dignified work environment, and opportunities for training and career advancement." (p. 3); "A New Social Compact for Work and Workers," California Future of Work Commission, 2021, https://www.labor.ca.gov/wp-content/uploads/sites/338/2021/02/ca-future-of-work-report.pdf#:~:text=Ensure%20that%20more%20workers%20have%20quality%20jobs.,workers%20report%20being%20in%20a%20quality%20job.

6 The Bay Area Deconstruction Working Group is composed of representatives of government, construction industry, and nonprofits, in fall 2024 to discuss strategies to increase the use of salvaged materials. It was convened by San Francisco Environment Department, EPA Region 9, and supported by StopWaste. Information can be found on StopWaste's website: https://www.stopwaste.org/at-work/built-environment/construction-demolition-debris/bay-area-deconstruction-workgroup.

7 While emissions reductions are low within the BARCAP region, food waste prevention contributes to avoiding emissions beyond the BARCAP region related to food production - agricultural activities, processing, and transportation.

8 Deconstruction is the systematic dismantling of a structure, or portion thereof, to maximize the salvage of materials for reuse, in preference over salvaging materials for recycling, energy recovery, or sending the materials to the landfill.

9 California Congress, House, Committee of Budget, Housing, AB 130, Approved by Governor June 30, 2025, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202520260AB130

10 Natural and Working Lands Sector

10.1 Vision for 2045

10.2 Sector overview

10.3 Context

10.4 How measures were developed

10.5 Natural and working lands measures and actions

10.6 Funding implementation





10 Natural and Working Lands Sector

10.1 VISION FOR 2045

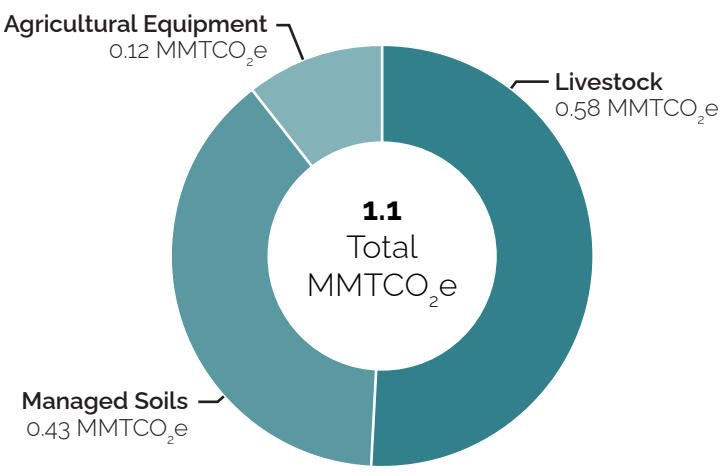
In 2045, natural and working lands are minimally impacted by wildfires, drought, and development, and have been made healthier by implementation of nature-based solutions. These lands will continue to sequester carbon, cool cities, provide clean drinking water, produce economically sustainable food and fiber crops, and support iconic ecosystems like redwood forests.

10.2 SECTOR OVERVIEW

The natural and working lands (NWL) sector includes carbon stocks held in plants and soils in agricultural and forestry lands (working lands) and natural ecosystems like wetlands, forests, and grasslands (natural lands), as well as greenhouse gas (GHG) emissions from agricultural equipment and livestock.[1]

Fossil-fuel powered agricultural equipment and livestock methane accounted for most of the GHG emissions from agriculture (see Figure 10-1), totaling 1.1 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2022 (or 2% of total regional GHG emissions).

Figure 10-1: GHG emissions by agriculture sub-sector for BARCAP region in 2022



The NWL sector is unique as it is the only sector with the potential to be a carbon sink in addition to a GHG emissions source.[2] NWL also provide critical benefits to Bay Area communities beyond carbon sequestration, such as clean drinking water, food and fiber crops, urban green spaces that cool cities and protect communities from flooding, and iconic natural landscapes including wetlands (tidal and delta) and redwood forests. An illustration of land cover types across the Bay Area Regional Climate Action Plan (BARCAP) region is shown on the following page in Figure 10-2, with total carbon stocks held in plants and soils shown in Figure 10-3. In 2022, the BARCAP region's plants and soils held over 92 million metric tons of carbon (MMT C), which is over six times larger than total annual GHG emissions across the BARCAP region.[3] The three largest contributors to carbon stocks are forests (50%), developed lands (12%), and grassland/herbaceous lands (11%). The massive amounts of carbon held in the BARCAP region's plants and soils emphasize the importance of preserving and enhancing these carbon stocks to achieve the region's climate goals. If current statewide trends continue, NWL are projected to be a net source of GHG emissions through 2045, mainly because of loss of plants and soil carbon stocks from land conversion and climate impacts like drought and wildfire.[4] These trends can be observed at the regional level: significant spikes in historic regional emissions from the sector were caused by wildfires in 2017 and 2020, two of the most severe wildfire years in California's history.

Figure 10-2: Land Cover Classes for BARCAP Eight-County Region (2022)

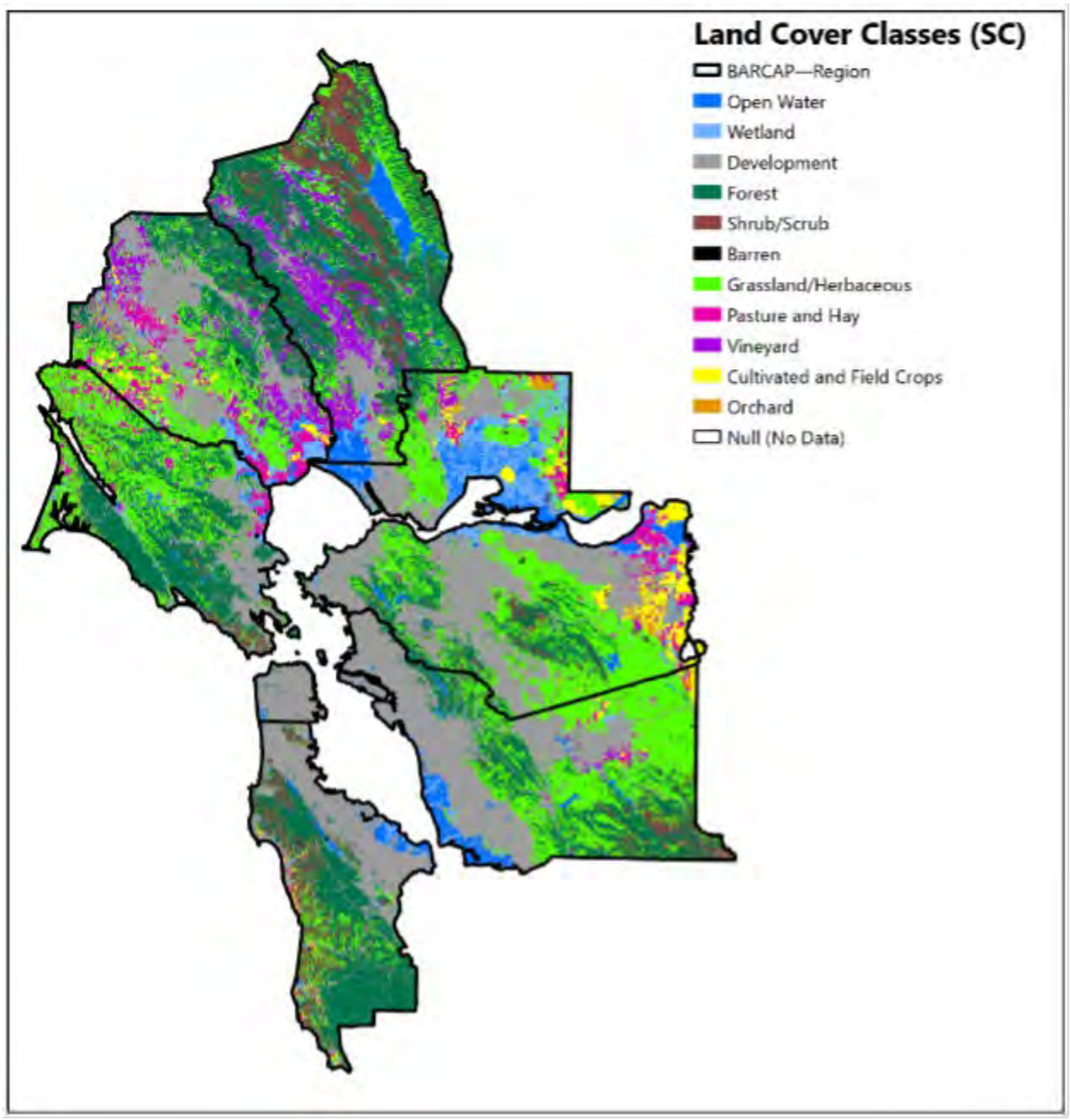
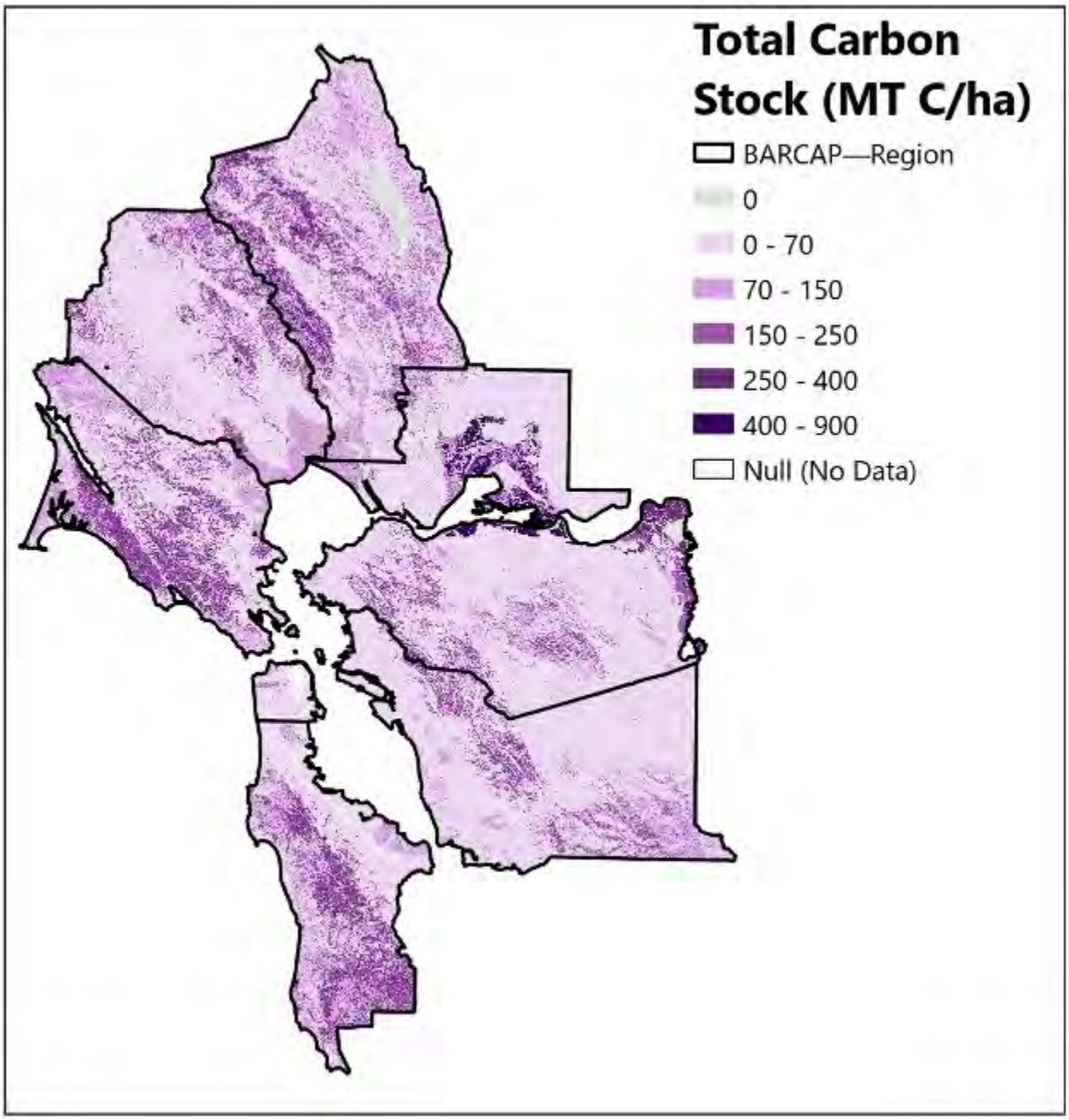


Figure 10-3: Carbon Held in Soils and Plants (2022)



Despite the forecast of declining carbon stocks and intensifying impacts of climate change across the state, implementers in the Bay Area have made important progress in both protecting existing ecosystems and agricultural lands, while also bringing forward nature-based solutions that increase carbon sequestration. Progress of note include:[5]

- Over 2.2 million acres of lands conserved in the BARCAP region by 2024;
- Over $14.3 million invested in climate beneficial agriculture projects in the BARCAP region as of 2025;

- Over 58 thousand acres of fuel treatment applied across the BARCAP region;
- 13 thousand acres of wetlands restored between 2000-2021 in the Bay Area.

10.3 CONTEXT

The State of California is increasingly recognizing the role of NWL in climate action. The California Air Resources Board 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan) included accounting and forecasting of NWL carbon stocks for the first time and included ambitious statewide targets for nature-based solutions, including:

- Conservation of 30% of California lands and waters by 2030;
- Reducing wildfire risk through annual fuel treatments on 2.3 million acres of forest, shrubland, and grassland;
- Increasing organic agriculture to 20% of all croplands;
- Restoring 60,000 acres of delta wetlands;
- Increasing urban forestry investment by 200%.[7]

Even if these targets are achieved, the outcome will slow, but not reverse, losses of carbon stocks across the state. Wildfire in particular is projected to drive large losses of carbon stocks, especially carbon rich forests, through 2045. Fortunately, the BARCAP region is home to a deep bench of technical experts, long-term implementers, and advocates for nature-based solutions. Historically, natural lands preservation and expansion activities are recognized for their value in conservation, outdoor recreation, water quality protection, habitat and biodiversity protection, wildfire prevention, and sustainable agriculture. While these qualities are recognized as 'co-benefits' in the context of the BARCAP, they have been the primary motivation for implementing what

East Bay Regional Park District: 'fighting fire with fire' with the carbonizer

In 2020, climate change-fueled drought produced over 1,500 acres of dead and dying trees in East Bay Regional Parks, including eucalyptus. The dead trees presented both a wildfire risk and a logistical challenge. Typical methods to clear and move wood are carbon intensive and costly (long-distance diesel truck transportation) or produce smoke and GHGs (open pile burning). Instead, the East Bay Regional Park District (EBRPD) turned to the carbonizer, a machine that burns organic matter at over 1,300 degrees Fahrenheit through a lower-emissions process. The carbonizer produces biochar, which can be added to soils to improve water retention, increase crop productivity, capture contaminants in soil, and increase long-term carbon sequestration. This effort was the first of its kind in California, reducing 14,049 tons of biomass tons of dead trees to 821.5 tons of biochar, which was then used at Ardenwood Historic Farm and other regional parks as a beneficial soil amendment. As of 2025, the Park District has thinned and removed hazardous trees and brush on 667 acres at Anthony Chabot Regional Park using a carbonizer, with additional work planned.[6]

is generally referred to as nature-based solutions. Nature-based solutions that protect existing carbon stocks include:

- **Land conservation**, which protects carbon held in natural and working lands from being lost to development;
- **Wildfire mitigation strategies and fuel management**, which reduces the chance of catastrophic wildfire;
- **Ecosystem restoration**, which makes existing carbon-rich landscapes more resilient to the effects of climate change like drought and sea-level rise.

These actions are essential for slowing projected losses of carbon from forests, wetlands, and agricultural lands. BARCAP strategies in this sector go beyond protecting current lands, and advance approaches that can enhance carbon sequestration in plants and soils. Core actions to sequester more carbon and reduce on-farm energy emissions include:

- **Expanding urban green spaces and the urban canopy**, sequestering more carbon and cooling communities;
- **Implementing climate beneficial agriculture**, which increases soil organic matter and soil carbon, and can integrate carbon sequestering trees into row crops and grazing lands;
- **Reducing energy emissions from water pumping and irrigation and expanding renewables on suitable agricultural lands**, which expands the generation of zero-carbon electricity while reducing emissions from pumping and moving water, which takes up 12% of California's total energy use.[8]

Based on feedback from public engagement conducted during the development of the BARCAP, there is strong regional support for expanding and protecting green spaces and natural ecosystems (public survey results ranked this second among 13 potential focus areas for climate action). Public commenters also expressed support for measures that support biodiversity and agriculture worker welfare, youth and school involvement in nature-based solutions, and interest in incorporating nature-based solutions into future regional efforts to support a just transition. Members of the BARCAP region's frontline communities who participated in the BARCAP



The BARCAP focuses on accelerating implementation of nature-based solutions that both protect existing carbon stocks and increase carbon sequestration through new funding and technical assistance to the BARCAP region's rich network of implementers.

Key areas for action include policy and data innovation, conservation, wildfire risk reduction, ecosystem restoration, climate beneficial agriculture, and environmental justice-centric urban greening.

City of Oakland land back to the Lisjan (Ohlone) people: Rinihmu Pulte'irekne project

The City of Oakland worked with a local tribe and an Indigenous land trust to return 3.8 acres of land in a city park to Indigenous stewardship. Confederated Villages of Lisjan Nation (Lisjan) is a Bay Area tribe without federal recognition status. They work with Sogorea Te' Land Trust, an intertribal nonprofit organization to rematriate and access their ancestral land. Together with the City, a Cultural Conservation Easement was created to transfer stewardship of Rinihmu Pulte'irekne. While the City retains ownership and liability, all other rights, including monitoring and conservation were transferred to the land trust, with perpetual access rights for Lisjan people.

The Tribe led care of the land, incorporating traditional approaches to habitat restoration, including removal of invasive species, fire fuels reduction and the reintroduction of native plants.

Oakland is the first known city to return land back to a tribe without federal recognition status. Returning land to Indigenous stewardship is increasingly recognized as a key climate solution because of its potential to shift historical and environmental harms mitigating catastrophic climate events and impacts.

The Rinihmu Pulte'irekne project and strategy of a Cultural Conservation Easement offer a possible legal framework and model for other cities to replicate.[9]

engagement process expressed support for the creation of food-growing spaces, expansion of urban green spaces that beautify communities and reduce urban heat and flooding, restoring indigenous land ownership, access to nature, and desire for community-led land stewardship. At the same time, they were concerned that new green spaces might unintentionally cause gentrification and displacement, increase wildfire impacts, and reduce water availability.

Equity issues are interwoven throughout the sector. Urban areas affected by the legacy of discriminatory policies such as redlining face greater danger from urban heat and have fewer green spaces.[10] When green spaces are built in disinvested communities, they may factor into gentrification unless additional guardrails are in place.[11] Displacement of Native American Tribes from land, and historic criminalization of land management practices like cultural burning, have contributed to overstocked and unhealthy forests that are more prone to catastrophic wildfire.[12] Opportunities to interact and play in the Bay Area's natural spaces can be inequitable, running the risk of unequal access for Black, Indigenous, and People of Color (BIPOC) communities.[13] Finally, outdoor workers like firefighters and farmworkers are disproportionately exposed to climate impacts like extreme heat and wildfire smoke.[14] Real progress has been made across the BARCAP region to address these key environmental justice issues, led by implementers like community-based organizations, advocates, Native American Tribes, parks departments, and local governments. Equity-centered policy solutions, investments, and innovations woven throughout the BARCAP highlight where additional regional action can be taken to build upon this progress.

10.4 HOW MEASURES WERE DEVELOPED

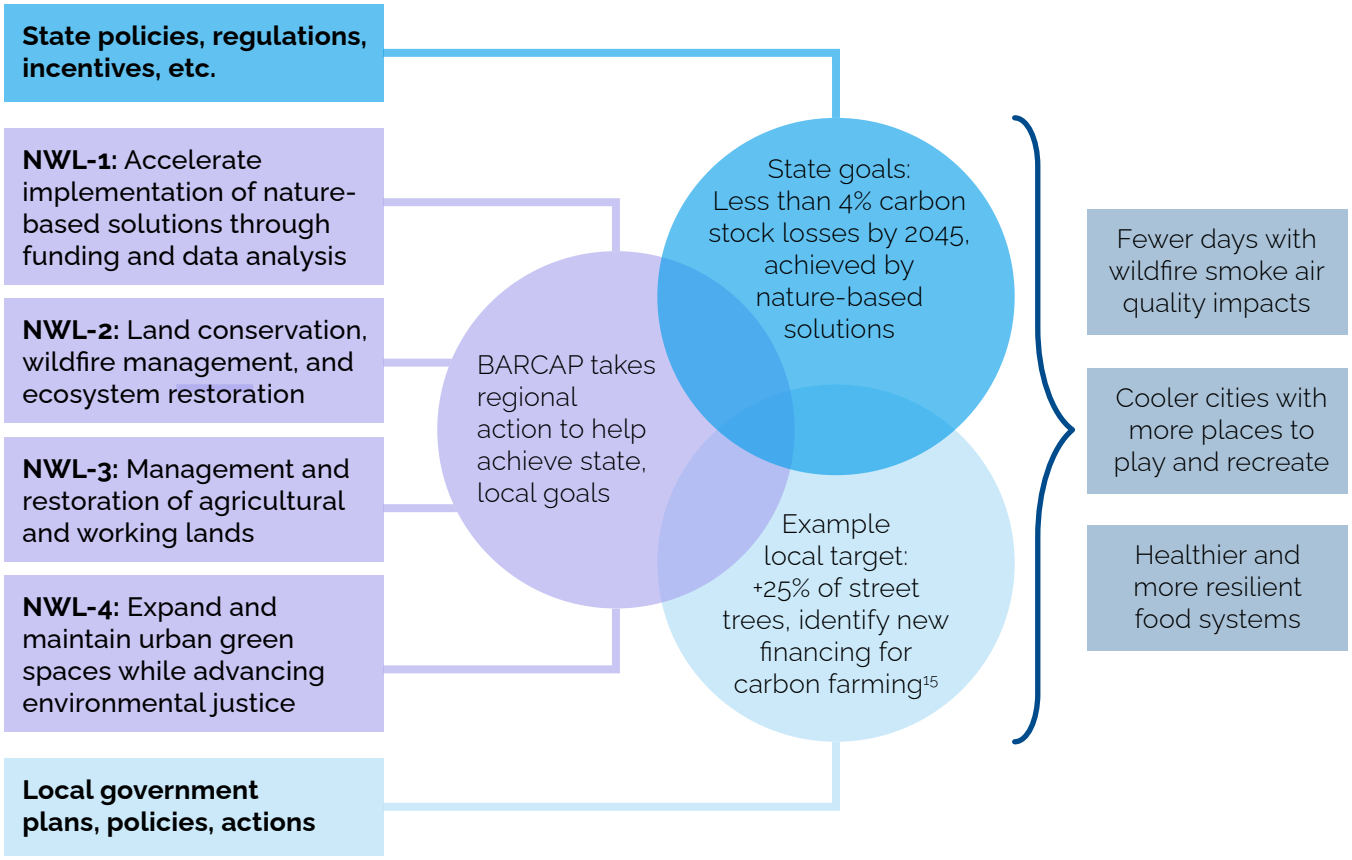
As described in Chapter 4, measures and actions were developed with extensive input from the public, frontline community members, and members of the NWL technical stakeholder working group. The technical stakeholder working group was comprised of 22 local experts in policy and implementation, who met, conferred, and advised over the course of six months in collaborative meetings to develop and refine the proposed measures and actions. Technical stakeholder working group members included resource conservation districts, implementers of urban forestry, regional conservation organizations, firewise councils, regional wetland protection organizations, local government staff involved in land management, and nonprofits with expertise in climate-beneficial agriculture. These technical experts grounded measures in the current assessment of implementation, key hurdles, and areas for action, and were foundational in shaping these measures.

The measures described on the following pages can be implemented with implementing partners' existing authorities.



10.5 NATURAL AND WORKING LANDS MEASURES AND ACTIONS

Figure 10-4: NWL measures contributing to state and local goals



The measures for the NWL sector contribute to achieving state and local goals for the sector and result in many other key benefits. As shown in Figure 10-4 they complement, rather than duplicate, state and local actions in important ways. The measures support successful local implementation of state policies and initiatives in ways that are equitable and bring many benefits to the BARCAP region. They also help remove barriers and build capacity to accelerate local action and scale promising approaches regionally.



Measure NWL-1: Accelerate Implementation of Nature-Based Solutions through Regional Funding and Data Analysis

GHG reductions in 2045: Supporting

Potential regional benefits:

- \+ Reduced duplication of work and administrative burden
- \+ Increased implementer capacity
- \+ Integration of best available science and data

Design principles:

Climate resilience benefits: Improved data for climate resilience and mitigation crossover areas

Estimated costs of implementation: NE

Proposed metrics: Number of data projects supported, usage of datasets by implementers, funding allocated to new nature-based solution implementation projects across the BARCAP region

SUMMARY

Accelerate implementation of nature-based solutions by providing land stewards and other implementers with regional-scale technical assistance for carbon data analysis and long-term funding and financing.

This will allow for more focus on-the-ground transformation of land management practices by reducing competition among implementers for funding or the need to conduct duplicative data analysis.

Milestones for Initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- ★ **Q4 2026 –** Identify lead organization/ organization(s) to lead collaborative regional efforts
- ★ **2027 –** Launch new, or contribute significant resources to enhance existing regional data initiatives
- ★ **2027 –** Launch new, or contribute significant resources to enhance existing regional funding

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Community Engagement, Awareness, and Capacity

✚ Increased community capacity, awareness of solutions/projects and results, and trust between communities and the government

✖ *Potential low uptake of funding and technical assistance by smaller community-based organizations without specific outreach and partnership*

ACTIONS

NWL-1.1: Provide technical assistance for NWL data analysis to support project implementation, results tracking, and incorporation of emerging science

Increase capacity for implementers of nature-based solutions to meet data tracking and inventory needs and reduce duplicative work across the BARCAP region by enhancing existing tools and resources, and/or providing technical assistance and standardization of regional approaches for analysis.

Implementation actions may include:

- **Obtain funding and/or provide professional expertise** to provide long-term maintenance of public data and technical assistance;
- **Create a public library for spatial and carbon sequestration datasets** and tracking metrics consistent with state analyses and latest science, include spatial data on equity, public health, and climate impacts;
- **Provide technical assistance to conduct standardized NWL carbon inventories** and landcover changes over time, including analysis of equity concerns to support implementation of nature-based solutions by local governments, resource conservation districts, community organizations, and other implementers.

Proposed Lead Implementer:
Regional agency or organization

Proposed Supporting Implementers:
Bay Area Greenprint, TOGETHER Bay Area, regional agency, San Francisco Estuary Institute (EcoAtlas), San Francisco Bay Joint Venture

Timeframe to start implementation:
Short-term

NWL-1.2: Increase long-term funding for nature-based solutions through dedicated support for regional-scale grant writing and exploration of emergent sources of long-term funding

Support long-term implementation of nature-based solutions by obtaining regional-scale, transformative levels of funding. Implementation actions may include:

- **Offer grant writing assistance** to support nature-based solution implementation by multi-agency or organization coalitions including parks departments, local governments, open space districts, community-based organizations, nonprofits, resource conservation districts, and tribes;
- **Explore new long-term funding sources for nature-based solutions** including Proposition 4 and other state bonds, public banks, green banks, and market mechanisms;
- **Provide outreach to key environmental justice groups** to increase their knowledge and uptake of new regional supports.

Proposed Lead Implementer:
Regional agency or organization

Proposed Supporting Implementers:
Regional agency or organization, TOGETHER Bay Area

Timeframe to start implementation:
Short-term





Measure NWL-2: Prevent Losses of Carbon Held in NWL through Land Conservation, Wildfire Management, and Ecosystem Restoration

GHG reductions in 2045:
High *(see Figure 10-4 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:

+ Biodiversity
+ Climate resilience
+ Outdoor access
+ Stewardship opportunities for frontline communities
+ Community health
+ Climate resilience
+ Green jobs
+ Access to services and amenities

Design principles:

Climate resilience benefits: Reduced wildfire severity, resilience to sea level rise and flooding

Estimated costs of implementation: **$$**

Proposed metrics: Number of new projects launched, acreage covered, funding provided, number of programs supporting implementation, changes in project-level carbon storage (if available)

SUMMARY

Prevent losses of carbon held in NWL from development and wildfire, while managing and restoring key carbon-rich lands to maximize carbon sequestration.

This measure addresses the challenge of predicted losses of carbon stocks which are expected statewide through the mid-century. Enhancing carbon sequestration and increasing carbon drawdown must build on a foundation of protecting existing pools of carbon held in regional natural and working lands.

Milestones for initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- **Q3 2026 –** Continue to monitor and support existing programs across NWL-2
- **Q4 2026 –** Start pilot and private owner financing model innovation with existing funds
- **2027 –** Leverage Proposition 4 and Other Funding at Regional Scale
- **2027 –** Regional update on blue carbon and beneficial reuse linkage

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Public and Community Health

✚ Reduced exposure to wildfire smoke, increased access and community health benefits from access to natural spaces

✖ *Incentives for private owners of large land areas primarily benefit the wealthy*

Jobs and Workforce Development

✚ Post training employment and sustained work opportunities in land management and ecosystem restoration

✖ *Employment opportunities may not be sustained, well-paying or have benefits*

Climate Resilience Co-Benefits

✖ *Increased resiliency to climate-related impacts including wildfire, extreme heat, and sea level rise*

ACTIONS

NWL-2.1: Support conservation of lands at the regional scale through the Priority Conservation Area (PCA) Program

Support regional implementation of California's 30 x 30 goals through conservation of NWL in the Bay Area region through the Priority Conservation Area (PCA) Program. Conservation priorities for protection and/or enhancement may be informed by emerging regional analysis on carbon stocks and sequestration, such as the 2022 carbon stock BARCAP inventory, and potential deliverables from NWL-1.1.

Proposed Lead Implementer:
MTC - PCA Grants Program, San Francisco Estuary Partnership

Timeframe to start implementation:
Short-term

NWL-2.2: Increase fuel management and reduce wildfire risk on natural and working lands and at the wildland-urban-interface (WUI) through new funding and financing mechanisms, workforce development, and innovation

Contribute to state targets for increased fuel management through treatments on NWL with high-fire risk. Treatments may include vegetation management, cultural and prescribed fire, and targeted grazing. Implementation actions to increase fuel management uptake may include:[16]

- **Exploration of new funding and financing strategies** to increase incentives for landowners to manage fuels, with a focus on smaller landowners and rural communities that may struggle to fund projects, including development of markets for woody material at high-fire risk, and climate co-benefit products like biochar;[17]
- **Identify and scale innovative and successful pilot projects** in fuel management;[18]
- **Reduce ignition risk in the WUI** by providing new incentives and exploring new policies to encourage homeowners to adopt home hardening practices, including "zone zero" practices that manage flammable materials within five feet of structures by managing flammable material;
- **Address the workforce gap for fuel management** through job training, emphasizing opportunities for indigenous land stewards and agricultural workers.

Proposed Lead Implementer:
Resource conservation districts (RCDs), fire safe councils, county governments (long-range planners), State agencies, Federal agencies, local fire protection districts

Proposed Supporting Implementers:
Community organizations, tribes, conservation corps, water agencies, local governments, University of California Cooperative Extension (UCCE)

Timeframe to start implementation:
Short-term/Medium-term



NWL-2.3: Incentivize private landowners managing large land areas to manage fuel at scale through innovations in cost sharing and financing

Overcome challenges for incentivizing private landowners to manage fuels on large land parcels through innovative financing mechanisms that allow for re-consideration of risks, pooling of costs, and benefits at the multi-parcel scale. This may include cost-sharing grants provided by local governments, existing regional cost-share programs (e.g. North Bay Forest Improvement Program), and emergent insurance-based mechanisms.

Proposed Lead Implementer:
RCDs, fire safe councils, county governments (long-range planners), State agencies, local fire protection districts

Proposed Supporting Implementers:
Community organizations, tribes, conservation corps, water agencies, local governments

Timeframe to start implementation:
Medium-term



NWL-2.4: Protect carbon held in the Bay Area's wetlands through protection, restoration, and enhancement of tidal marsh habitat

Contribute to the achievement of targets from the 2022 San Francisco Estuary Blueprint Task 10, and Baylands Ecosystem Habitat Goals Science Update (2015):

- **23,000 acres of tidal marsh restored** in the Bay, and 5,500 acres of tidal marsh restored in the Delta, which is achieved through collaboration with diverse partners, and consideration of climate adaptation in project design;
- **3,000 acres of tidal marsh enhanced** in San Francisco Bay;
- **20,000 acres of Baylands protected** through various mechanisms including acquisition, transfer of fee title, or easement.

Implementation may depend upon funding availability.

Proposed Lead Implementer:
Nonprofits, government agencies, private entities, San Francisco Bay Joint Venture

Proposed Supporting Implementers:
Regional organizations for estuary partnership and restoration

Timeframe to start implementation:
Short-term



NWL-2.5: Contribute to emergent science on blue carbon through research on blue carbon fluxes and beneficial sediment reuse[19]

Monitor and research blue carbon fluxes – both sequestration and emissions – to inform wetland restoration and management, supporting San Francisco Estuary Partnership 2022 Blueprint Tasks 7-2 and 7-5.

Study and share knowledge on beneficial reuse of sediment for wetland restoration and adaptation – and how this can affect carbon sequestration.

Lead Implementers (Fluxes): State agencies, Federal agencies, and Universities

Proposed Supporting Implementers (Fluxes):
Delta Stewardship Council

Lead Implementers (Reuse): SF Estuary Institute/Regional Monitoring Program, federal implementing agencies

Proposed Supporting Implementers (Reuse):
Long Term Management Strategy Implementers (Federal agencies, regional commissions, State water agencies)

Timeframe to start implementation:
Short-term/Medium-term

NWL-2.6: Support efforts to protect riparian forests, advancing land and water management strategies that maintain and increase carbon storage

Facilitate knowledge sharing about the carbon sequestration, wildfire mitigation, and climate resilience benefits of riparian protection and restoration.

Coordinate efforts to compile data and conduct monitoring on the rates of vegetation growth and carbon sequestration in riparian restoration under various conditions in the Bay Area.

Collaborate with stakeholders to leverage potential funding sources to achieve greater protection, restoration, and climate resilience of riparian areas.

Proposed Lead Implementer:
San Francisco Bay Regional Water Quality Control Board

Proposed Supporting Implementers:
Resource conservation districts (RCDs), nonprofits, community organizations, tribes, conservation corps, water and flood management agencies, Sonoma County Transportation and Climate Authorities (SCTCA), local governments

Timeframe to start implementation:
Short-term/Medium-term



Measure NWL-3: Enhance Carbon Sequestration and Reduce Greenhouse Gas Emissions through Management and Restoration of Agricultural and Working Lands

GHG reductions in 2045:
Low *(see Figure 10-4 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:

+ Reduced water consumption
+ Community health
+ Climate resilience
+ Green jobs
+ Resilient food and fiber production
+ Renewable energy generation
+ Reduced worker exposure to toxins and pollution[21]

Design principles:

Climate resilience benefits: Increased resilience in agricultural practices that allow for greater preparedness for droughts, floods, and extreme weather

Estimated costs of implementation: $

Proposed metrics: Number of growers assisted, acreage applied, funding provided, number of programs supporting implementation, MW new renewable energy on agricultural lands, number of water projects implemented on farms, water savings (in terms of acre feet and/or percentage)

SUMMARY

Increase carbon draw-down into agricultural lands by scaling up climate beneficial agriculture and reducing implementation challenges, helping to achieve state and local governments' agricultural targets and goals.[20] Explore areas to increase cross-sector benefits and GHG emission reductions through energy-efficient sustainable water management and integration of renewable energy on agricultural lands.

This measure addresses implementation challenges and builds on existing opportunities to enhance and scale implementation of climate-beneficial agriculture practices.

Milestones for initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- **Q2 2026 –** Continue to monitor and support existing programs across NWL-3
- **Q2 2026 –** Start funding search to enable NWL-3.2 and all connected actions
- **2027 –** Kickstart P-1 and connect convenings to NWL-3.4, NWL-3.5

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Jobs and Workforce Development

✚ Access to employment and sustained work opportunities once training is complete

✖ *Employment opportunities may not be sustained, well-paying or have benefits*

Community Engagement, Awareness, and Capacity

✚ Increased community capacity, awareness of solutions/projects and results, and trust between communities and the government

✖ *Outreach may only engage people in one area, one language, or those with more time and resources, and omit many individuals with possibly greater vulnerabilities*

Climate Resilience Co-Benefits

✚ Increased resiliency to climate-related impacts such as drought

ACTIONS

NWL-3.1: Scale climate-beneficial agriculture and catalyze widespread adoption of practices that increase or maintain above- and below-ground carbon stocks, and achieve climate resilience on working lands

Implement scaled adoption of climate-beneficial agriculture practices including agroforestry, hedgerows, cover crops, conservation cover, windbreaks, compost application, riparian forest buffer, residue and tillage management, alternative manure management strategies, on-farm compost production, and critical area planting, contributing to state targets.

Support scaled adoption through actions including:

- **Increasing technical assistance** to support land managers plan, design, implement, and monitor multi-benefit climate-beneficial agriculture practices, with a particular focus on ensuring technical assistance access for small-scale and disadvantaged producers;
- **Strengthening education and partnerships** at the local and regional level to understand and overcome barriers to adoption;
- **Enhancing applied research** by supporting trials, research, and monitoring on working lands to refine local data and effectiveness of climate- beneficial practices;
- **Supporting development of key infrastructure** to reduce cost on the individual grower/organization and expand adoption of climate-beneficial practices, explore opportunities for local equipment and infrastructure sharing and improve access to plant materials and other supplies which may be supported through implementation of NWL-3.2;

- **Continuing to support urban and community-scale gardeners** and food growers to increase food sovereignty and urban agriculture as feasible;
- **Developing new equity-centric land access strategies** to increase access to agricultural lands, advancing environmental justice outcomes for disadvantaged producers, and new farmers and ranchers.

Proposed Lead Implementer:
Growers and land stewards, public and private landowners

Proposed Supporting Implementers:
RCDs, Carbon Cycle Institute, statewide farming organizations, UCCE

Timeframe to start implementation:
Short-term

NWL-3.2: Increase local implementer capacity by conducting a regional needs assessment and 'shovel-worthy' project portfolio

Secure funding for and conduct a regional needs assessment. Implementation actions may include:

- **Identify gaps in existing locations** of staff and infrastructure (compost spreading equipment, nurseries) to support necessary investments, leveraging existing needs assessment work done by resource conservation district regional hubs;
- **Identify a portfolio of projects** that could be implemented within five years, including those that could be aggregated to achieve economies of scale and leverage funding, especially for multi-benefit projects;
- **Include specific analysis of needs and opportunities** for tribal, disadvantaged, and small-scale producers, which should be co-created with these implementers.

Proposed Lead Implementer:
RCDs, including Bay Area and North Coast Hub

Proposed Supporting Implementers:
Carbon Cycle Institute, UCCE, statewide farming organizations

Timeframe to start implementation:
Short-term

NWL-3.3: Support integration of climate-beneficial agriculture into climate-related plans and policies through a planning toolkit and training

Support local, county, and regional governments in adopting strong agricultural climate solutions as part of future climate plans and policies by producing a toolkit on climate mitigation, co-benefits, resilience and adaptation impacts of climate beneficial agriculture. Implementation actions may include:

- **Update and finalize existing toolkit** developed by the Carbon Cycle Institute and partners;
- **Provide technical assistance** to government staff using toolkit to inform County climate action plan updates;
- **Work with counties to identify updates** to agriculture and working lands climate action plan chapters and targets;
- **Advocate for strengthening the integration of climate beneficial ("regenerative") agriculture** in the Priority Conservation Area Program lead by the Metropolitan Transportation Commission and funding priorities.

Proposed Lead Implementer:
Carbon Cycle Institute, county governments (climate, sustainability, planning staff)

Proposed Supporting Implementers:
RCDs, Air District, SCTCA, UCCE

Timeframe to start implementation:
Short-term



NWL-3.4: Explore establishment of more renewable energy on agricultural lands

Explore areas where working lands can house and generate clean energy, including agrivoltaics, wind power, storage, and geothermal power resulting in a regional roadmap for renewable energy on agricultural lands to contribute to Measure P-1 in the Power Sector.

Implementation actions may include:

- **Mapping suitable sites,** establishing criteria for site suitability (e.g., presence of animal agriculture and existence of renewables like wind);
- **Identifying** financing models;
- **Pilot project identification** and opportunities for replication and expansion.

Proposed Lead Implementer:
Farmers, ranchers and growers, power providers

Proposed Supporting Implementers:
RCDs, research organizations, community organizations, local governments

Timeframe to start implementation:
Medium-term



NWL-3.5: Reduce energy-related emissions and increase groundwater recharge through adoption of sustainable water management practices

Support higher rates of adoption for sustainable water management practices through promotion of best practices and technical assistance, contributing to energy efficiency targets for the BARCAP region.

Implementation actions may include:

- **Promote climate-friendly irrigation and stock watering practices** that increase water use efficiency and, where possible, recharge groundwater, including: solar-powered irrigation equipment, conversion to drip irrigation, winter stormwater capture, groundwater recharge basins, increasing soil organic matter and cropping system flexibility to maximize resilience to a changing climate;
- **Support farmers and ranchers in successful water management** through irrigation evaluations, permitting assistance, incentive program application assistance and whole-operation planning for improved water use efficiency, soil carbon enhancement, and climate benefits.

Lead Implementers: Regional water agencies, farmers, ranchers, and growers, RCDs, UCCE

Proposed Supporting Implementers: Groundwater sustainability agencies, local governments with groundwater resources, statewide farming organizations

Timeframe to start implementation: Short-term





Measure NWL-4: Expand and Maintain Urban Green Spaces While Advancing Environmental Justice Outcomes

GHG reductions in 2045: Medium *(see Figure 10-4 for an illustration of the GHG emission reductions enabled by these measures and actions and Appendix C for quantified reductions)*

Potential regional benefits:

+ Local food production
+ Community health
+ Climate resilience
+ Green jobs
+ Access to nature
+ Enhanced community engagement
+ Improve housing quality, comfort, and safety
+ Biodiversity

Design principles:

Climate resilience benefits: Reduced urban heat, increased opportunities for urban cooling and shade, equitable access to urban cooling, increased ability for urban landscapes to withstand damage from floods and extreme weather

Estimated costs of implementation: $$$

Proposed metrics: Percent urban canopy increase, funding invested in urban greening, number of new urban green spaces, number of new programs and supports for operations and maintenance

SUMMARY

Increase carbon stored in urban plants and soils through expansion and maintenance of green spaces that reduce the effects of flooding and extreme heat, build food sovereignty, and beautify and connect communities. Achieve these outcomes through new regional funding, staffing, and technical assistance resources. Ensure that frontline communities benefit from urban green spaces and avoid unintended consequences by supporting a policy shift towards community-led planning to embed environmental justice and anti-gentrification approaches in urban greening.

This measure addresses the challenge of current gaps in the funding and implementation landscape to support long-term operations and maintenance issues faced by urban greening implementers. It also addresses challenges linked to gentrification and displacement in relation to urban greening through community planning, empowerment, and policy innovation.

Milestones for initiation:

Initiation dates assume funding and staff resources are available and obtained. If not, shifting initiation dates may be necessary.

- **Q3 2026 –** Continue to monitor and support existing programs across NWL-4
- **Q3 2026 –** Start funding search to enable NWL-4.1 and NWL-4.2
- **Q3 2026 –** Plan for regional convening to support NWL-4.1 and NWL-4.2

✚ = Potential Benefits
✖ = *Potential Unintended Consequences*

FRONTLINE COMMUNITY IMPACTS:

Housing Quality and Security

✚ Improved housing conditions, increased comfort, protection from extreme heat

✖ *Potential for increased housing costs, displacement risk and rent increases unless protections are provided*

Public and Community Health

✚ Reduced exposure to health-damaging pollution, improved food access, and reduced heat island effect from new green spaces and community gardens

✖ *Potential inequitable access to health benefits if communities are left out of the planning process and/or greening sites are not accessible to community members*

Jobs and Workforce Development

✚ Access to employment and sustained work opportunities once training is complete

✖ *Employment opportunities may not be sustained, well-paying or have benefits*

Community Engagement, Awareness, and Capacity

✚ Increased community capacity, awareness of solutions/projects and results, and trust between communities and the government

✖ *Outreach may only engage people in one area, one language, or those with more time and resources, and omit many individuals with possibly greater vulnerabilities*

Climate Resilience Co-Benefits

✚ Increased resiliency to climate-related impacts, including flooding and extreme heat

✖ *Potential inequitable access to climate resilience benefits if communities are left out of the process and or greening sites are not accessible to community members*

Cost Burden

✚ Potential decreased energy cost burden from reduced need for air conditioning due to cooling effects of greening

✖ *Potential inequitable access to cooling and reduced energy costs if greening sites are not adjacent to communities*

ACTIONS

NWL-4.1: Expand urban green spaces and prevent loss through new regional funding and technical support, prioritizing green spaces that benefit frontline communities

Contribute to state and local goals for urban forestry investment and drought resistant watering. Green spaces that may garner particular focus because of air quality, environmental justice, or climate resilience benefits include parks and trees in formerly redlined or under-greened communities, community farms and gardens, freight corridor buffers, and green stormwater infrastructure. Implementation actions may include:

- **Increase funding through new regional-scale funding sources** such as Proposition 4/ state bonds, which may be provided to coalitions of local governments/implementers for urban greening implementation;
- **Increase technical assistance, funding, and long-term maintenance support** for urban green spaces by providing tree inventories, and hands-on arborist support to local governments and other implementers at the regional scale;
- **Identify, support, and scale pilot projects** for emergent or difficult to implement urban green spaces like green buffer zones along freight corridors and urban agriculture;
- **Explore opportunities to integrate green spaces** into transportation, active transportation, transit, and road infrastructure upgrades;
- **Regularly convene local governments and other implementers** to understand and overcome barriers to implementing "right tree right place" urban greening, allowing for iterative and targeted future technical assistance;
- **Dedicate regional staff time and expertise to help local governments** integrate best practices into urban greening by providing policy resources, research, and case study support that will aid implementers in achieving urban greening goals.

Proposed Lead Implementer:
Regional agencies, local governments, community organizations, parks departments, public works, urban farms and gardens, SCTCA, UCCE

Proposed Supporting Implementers:
State agencies, Bay Area Regional Collaborative (BARC), water agencies, San Francisco Estuary Institute [Urban Nature Program]

Timeframe to start implementation:
Short-term

NWL-4.2: Advance environmental justice-centered approaches for urban greening through policy innovation, community-led planning, and support for frontline community land stewardship

Implementation might consist of regional support to local governments and other implementers for policy and plan updates and to frontline community-lead stewardship for capacity building, including:

- **Provide local governments and community organizations with a best practices policy toolkit,** including emergent projects across the BARCAP region, for environmental justice approaches including case studies, and local examples that embody community-led planning and outcomes for equitable urban greening that avoid unintended gentrification consequences;
- **Develop and share best practices on air quality and urban greening intersection-** facilitate establishment of low volatile organic compound (VOC)-emitting native new trees through exploration of resources and best available research on community health and air quality benefits of urban greening, amplifying similar work being done at Sacramento Metropolitan Air Quality Management District;
- **Advocate for a regional shift towards community-led planning in urban greening** by encouraging new urban greening projects to include frontline community members and community-based organizations early, and often in planning stages to guard against gentrification, space conflict, and other unintended harms of urban greening, explore collaboration points with AB 617 community emission reduction plans;
- **Provide financial and technical assistance** for local planners to identify and collaborate with trusted messengers and community organizations to deliver multilingual, culturally relevant urban greening outreach;
- **Seek additional technical and financial support opportunities** to build long-term land stewardship capacity among frontline communities through education programming, exploration of community ownership models, and job training to implement urban greening.

Proposed Lead Implementer:
Regional agency, local governments (planning), community organizations

Proposed Supporting Implementers:
Community members, conservation corps, nonprofits, Air District, schools and youth organizations

Timeframe to start implementation:
Short-term



10.6 FUNDING IMPLEMENTATION

Implementation of the NWL sector measures can be supported in part through existing funding and financing approaches. For example, both California Natural Resources Agency's Urban Greening Program and CAL FIRE's Urban and Community Forestry Grant provide funding for green infrastructure and urban forest management. Additionally, CAL FIRE's Forest Health Grants and California Forest Improvement Program provide funding for forest improvement, restoration, and fuels reduction.[22] The US Department of Agriculture's Environmental Quality Incentives Program (EQUIP) also provides financial assistance for agricultural producers to apply conservation practices that conserve resources and mitigate climate risks. RCDs, who are instrumental in enacting NWL climate actions at the county-level do not have guaranteed funding, and have historically relied on state and federal funding, including EQUIP on a project-by-project implementation basis.[23] Voters in California are increasingly recognizing the importance of nature-based solutions, with the 2024 passage of Proposition 4 dedicating $10 billion to wildfire resilience, protecting drinking water, and other climate actions.[24] The programs listed above are not a comprehensive list of available funding. See Appendix G for other funding and financing sources, programs and partners, and examples of successful implementation. Additional funding and financing mechanisms will be needed to fully achieve the goals of this sector.

ENDNOTES

1 While carbon stocks and carbon sinks are oftentimes used interchangeably, carbon stocks in the context of the BARCAP carbon stock inventory specifically refer to the amount of carbon held in a carbon pool, or stock, such as soil organic carbon or forest biomass. Carbon sinks, as described further in footnote two, refer more specifically to the process of carbon drawdown, or movement of carbon from the atmosphere into natural carbon pools; "Carbon Stocks, Fluxes and the Land Sector," Forest Carbon and Climate Program, Michigan State University, February 7, 2022, https://www.canr.msu.edu/news/carbon-fluxes-and-carbon-stocks.

2 Carbon sinks describe the role of plants and soils to sequester carbon by capturing carbon dioxide from the atmosphere and transform it into biomass and soil organic matter, where it is stored for long periods of time. When more carbon is drawn down than these natural carbon cycles emit, these reservoirs of carbon in plants, oceans, and soils are called carbon sinks because they are net sinks, not net emitters; "Soil-Based Carbon Sequestration," MIT Climate Portal, accessed October 28, 2025, https://climate.mit.edu/explainers/soil-based-carbon-sequestration; "Carbon Sinks and Sequestration," United Nations, Accessed October 28, 2025, https://unece.org/forests/carbon-sinks-and-sequestration.

3 The US Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator was used to convert carbon held in NWL to carbon dioxide equivalent (CO_2-e) units in order to make this comparison; "EPA Greenhouse Gas Equivalencies Calculator," United States Environmental Protection Agency, Accessed October 28, 2025, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.

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8 "Water Energy Nexus," California Department of Water Resources, Accessed October 28, 2025, https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Water-Energy-Nexus.

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www.fws.gov/project/rematriation-rinihmu-pulteirekne; "Rinihmu Pulte'irekne (Sequoia Point)," Sogorea Te' Land Trust, Accessed October 28, 2025, https://sogoreate-landtrust.org/sequoia-point-land-return/.

10 "50 Years after Being Outlawed, Redlining Still Drives Neighborhood Health Inequities," University of California Berkeley Public Health, May 20, 2025, https://publichealth.berkeley.edu/articles/spotlight/research/50-years-after-being-outlawed-redlining-still-drives-neighborhood-health-inequities#:~:text=Access%20to%20parks%2C%20trees%2C%20and,from%20the%20Mapping%20Inequality%20Project.

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12 Robyn Schelenz and Jessica Wheelock, "How the Indigenous Practice of 'good Fire' Can Help Our Forests Thrive," University of California, May 31, 2024, https://www.universityofcalifornia.edu/news/how-indigenous-practice-good-fire-can-help-our-forests-thrive.; Deniss J. Martinez et al., "Indigenous fire futures: anticolonial approaches to shifting fire relations in California," Environment and Society 14, no. 1 (2023): 142-161.

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16 Wood chipping specifically refers to fire-at-risk wood and vegetation, rather than production and processing of woody biomass for fuel.

17 'Fire-at-risk' wood refers to woody biomass classified as Very High, or High Fire Hazard Severity under agencies like CALFire; "Fire Hazard Severity Zones," California Office of the State Fire Marshal, Accessed October 28, 2025, https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones; Biochar created via pyrolysis or gasification is subject to Air District permitting.

18 Strategies like prescribed fire require a submittal of a Smoke Management Plan to the Air District under Air District Regulation 5: Open Burning (Regulation 5). As of October 2025, the Air District adopted amendments to Regulation 5 to waive operation fees for all persons conducting prescribed burns, expanding the previous exemption that applied only to public agencies. The amendments to Regulation 5 support statewide efforts to expand beneficial fire practices for wildfire prevention and land stewardship.

19 The National Oceanic and Atmospheric Administration defines blue carbon as "carbon dioxide that is absorbed from the atmosphere and stored in the ocean…underwater sediments, coastal vegetation and soils; carbon-containing molecules such as DNA and proteins; and ocean life from whales to phytoplankton." Michon

Scott and Rebecca Lindsey, "Understanding blue carbon," National Oceanic and Atmospheric Administration, Archived June 25, 2025, https://www.climate.gov/news-features/understanding-climate/understanding-blue-carbon#:~:text=Blue%20carbon%20refers%20to%20carbon,than%20even%20a%20tropical%20rainforest.

20 Climate beneficial agriculture is the term preferred by implementing partners at Carbon Cycle Institute and Bay Area resource conservation districts (RCDs) and can also be described interchangeably as 'carbon farming', 'climate-smart agriculture' and 'regenerative agriculture'. Climate beneficial agriculture, as articulated by the California Department of Food and Agriculture's 2025 definition of regenerative agriculture describes an integrated approach to farming and ranching rooted in principles of soil health, biodiversity and ecosystem resiliency leading to improved targeted outcomes; "RCD Regional Ag and Climate Hub Coordinators," California Association of Resource Conservation Districts, Accessed October 28, 2025, https://carcd.org/page/rcd-regional-ag-and-climate-hubs; "Defining Regenerative Agriculture for State Policies and Programs," California Department of Food and Agriculture, Accessed October 28, 2025, https://www.cdfa.ca.gov/RegenerativeAg/.

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11 Industrial Sector

11.1 Sector overview

11.2 Context

11.3 Supporting action in the industrial sector





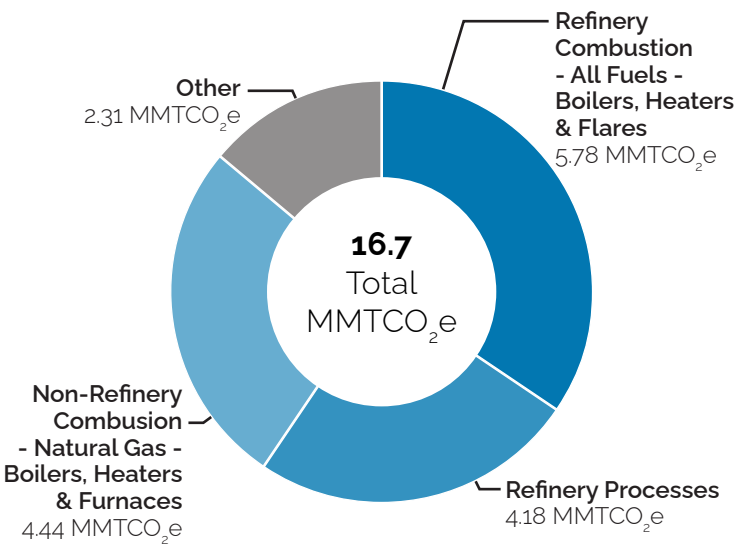
11 Industrial Sector

11.1 SECTOR OVERVIEW

The industrial sector includes activities related to the manufacturing and processing of goods and raw materials. The sector includes businesses and operations that produce fuels, machinery, motor vehicles and aircraft, electronics, furniture, and clothing. It also includes construction equipment.

The industrial sector is the second largest source of greenhouse gas (GHG) emissions in the Bay Area Regional Climate Action Plan (BARCAP) region. In 2022, the industrial sector accounted for 31% of GHG emissions in the BARCAP region (16.7 million metric tons of carbon dioxide equivalent ($MMTCO_2e$)) (see Figure 11-1). Generally, emissions from this sector come from fuel combustion at facilities (70%) (e.g., burning natural gas at power plants, refineries, factories, or other industrial facilities). Processes (e.g., chemical reactions in metal, cement, mineral and fuel production) account for 26% of sector emissions, while fugitive/evaporative emissions (e.g., from industrial processes, equipment, oil and gas systems) and leaks of high-global warming potential (GWP) gases) accounted for 4% of industrial emissions.

Figure 11-1: GHG emissions by industrial sub-sector for BARCAP region in 2022



In 2022, the refining of fuel for the transportation sector accounted for 60% of the industrial sector's emissions (10 $MMTCO_2e$). These emissions are associated with the transportation sector when accounting for all transportation-related emissions. Chapter 2.1.3 and Appendix A describe the contribution of emissions from the refining of transportation fuels in more detail. Another significant emissions source in the industrial sector was combustion of natural gas in boilers, heaters, furnaces, ovens, and afterburners for industrial uses at facilities other than refineries, which accounted for 27% (or 4.4 $MMTCO_2e$) in 2022. The GHG emissions from the industrial sector in the BARCAP region are roughly similar in 2022 to emission levels in 1990.

11.2 CONTEXT

Current state law prohibits local air districts from regulating carbon dioxide (CO_2) emissions from sources covered by the state's Cap-and-Invest regulation. The vast majority of the BARCAP region's industrial sector GHG emissions (85%) are covered by Cap-and-Invest. The BARCAP therefore does not include new measures or actions to reduce CO_2 from these covered sources. Section 11.2.1 below describes different approaches the Air District has taken to address GHG emissions from the industrial sector.

11.2.1 History of Air District GHG reduction actions for industrial sector

The Air District regulates air pollutant emissions at large industrial sources such as refineries. Regulation of GHG emissions from these sources, however, has been complex and has changed over time. As part of implementation of the 2017 Clean Air Plan, the Air District initiated a region-wide strategy to systematically address emissions, including GHG emissions, from stationary fossil fuel combustion, beginning with the three largest industrial sources: petroleum refineries, power plants, and cement plants.[1] As a first step, the Air District began developing two rules to address refinery emissions. The first proposed rule, Regulation 12, Rule 16: Petroleum Refining Greenhouse Gas Emissions Limits, sought to place a numeric cap on GHG emissions at refineries.[2] The second rule, Regulation 13, Rule 1: Petroleum Refinery Carbon Intensity Limits, proposed limiting

refining carbon intensity[3] to a level consistent with each refinery's current operations. It aimed to complement and serve as a backstop for state climate efforts, which, at the time, were expected to require refinery carbon intensity reductions equivalent to a 20% reduction in GHG emissions by 2030.[4] The Air District held public workshops on both rules and was poised to present draft Rule 12-16 to the Board of Directors for adoption in Summer 2017. However, the state's Cap-and-Invest program was extended with the passage of Assembly Bill 398 (2017), and the Air District lost its authority to regulate CO_2 emissions from large industrial sources. As a direct result, the Air District suspended further action on these rule development efforts.

After losing the authority to regulate CO_2 from most industrial sources, the Air District shifted its focus to the second largest climate pollutant, methane. Initial success came with the adoption of the first methane rule: Rule 13-5: Industrial Hydrogen Plants, adopted in May 2022.[5] This rule limits vented emissions of methane and organic compounds (precursors to smog formation) from hydrogen production plants and hydrogen carrying systems. The rule reduces methane emissions from hydrogen production plants by at least 90% - a reduction of 78,000 $MTCO_2e$ annually in a typical year.

11.3 SUPPORTING ACTION IN THE INDUSTRIAL SECTOR

While the BARCAP does not include measures and actions to address industrial GHG emissions, the Air District is helping to advance California's climate goals by supporting important state policies for this sector. The most significant policy for the industrial sector is the California Air Resources Board's (CARB's) Cap-and-Invest program, which is the state's chief mechanism for reducing CO_2 emissions in the industrial sector. CARB is also implementing a Short-Lived Climate Pollutant (SLCP) Reduction Strategy (required by Senate Bill 1383).[6] Below is a discussion of these policies and Air District actions to support them.



11.3.1 Cap-and-Invest Program

The Cap-and-Invest Program is the state's main policy mechanism to reduce CO_2 emissions from the industrial sector, and the Air District is prohibited from regulating CO_2 emissions from sources covered by the program. Within the BARCAP region, emissions from industrial facilities that are not covered by the Cap-and-Invest Program totaled 0.44 $MMTCO_2e$ in 2022, just 3% of total BARCAP industrial emissions. Roughly a third of industrial GHG emissions from non-Cap-and-Invest sources are from natural gas combustion in boilers and heaters.

Air District support:

- The Air District's Strategic Plan commits the agency to maximize the climate change benefits of its regulations and nonregulatory programs. This includes a loan guarantee program to support commercialization of technologies, which can increase industrial efficiency and/or promote decarbonization.

11.3.2 Short-lived climate pollutants

The SLCP Strategy is California's plan for reducing emissions of high GWP gases with short atmospheric lifetimes. Short-lived climate pollutants include the GHGs methane and hydrofluorocarbons (HFC are high GWP gases mostly used in refrigeration, aerosols, fire protection, and solvents), as well as black carbon. The SLCP Strategy includes goals of reducing methane and HFC emissions each by 40% below 2013 levels by 2030. This Strategy sets a target for human-produced black carbon emissions (or soot, which is a dominant component of diesel particulate matter) to decrease by 50% from 2013 levels by 2030.[7]

Air District support:

- The Air District is investigating possible rule amendments to reduce methane emissions from refineries.



ENDNOTES

1 "Current Plans," Bay Area Air District, Accessed November 21, 2025, https://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans.

2 "Regulation 12 Rule 16: Petroleum Refining Greenhouse Gas Emissions Limits," Bay Area Air District, Accessed October 21, 2025, https://www.baaqmd.gov/rules-and-compliance/rules/regulation-12-rule-16-petroleum-refining-greenhouse-gas-emissions-limits?sc_lang=en&switch_lang=true.

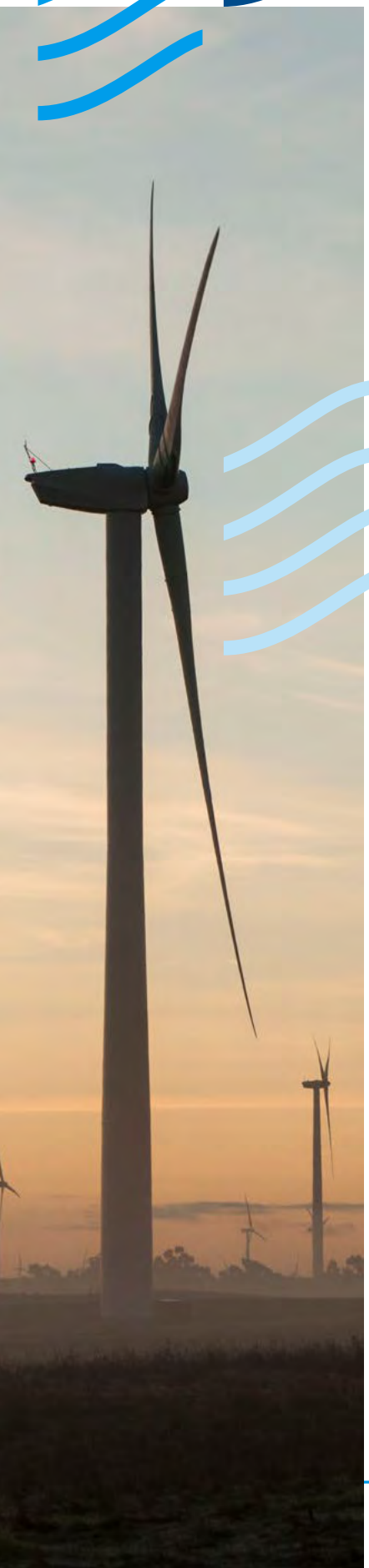
3 Carbon intensity is the amount of GHG emissions per unit of total oil feedstock (crude plus non-crude) processed (thousands of barrels) and can be an indication of the energy and process efficiency of a refinery when compared to similar facilities. "DRAFT Regulation 13 Climate Change Pollutants Rule 1 Petroleum Refining Carbon Intensity Limits or Facility-wide GHG Emission Limits", Bay Area Air District, March 21, 2027, https://www.baaqmd.gov/~/media/files/planning-and-research/rules-and-regs/workshops/2017/reg-13-rule-1/draft-rg1301.pdf?rev=a4d538b872bd427bb27bd7c69a74c2b8&sc_lang=en.

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7 See California Air Resources Board's Short-Lived Climate Pollutant Reduction Strategy (2017) for more discussion and a definition of black carbon.



12 Implementing the BARCAP

Successful and thoughtful implementation is critical to realizing the greenhouse gas (GHG) emission reductions and other core benefits from the Bay Area Regional Climate Action Plan (BARCAP) measures. This requires collaboration across many agencies and organizations, accountability through tracking and reporting, and the necessary workforce, funding, and financing to execute the plan.

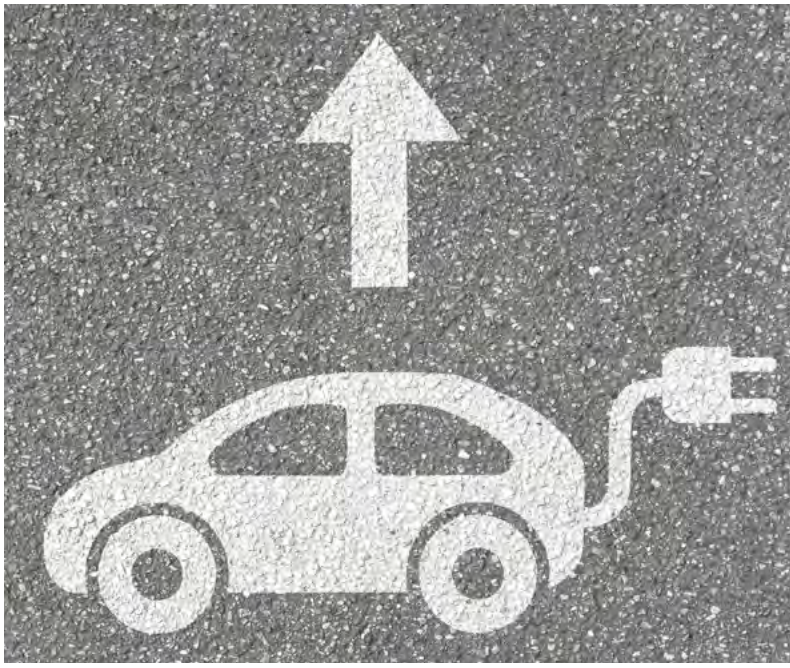
12.1 COLLABORATIVE PROCESS

While the Air District played the lead role in coordinating plan development, it will be only one of many key agencies and organizations that together implement this plan. The scope of the BARCAP, which covers eight counties and five economic sectors, requires a broad coalition of agencies and organizations with different authorities, expertise, and networks including regional agencies, city and county governments, utilities and community choice aggregators, resource conservation districts, business networks, community-based organizations (CBOs), and others. Implementing the BARCAP will require the same high degree of collaboration that was used to develop the plan.

12.1.1 Implementation partners and details

The BARCAP identifies a variety of lead and supporting implementers for each action in the plan. Lead implementers are agencies or organizations that would coordinate or manage the overall implementation of an action. In some cases, they would lead one or more core components of an action. Supporting implementers would participate in implementation of an action but would not take a leading role. For most actions, the lead and supporting implementers are known. However, for several actions – particularly those with longer timelines to begin implementation – conversations to identify key implementers are ongoing are will be identified as the details of implementation are more fully

developed.



Many actions already include specific information on how they will be implemented. For others, details such as specific implementing partners and their roles, programmatic components, equitable outreach and engagement, etc., will be determined during the early stages of the implementation process. Many helpful comments were made during the public review of the draft BARCAP measures that will be considered during the early implementation stage. Many public comments received online and in workshops offered useful information and detailed suggestions for the implementation phase. Comments included specific organizations and existing resources to leverage, ways to involve and further expand opportunities for different types of contractors, and potential funding sources to explore to provide financial support. Across sectors, for many actions, the first implementation steps will include convening conversations to discuss the implementation approach, including funding sources.

12.1.2 The Air District's role

While implementation of the BARCAP will be a collaborative process, the Air District will play a central role in tracking the implementation of BARCAP measures, tracking progress on implementation milestones and metrics, and reporting on the status of implementation to partners and the public. The Air District will also serve as a lead or supporting implementer for several BARCAP measures and actions and may play a convening role in some instances.

12.2 IMPLEMENTATION TIMELINE

Nearly all BARCAP actions are designed so that implementation of all or part of the action can begin in the short- to medium-term timeframes. A short-term timeframe means that implementation can be initiated within two years from when the BARCAP is finalized, and medium-term would begin within two to five years. Long-term refers to implementation beginning after five years. Chapters 6 to 10 provide more information on the timing for specific BARCAP actions. The timeframes assume that funding and staff resources are available and obtained. If staff capacity and funding resources are not secured, shifting the estimated initiation dates may be necessary.

12.3 FUNDING

Changes in funding priorities at the federal level have introduced uncertainty regarding the future of funding for climate programs and initiatives. Without reliable federal funding sources, state and local resources and existing and innovative new funding and financing approaches will become even more critical for BARCAP implementation.

Several BARCAP actions directly address the need for additional funding by leveraging existing funding streams, identifying and securing new funding sources, and adjusting existing funding to better support frontline communities. These actions include:

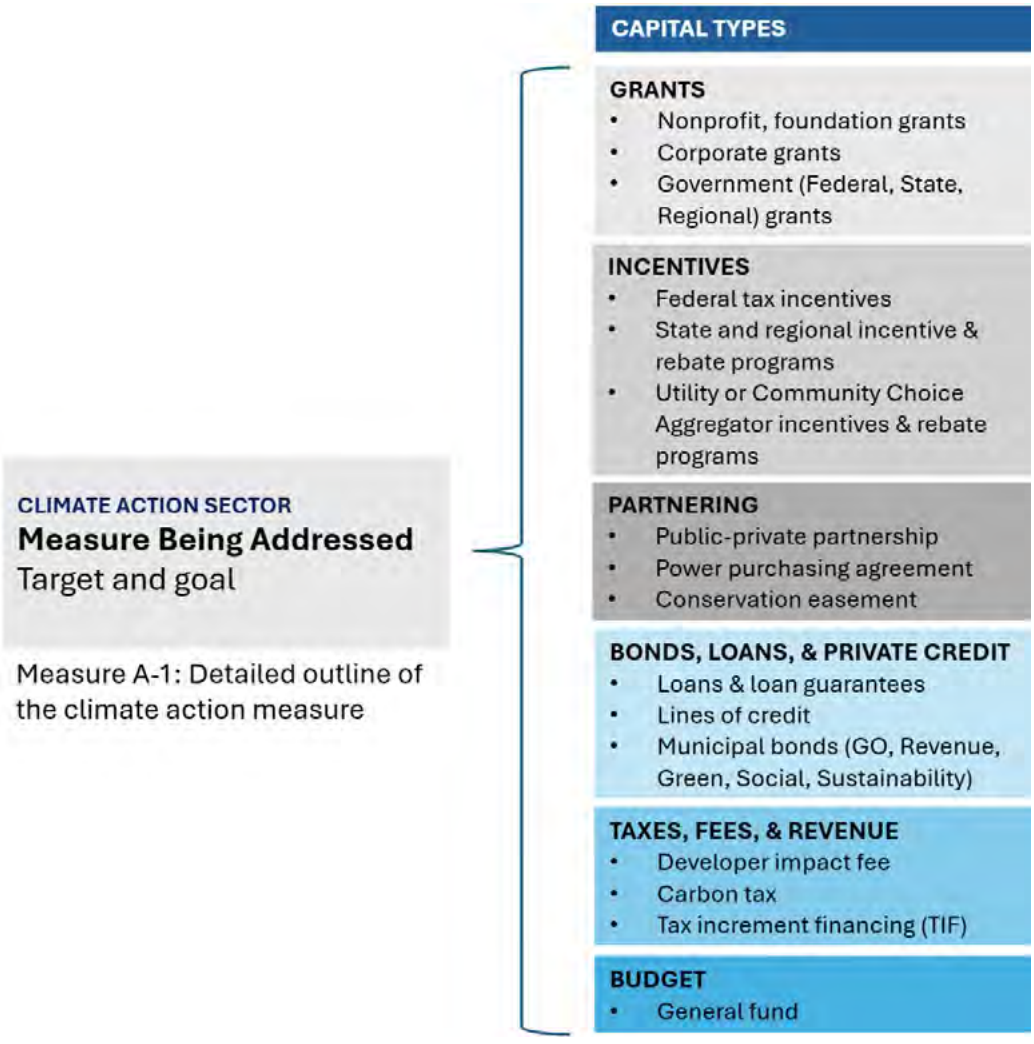
T-1.1: Expand incentives for the purchase or lease of EVs
T-1.2: Provide monetary and non-monetary incentives to deploy EV charging stations at strategic locations to help fill gaps in the existing charging network
T-2.1: Expand incentives and loan assistance for the purchase of medium- and heavy-duty zero-emission (ZE) vehicles and equipment
B-1.4: Explore new funding and financing opportunities to augment existing sources to further reduce financial burdens, especially for low-income building owners and tenants
B-2.1: Explore new funding and financing opportunities for home repair, public health, energy efficiency, and decarbonization programs to augment existing sources
B-3.2: Explore partnerships to expand education, training, business growth and other targeted support of Minority/Women/Disadvantaged Business Enterprises (MWDBE) contracting companies to become active in building decarbonization program and project opportunities
P-1.4: Monitor - and explore how to address - key funding and financing gaps for behind-the-meter and in front-of-the-meter small clean energy and storage projects that benefit frontline communities, low-income and moderate-low-income households, small businesses, and community organizations
W-1.1: Develop funding and asset-sharing mechanisms to support edible food recovery
NWL-1.2: Increase long-term funding for nature-based solutions through dedicated support for regional-scale grant writing and exploration of sources of long-term funding
NWL-2.2: Increase fuel management and reduce wildfire risk on natural and working lands and at the wildland-urban-interface (WUI) through new funding and financing mechanisms
NWL-2.3: Incentivize private landowners managing large land areas to manage fuel at scale through innovations in cost sharing and financing

12.3.1 Leveraging existing funding sources

State agencies, such as the California Energy Commission (CEC), California Public Utilities Commission, California Natural Resources Agency and CalRecycle, and regional programs implemented by utilities and Regional Energy Networks (funded by ratepayers) provide a variety of funding mechanisms including grants, rebates, low-interest loans, and other incentives. Regional agencies, like the Air District provide financial incentives to advance climate and clean energy solutions. It will be critical to prioritize funding for implementing actions that benefit frontline communities and ensure these communities have access to funding and financing opportunities.

The roadmap below (Figure 12-1) draws from many sources to provide an approach to funding and financing implementation of BARCAP measures.[1] It includes grants, loans, vouchers, rebates and other mechanisms as possible sources of funds. It includes examples of existing case studies from within the BARCAP region and California, as well as innovative approaches from elsewhere in the United States.

Figure 12-1: HIP plan-level funding map



Detailed funding roadmaps for specific BARCAP measures are included in Appendix G.

12.3.2 Identifying and developing new funding sources

Additional funding and financing will be needed to fully implement all BARCAP measures, even after taking advantage of all the programs described above. The BARCAP region and state are facing an affordability crisis, which means funding is needed to not just implement the measures but to do it in a way that does not further impact affordability. Along with the state, the Bay Area region must find or create new funding and financing mechanisms to backstop the decrease in federal funding and increase the total overall financial resources supporting climate action, particularly in frontline communities. This will require collaborative and creative thinking, and drawing on innovative examples including public-private partnerships such as city-business climate alliances, utilizing strategic financing mechanisms such as on-bill financing, partnering with philanthropic organizations, the business community, creating land-based financing such as special districts, etc.

12.4 TRACKING AND REPORTING

The Air District will play a central role in tracking overall implementation of the BARCAP and tracking progress. This will involve regularly conferring with the lead implementers of each action to assess implementation progress.

Metrics for tracking progress have been identified for each BARCAP measure and are included in the measure descriptions in Chapters 6 to 10. These metrics are indicators of progress towards key desired outcomes of measures. The Air District will work with implementation partners to determine the most appropriate metrics from these lists to track progress and then work together to compile and periodically report on the status of implementation.

As part of its grant obligation to the U.S. Environmental Protection Agency, the Air District will submit a report on the status of BARCAP implementation in the summer of 2027.

12.5 CONSIDERATIONS FOR IMPLEMENTATION

The public and community engagement processes and the workforce planning and frontline communities impact analysis raised several important considerations for how to implement the BARCAP. The following issues should be thoughtfully considered and incorporated into implementation of the BARCAP measures to ensure the measures achieve their intended goals.

12.5.1 Workforce

Implementation of the BARCAP provides an opportunity for the BARCAP region to create additional high-quality jobs.[2] While some BARCAP measures explicitly address workforce needs, efforts to grow the qualified, trained workforce necessary to implement the BARCAP over the coming decades are needed across all sectors. This requires a commitment to partnering and investing in workforce development and providing work opportunities and pathways to residents in the BARCAP region, including frontline communities.

A workforce planning analysis of the BARCAP measures found that each sector will need to grow its trained workforce in the key occupations listed below, and by varying magnitudes depending on the measures.[3] Many of these occupations pay more than the regional median wage ($33.93 per hour).



Buildings: carpenters; construction laborers; electricians; plumbers, pipefitters, and steamfitters; and HVAC mechanics and installers

Natural and Working Lands: farmworkers and laborers: crop, nursery, and greenhouse workers; firefighters; farmers, ranchers, and other agricultural managers; environmental scientists and specialists; tree trimmers and pruners; urban and regional planners; forest and conservation technicians; conservation scientists; foresters; agricultural engineers; and forest fire inspectors and prevention specialists

Power: electrical, electronic, and electromechanical equipment assemblers; electrical engineers, power-line installers and repairers; solar photovoltaic installers; power plant operators; and wind turbine service technicians

Transportation: retail salespersons; electricians; automotive service mechanics; and electrical and electronics installers and repairers

Waste: refuse and recyclable materials collectors; light-duty truck drivers; heavy-duty and tractor-trailer truck drivers; operating engineers and other construction equipment operators; mobile heavy-duty equipment mechanics; hazardous materials removal workers; and shipping, receiving, and inventory clerks

In many cases, the BARCAP region's current workforce has the necessary skills, while in a few instances, such as plumbers (who may need training for installing heat pump water heaters, which run on electricity instead of gas), upskilling may be necessary. Fortunately, the Bay Area is home to a robust network of training programs and resources that can support workers in this transition.

The accessibility of these roles and training opportunities, however, may not be equal for everyone. Job seekers residing in frontline communities may also require additional resources, such as childcare, transportation assistance, interpretation and translation, and other services to overcome systemic barriers to participation in certification and training programs and securing high-quality employment.

For a detailed analysis of the current and future state of the Bay Area workforce, critical occupations for successful implementation of the measures, and existing training opportunities, see Appendix F.

The workforce planning analysis also identified core recommendations that should be considered when implementing the measures that extend across all five sectors, including:

- Greater K-16 education communication and awareness of careers related to implementing the BARCAP;
- Coordination with community colleges, vocational and technical schools, private and non-profit training organizations, workforce development boards, and unions;
- More consistent funding to help support job creation related to the BARCAP and training to help frontline community members to secure those jobs;
- Tracking how the energy transition is impacting the local workforce and partnering to support workers facing disruptions;
- Considering ways to encourage high-quality employment in local and regional government projects.



Just transition in the BARCAP region

A carbon neutral future means shifting to a clean energy economy powered by zero-emitting fuel sources. However, this shift can significantly impact workers from fossil-fuel reliant industries and impact not only workers but the surrounding communities. While there are many working definitions of just transition, one helpful framework is that a just transition "refers to an integrated policy approach offering protection, support, and compensation for displaced workers and communities in specific industries or regions."[4] In the BARCAP region, a key industrial focus for a just transition is the fossil fuel refining industry.

The BARCAP region has five refineries, which, when including refinery reliant industries such as construction and trucking and transportation, employ roughly 18,000 people in the Bay Area. In 2020, the Marathon Martinez refinery in Contra Costa County idled (paused its refining operations) and laid off over 750 workers. A year later, 26% of these former employees remained unemployed, while former employees who found new jobs often faced a decline in wages and/or working conditions.[5] Assuming refinery exports from the Bay Area region decline at the same rate as projected in-state consumption, by 2045 the decrease in demand will likely lead to refinery shutdowns or a transition to new, cleaner products. Two refineries in the region have shifted production to renewable fuels.[6]

Unions and labor councils, CBOs, non-profit organizations, and local governments are working together to shape the just transition. The Contra Costa Refinery

Transition Partnership created 31 recommendations for how local and state governments can ensure a just transition for the refinery sector in Contra Costa County. The partnership includes worker associations, CBOs including the Asian Pacific Environmental Network, and non-profit organizations like the Blue Green Alliance. Recommendations include requiring a two-year notice to the public of a refinery closure or idling, establishing worker and community safety nets, and creating refinery decommissioning or clean-up standards.[7]

Just transition initiatives need to extend beyond refineries to other parts of the economy and ensure that workers and communities have a voice in these decisions. For example, in the City of Richmond, a coalition of CBOs – the Richmond Our Power Coalition – is working to advance a just transition, including a Project Support Fund that provides grants to projects directly serving local residents.[8] In addition, the Northern Waterfront area of Contra Costa County has been designated a Green Empowerment Zone (GEZ) to identify key projects in the area that can revitalize a clean energy economy. This includes designing and implementing a strategy to help grow a high-road clean energy manufacturing ecosystem in and around the GEZ that will advance a just transition.[9] Another example, the Bay Area High-Road Manufacturing Initiative led by Working Partnerships USA alongside other CBOs and labor organizations, is coordinating multiple pilot projects to grow the manufacturing sector in a way that achieves climate goals and supports workers.[10] Plans and projects like these will be integral in ensuring a clean economy that centers and protects workers in the transition to a carbon neutral future.



12.5.2 Frontline communities

In addition to the potential benefits and unintended consequences for each BARCAP measure, the Frontline Communities Impacts Analysis highlighted recommendations for implementation in each sector. A snapshot of the recommendations is below. For the full list of impacts, see Appendix D.



Building sector: Consider opportunities to pair building electrification with health and safety, weatherization, and building efficiency upgrades; emphasize workforce development and contractor support, building workforce transition into program design and budgeting.



Natural and Working Lands sector: Make funding flexible, offering sustained, low-barrier funding options for frontline groups; invite frontline and tribal co-leadership in land stewardship and management activities; pair urban greening with anti-displacement strategies (e.g., land trusts, rent control).



Power sector: Use equity criteria in project siting and design; protect low-income and medically vulnerable customers and ensure renters benefit from programs; fund inclusive community engagement processes; develop and utilize community benefits agreements for large energy projects.



Transportation sector: Encourage public and private fleet owners to deploy EVs in frontline communities; subsidize frontline community transition to EVs; emphasize public input opportunities in planning EV transitions; install charging infrastructure near affordable and multifamily housing.



Waste sector: Support smaller community-scale, decentralized composting options; increase multilingual, multi-media education and communication strategies for waste sorting; minimize siting large-scale compost facilities near residential areas of frontline communities; consider developing community benefit agreements near waste management sites to increase facility accountability and reduce impacts of odors.

12.5.3 Outreach and engagement

The BARCAP was shaped by an intentional and rigorous outreach and engagement process. As the finer details of implementation are developed, the Air District and implementing partners will continue to center outreach and engagement, particularly with CBOs and frontline communities.

CBOs play a critical role in implementation, and the Air District will continue to encourage

lead implementers to form meaningful partnerships with them throughout BARCAP implementation. They are not only 'trusted messengers' in delivering information and encouraging frontline community members to engage in climate efforts, but they are subject matter experts in embedding environmental justice in climate action and may lead climate actions themselves (e.g., cultural burning or 'good fire', urban tree planting). CBOs also play a critical role in holding institutions and implementers accountable in making sure that frontline communities benefit from climate actions. The Air District will also work with CBOs in providing updates on how the implementation of BARCAP measures has benefited frontline communities. Including community voices in the implementation of BARCAP measures provides an opportunity for people who are underrepresented in decision-making processes to take ownership in their future and climate impact outcomes.

The Air District recognizes the importance of continuing the conversation on climate action in the BARCAP region, particularly with frontline communities and young people, and will work to uplift all voices in implementation. Youth engagement, a priority brought up during the public comment period, will also be an important component of the implementation process. Young people bring fresh perspective, innovative thinking, and a sense of urgency to conversations around climate action. The Bay Area includes numerous youth organizations and movements that are leading advocacy and education among their peers. Talking about climate change – including climate impacts, solutions, and specific roles people can play – is one of the most important actions individuals can take to inspire hope and collective action. Outreach and educational efforts should support these conversations and more collective action.



12.5.4 Economic development

A history of concurrent climate action and economic growth in the Bay Area and California shows that economic growth and reducing GHGs are not at odds; rather, climate action can drive economic development. The Air District and implementing partners can refer to recent economic roadmaps like the State Economic Blueprint and the Bay Area Jobs First Collaborative Regional Plan and other local plans to understand how implementation of the BARCAP can align with and support regional economic development priorities. For instance, many measures in the BARCAP are consistent with the sectors identified by the State Economic Blueprint as critical to include in future economic development efforts.[11]

The region should also be intentional in how implementation of this plan leads to local job creation and new businesses and spurs innovation and public-private partnerships. Private investment resulting from BARCAP-related economic development activities may in turn be a key source of funding and financing for implementation.



12.6 MOVING FORWARD TOGETHER

Several of the 16 measures and 57 actions in the BARCAP are already underway. They include ongoing activities that will ramp up and/or expand in scope over the next year or two. Other measures may depend upon new funding or staff resources to be secured before implementation can begin. In those cases, preliminary implementation activities may include convening conversations with lead and supporting implementers and stakeholders, including CBOs, to determine initial organizational stages and steps to be taken toward securing resources. Implementation will also include identifying opportunities for collaboration and coordination with Santa Clara County on related and complementary measures in the Santa Clara County/San Benito County Comprehensive Climate Action Plan.

No single agency or plan, however, can solve the problem of climate change on its own. Achieving the critical transition to a clean economy will require a collaborative effort on the part of governmental agencies at all levels, business and industry, community and environmental groups, educational institutions and Bay Area residents. It will also necessitate a commitment to ensure that all Bay Area

communities benefit from this transition, particularly frontline communities.

Everyone has a role to play in the transition to a clean energy economy and carbon neutrality. Individual actions among residents, households and businesses to reduce GHG emissions are important, but when they are combined with coordinated, collective action, they can become transformational. Such collective action can include community-based initiatives like tree-planting, coordinated purchasing of low-carbon products, community education and outreach, participating in civic forums, joining advocacy groups, and talking about climate change action with family, friends, and community members. Individuals can bring climate action into shared spaces like neighborhood groups, schools, workplaces, faith-based congregations, or local government councils and commissions. Tackling actions together enables more people to join in, begins to shift norms, and motivates leaders to invest in infrastructure solutions. Working collectively on climate action can bring shared joy and agency. Similar to how the BARCAP aims to amplify state and local actions through regional collaboration, community action can amplify the impacts of individual action.

The Bay Area has many necessary attributes that are needed to tackle the climate challenge. It is one of the most socially and technologically innovative regions in the world, with a strong environmental ethos, world-class academic institutions, robust networks of non-profits and CBOs, and progressive leadership in business and government. By rising to the challenge together, the BARCAP region can achieve local, regional, and state climate goals while fostering thriving communities, healthy natural ecosystems, and a sustainable, inclusive, and prosperous economy that continues to lead in developing new technologies and innovations needed to address the climate challenge.



ENDNOTES

1 This funding and financing roadmap was developed for the Air District by HIP Investors, Inc.

2 According to the State of California's Future of Work Commission "Quality jobs provide a living wage, stable and predictable pay, control over scheduling, access to benefits, a safe and dignified work environment, and opportunities for training and career advancement." Institute for the Future, "A NEW SOCIAL COMPACT for work and workers," California Future of Work Commission, March 2021, https://www.labor.ca.gov/wp-content/uploads/sites/338/2021/02/ca-future-of-work-report.pdf#:~:text=Ensure%20that%20more%20workers%20have%20quality%20jobs.,workers%20report%20being%20in%20a%20quality%20job.

3 These occupational titles are used by the federal government for tracking purposes.

4 Caro Zabin et al., "Putting California on the High Road: A Jobs and Climate Action Plan for 2030," California Workforce Development Board, 2020, cwdb.ca.gov/wp-content/uploads/sites/43/2020/09/AB-398-Report-Putting-California-on-the-High-Road-ADA-Final.pdf; Community-based organizations have developed a more expansive definition, which can be found here: CJA_JustTransition_Principles_final_hi-rez.pdf.

5 Jessie HF Hammerling et al., "Refining Transition: A Just Transition Economic Development Framework for Contra Costa County, California," UC Berkeley Labor Center, 2025, https://laborcenter.berkeley.edu/wp-content/uploads/2025/01/Refining-Transition.pdf.

6 Christina E. Simeone and Ian Lange, "San Francisco Bay Area Refinery Transition Analysis," The BlueGreen Alliance Foundation, 2022, https://www.bluegreenalliance.org/wp-content/uploads/2025/01/San-Francisco-Bay-Area-Refinery-Transition-Analysis.pdf.

7 The BlueGreen Alliance Foundation, "Report and Recommendations of the Contra Costa Refinery Transition Partnership," The BlueGreen Alliance Foundation, 2025, https://www.bluegreenalliance.org/wp-content/uploads/2025/01/Contra-Costa-Refinery-Transition-Report-and-Recommendations-2025.pdf.

8 "Funds," Richmond Our Power Coalition, Accessed October 16, 2025, https://www.ourpowerrichmond.org/funds.

9 John Gioia and John Kopchik, "Overview of the Green Empowerment Zone," Contra Costa County, 2025, https://www.baaqmd.gov/~/media/files/board-of-directors/2025/ssc_presentations_070925_rv_op-pdf.pdf?rev=1aa920d8b0ec41b5bac4a876e7ab16cc&sc_lang=en.

10 "Bay Area High-Road Manufacturing Initiative," All Home, Accessed September 1, 2025, https://www.allhomeca.org/catalyst-projects/bay-area-high-road-manufacturing-initiative/.

11 The State Economic Blueprint identified four categories of sectors that are critical to future economic development. The sectors that align with BARCAP measures include Strengthen: Sectors where the state has a competitive position and/or significant employment but where growth and wages are leveling, including working lands & water (agricultural production). Accelerate: Sectors with moderate to high projected growth that are read for expansion where additional investments could bend the curve to generate growth, including clean economy (batteries, solar, zero emission vehicles, onshore wind) and working lands and water (agtech and farm equipment). Bet: Emerging sectors with significant investment or high strategic importance to the innovation ecosystem, including clean energy economy (carbon management, hydrogen), working lands & water (bioeconomy, blue economy and tech), and high-tech (artificial intelligence). Anchor: Regional anchors that are critical for attracting and supporting industry activities while often providing quality, good-paying jobs within local communities, including education & skilled workforce, infrastructure (transmission, transportation infrastructure).

Appendix A

BARCAP Region Greenhouse Gas Emissions Inventory

March 2026

Bay Area Regional Climate Action Plan

BARCAP Region Greenhouse Gas Emissions Inventory

GHG Inventory Technical Appendix of BARCAP Report

October 2025

BARCAP REGION EMISSIONS INVENTORY

SUMMARY REPORT FOR GREENHOUSE GASES

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Glossary

Abbreviation	Definition
ABAG	Association of Bay Area Governments
BAAD	Bay Area Air District (also known as the Air District)
BAAQMD	Bay Area Air Quality Management District (also known as the Air District)
BARCAP	Bay Area Regional Climate Action Plan
CAP	Criteria Air Pollutant
CARB	California Air Resources Board
CADF	California Department of Finance
CEC	California Energy Commission
CEPAM	California Emission Projection Analysis Model
CFCs	Chlorofluorocarbons
CH_4	Methane
CO_2	Carbon Dioxide
EIA	Energy Information Administration
EMFAC	EMission FACtors Model
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GWP	Global Warming Potential
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
IPCC	Intergovernmental Panel for Climate Change
MSA	Metropolitan Statistical Area
$MMTCO_2e$	Million Metric Tons of Carbon Dioxide-Equivalent
N_2O	Nitrous Oxide
PFCs	Perfluorocarbons
PM_{10}	Particulate Matter (inhalable particles with diameter $\leq$ 10 micrometers)
$PM_{2.5}$	Particulate Matter (fine inhalable particles with diameter $\leq$ 2.5 micrometers)
PTO	Permits-to-Operate
SFBA	San Francisco Bay Area
SF_6	Sulfur Hexafluoride
TAC	Toxic Air Contaminant
TOG	Total Organic Gases
USEPA	United States Environmental Protection Agency
USDA	United States Department of Agriculture
VMT	Vehicle Miles Traveled

EXECUTIVE SUMMARY

Inventory Overview

The Bay Area Air District (Air District) is the regional government agency responsible for the regulation of air pollution from stationary sources within the San Francisco Bay Area (SFBA). The Air District's jurisdiction includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties. The agency maintains inventories of emissions for criteria air pollutants (CAPs), greenhouse gases (GHGs), and toxic air contaminants (TACs) to:

- Comply with statutory emissions reporting requirements;
- Provide inputs for regional air quality modeling to estimate pollutant concentrations and exposures;
- Support the development of new regulations and amendments to existing regulations to reduce emissions; and
- Support regional and local air quality and climate action planning and policy initiatives.

The Air District's GHG emissions inventory is an accounting of annual emission estimates of major climate-warming pollutants resulting from human activities (also known as anthropogenic emissions) that are grouped by source category for each county. This report presents an overview of the regional GHG emissions inventory from 2000[1] to 2050 across an eight-county jurisdiction developed for the Bay Area Regional Climate Action Planning (BARCAP) Initiative. The BARCAP is the Air District's regional climate action plan for the Northern and Central Bay Area region, developed under funding from the United States Environmental Protection Agency's (USEPA) Climate Pollution Reduction Grant. The BARCAP covers the same jurisdiction as the Air District but does not include Santa Clara County, which is considered by the USEPA as part of a neighboring and separate planning area for their CPRG program. The pollutants covered in the GHG emissions inventory are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and several long-lived gases with high Global Warming Potentials (GWPs)[2] such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6), as well as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). Although CFCs and HCFCs have been banned, and their use phased out,[3] historical emissions and residual emissions from legacy equipment are included in the GHG emissions inventory.

Exposure to ambient levels of these pollutants is not directly harmful to human health. However, these pollutants are primary drivers of climate change, which in turn has negative air quality and health impacts in the SFBA. For example, rising temperatures due to global warming increases heat stress and accelerates ozone and secondary particulate matter formation; and more severe wildfires elevate exposure to harmful pollutants. The GHG emissions from fuel combustion and other sources are often accompanied by emissions of co-emitted criteria air pollutants and toxic air contaminants which have direct local air quality and health impacts. Additional discussions about climate and air quality related health impacts can be found in Chapter 5 of the BARCAP report.

The regional source category-level GHG emissions inventory is estimated in alignment with state and federal methodologies, based on detailed research to gather data for the following key variables:

- Activity data or throughput – a measure of emission-generating processes, operations, and services.
- Emission factors – values that represent the amount of a GHG pollutant emitted per unit quantity of the activity or throughput; and
- Control factors – quantitative measure of the reduction in GHG pollutant emissions achieved through pollution-control devices or regulated changes in facility operations.

Forecasted and certain historical emissions are derived using growth profiles. For future projections, growth profiles are developed based on selected socio-economic indicators that characterize how activity data for source categories are expected to evolve over time. For historical backcasting, when direct activity data are unavailable, growth profiles are developed to estimate historical activity levels and emissions.

Emissions Summary

This section presents four key perspectives useful to understanding GHG emissions:

- By sector (i.e., source types)
- By pollutant
- By geographic area (by county)
- By year (i.e., trends and forecasts)

Contribution by sector

The BARCAP GHG emissions inventory follows an inventory framework consistent with California's GHG inventory categorization scheme. GHG emissions source categories are grouped into six economic sectors,[4] which are aligned with CARB's sector definitions:[5]

- Transportation
- Buildings
- Industrial
- Power
- Waste
- Agriculture

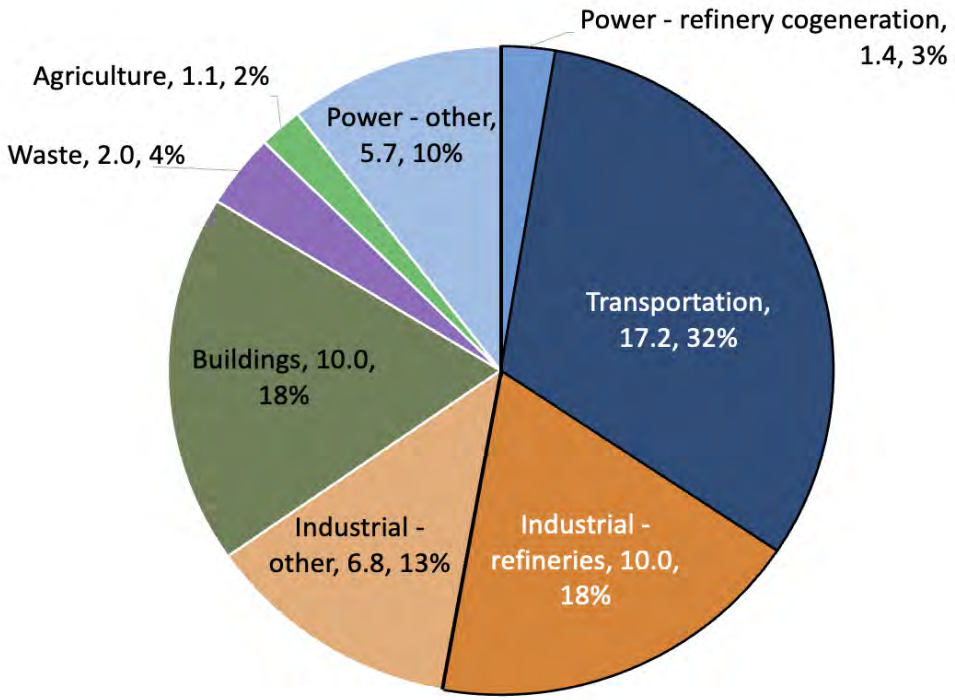


Figure 1: 2022 GHG emissions inventory by sector for the BARCAP region ($MMTCO_2e$).

The annual GHG emissions from all six sectors for the BARCAP region for the base year 2022 is approximately 54.1 million metric tons of CO_2-equivalent ($MMTCO_2e$), which represents about 15% of California's 2022 statewide GHG emissions in 2022.[6] Transportation (32%) is the largest contributing sector in the BARCAP region, followed by the industrial (31%) sector (Figure 1). The buildings sector contributes about 18% and the power sector contributes about 13% to the annual GHG inventory. The waste and agriculture sectors combined contribute less than 6% of the regional total.

As currently defined for the BARCAP, the transportation sector only accounts for GHG emissions from the combustion (end-use) of fossil fuels to move people and goods (e.g., tailpipe emissions from on-road motor vehicles, fuel combustion exhaust from ships and airplanes, etc.). However, every lifecycle stage of fossil fuel extraction, processing, and use for the transportation sector generates GHG emissions. While the BARCAP region has negligible fossil fuel extraction sources, processing of fossil fuels for the transportation sector at the BARCAP region's refineries contributes significantly to the industrial sector emissions, accounting for over 60% (~10 MMTCO2e) of that sector's total GHG emissions. In addition, on-site cogeneration of electricity for use at these refineries, categorized under the power sector, adds another 1.4 MMTCO2e or 20% to that sector's total. When combined with the transportation sector emissions, the GHG emissions related to transportation that are associated with both production (extraction and processing) and consumption (combustion) of fossil fuels account for over half of the total regional GHG emissions in 2022 (53% or 28.6 $MMTCO_2e$), as seen by the sectors outlined in black in Figure 1.

The BARCAP region is heavily urbanized and thereby the share of transportation sector in the regional GHG emissions inventory is larger than its corresponding share in the national emissions inventory (32% versus 28%).[7] In the BARCAP region, GHG emissions from the buildings sector are primarily attributable to space- and water-heating (combined total of 67% of the sector's emissions) and the use of refrigerants and solvents in buildings (21% of building sector emissions). Due to relatively high population density in urban areas, the buildings sector accounts for a higher share of the region's emissions as compared to the national average (18% versus 13%). The power sector represents a lower share in the regional GHG inventory compared to the national average (13% versus 25%), largely because a greater portion of the region's electricity is produced from renewable sources such as wind, solar, hydrothermal, etc., reducing the region's reliance on natural gas-fired power plants.

A subsector breakdown of the base year 2022 GHG emissions inventory is provided in Figure 4 and Table 3.1 in Section 3 of this appendix. Emissions data for the Air District's regional GHG inventory, which includes the full jurisdiction of the Air District including Santa Clara County, are presented in an interactive online dashboard on the Air District's emissions inventory webpage.[8]

Contribution by pollutant

Reviewing the pollutant composition in the BARCAP GHG inventory is useful to identify different types of GHGs associated with different sources. Analyzing the pollutant distribution in the BARCAP region compared to the national profile reveals distinct sources and emissions characteristics unique to the region. The contribution of CH_4 (>6%) and N_2O (~2%), which are primarily emitted from waste management, animal agriculture, soil management, and petroleum production systems, is a smaller share in the BARCAP GHG inventory compared to their contribution at the national level of 11% for CH_4 and 6% for N_2O.[9] In the BARCAP region, high-GWP gases like HFCs and PFCs, emitted from a variety of sources such as refrigeration, air conditioning, fire suppressants, and insulation, etc., represent a significant proportion of GHG emissions from the buildings sector (>20%, Figures 4 and 5). This results in a higher overall regional contribution (~6% of the regional GHG total) of high-GWP gases than that in the national inventory (~3%). CO_2, largely produced through fuel combustion, remains the most prevalent GHG pollutant in the region (>86% of the regional inventory; see Figure 5).

Contribution by county

Evaluating the geographic distribution of GHG emissions across the BARCAP region identifies those counties with the largest contributions to GHG emissions and the sectors driving those emissions Figure 2 shows the distribution of annual regional GHG emissions by county across the BARCAP region. Contra Costa County is attributed to having the highest GHG emissions (~45%) in the region, due mostly to the presence of large sources in the industrial sector (e.g., refineries) and in the power sector (e.g., power plants) located in this county. The southern Solano County, which accounts for 10% of the BARCAP region's GHG emissions despite only having 4% of the Bay Area's population, is also largely impacted by industrial sources. In the other seven counties that have fewer heavy industries, the

transportation and buildings sectors account for the majority of county-level GHG emissions. A detailed breakdown of emissions by county is provided in Table 3.2 in Section 3 of this appendix.

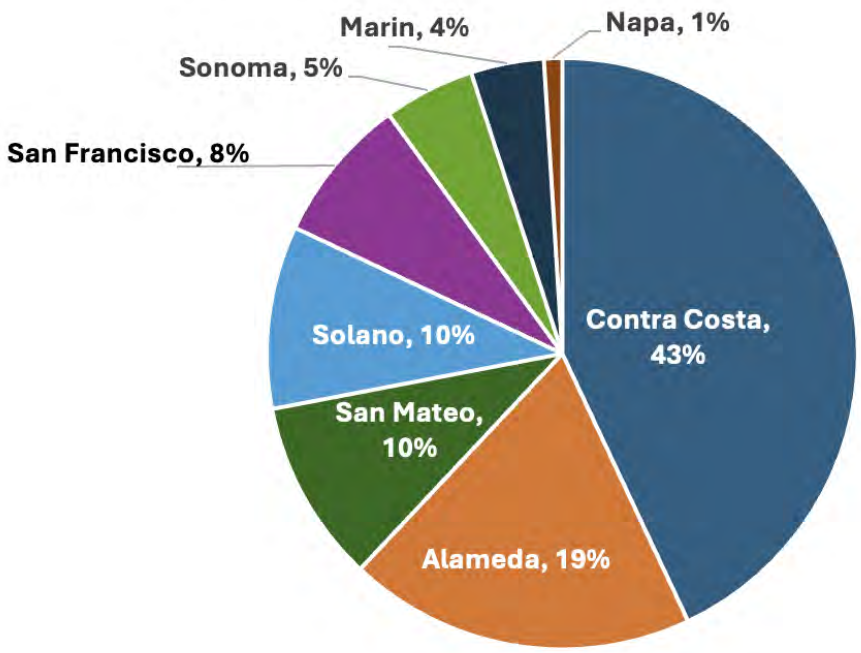


Figure 2: 2022 GHG emissions inventory by county for the BARCAP region ($MMTCO_2e$)

Trends and forecasts

A time series of historical GHG emissions along with projected future emissions allows the Air District to assess the progress the region has made in achieving its climate objectives and future policy goals. Overall, the BARCAP region's GHG emissions have dropped from 62.2 $MMTCO_2e$ in 2000 to 54.1 $MMTCO_2e$ in 2022 marking a 13% reduction, consistent with the declining trend in California's state inventory (19.8% decrease) and the U.S. national inventory (14.5% decrease) over the same period.[10] Most of the GHG emissions reductions in the BARCAP region are attributed to the transportation (-23%), industrial (-9%), and power (-23%) sectors as shown in Figure 6, largely due to regulations in goods movements and the use of renewable sources for energy generation. This downward trend is partially offset by an increase in GHG emissions from the buildings (+14%) sector, indicating an increasing demand for energy from the Bay Area's growing population and businesses. A significant decline in GHG emissions is predicted in the buildings sector, primarily due to the Air District's Regulation 9 Rule 4 and Regulation 9 Rule 6,[11] which require newly installed natural gas furnaces and water heaters to meet a zero nitrogen oxides (NO_X) emissions standard starting with water heaters in 2027.

Contents of Summary Report

The BARCAP GHG inventory reflects methodological advancements over the previous inventory.[12] This report summarizes the key findings resulting from this latest inventory update. Section 1 discusses the general scope of the inventory including geographic coverage, key pollutants, and sector hierarchy schema. Section 2 presents the general methodology used to develop the inventory based on source characteristics and availability of supporting data sources. Section 3 provides a breakdown of the regional GHG emissions by process, sector, and pollutants, and highlights key observations at the regional and sector level. Finally, Section 4 provides an overview of key assumptions and limitations in the emissions estimates and identifies areas for future improvement.

1. INVENTORY SCOPE AND ORGANIZATION

This section provides an overview of the BARCAP GHG inventory, which includes geographical area covered by the plan, identification of the key pollutants, and a description of the source sectors and subsectors using an organizational hierarchy schema.

1.1. GEOGRAPHY

The BARCAP GHG inventory covers eight counties including Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, southwestern Solano, and southern Sonoma counties (see Figure 3). Only GHG emissions that are generated or produced in the portions of Solano and Sonoma counties that are part of the Air District's jurisdiction are accounted for in this inventory.



Figure 3: Map of the BARCAP region that includes six full and two partial (Solano and Sonoma) counties

Each county in the BARCAP region has unique and diverse characteristics that serve as key predictors of trends likely to influence future activity and, in turn, estimated GHG emissions. The Air District has

relied on these predictors which include population distribution, socioeconomic data, goods consumption patterns, etc. to project future growth or change in GHG emissions across sectors and subsectors. As shown in Table 1.1, these predictors vary significantly among counties and highlight the complexities in quantifying the base year emissions and predicting future activities summarized in this report.

Table 1: Selected demographic and socio-economic indicators by county for the BARCAP region for 2022.

County[a]	Area in acres[b] (%)[c]	Human Population[d] (%)[c]	Total Natural Gas Consumed in Millions of Therms[e] (%)[c]	Automobile Registration Count[f] (%)[c]	Total Electricity Consumed in Giga Watt-Hours[e] (%)[c]
Alameda	473,639 (20)	1,643,683 (30)	377 (17)	1,035,244 (29)	10,395 (29)
Contra Costa	506,953 (21)	1,149,841 (21)	892 (41)	807,986 (22)	8,338 (24)
Marin	331,834 (14)	255,459 (5)	66 (3)	188,149 (5)	1,293 (4)
Napa	502,039 (21)	135,564 (3)	39 (2)	93,614 (3)	1,029 (3)
San Francisco	30,080 (1)	840,575 (15)	214 (10)	386,770 (11)	5,121 (14)
San Mateo	289,647 (12)	742,051 (13)	204 (10)	562,003 (16)	4,177 (12)
Solano	132,846 (5)	312,919 (6)	248 (12)	208,801 (6)	2,279 (7)
Sonoma	145,060 (6)	412,502 (7)	107 (5)	290,573 (8)	2,477 (7)

a: Only represents the Air District portion of Solano and Sonoma counties.
b: Solano and Sonoma counties portions of the Air District are 48% and 37%, respectively.
c: The numbers in parentheses indicate percentage relative to the whole region.
d: Data is obtained from the California Department of Finance for the year 2022. Solano and Sonoma counties population portions within the Air District are 70% and 86%, respectively.
e: Data is obtained from the California Energy Commission for 2022. Solano's and Sonoma's energy consumption is derived from the proportional distribution of human population of the Air District portions of the two counties (70% for Solano and 86% for Sonoma, respectively).
f: Registration data are obtained from the California Department of Motor Vehicles for 2022. The Solano and Sonoma counts are derived from the proportional distribution of human population of the Air District portions of the two counties (70% for Solano and 86% for Sonoma, respectively).

1.2. POLLUTANTS

The greenhouse gases covered in the BARCAP regional emissions inventory align with those included in United States Environmental Protection Agency's National Emissions Inventory[13] and California Air Resources Board's statewide GHG emissions inventory.[14] The BARCAP GHG inventory includes emissions of the following GHG pollutants:

- **Carbon Dioxide (CO_2)**: CO_2 is a major emission by-product of all fossil fuel (e.g., natural gas, gasoline, diesel, wood, etc.) combustion processes, and to a minor extent the biological decomposition of all organic material (e.g., animal waste, compost, agricultural residues, etc.), noted as CO_2_bio in the emissions inventory. CO_2_bio emissions are from biogenic sources and

are excluded from the total anthropogenic GHG emissions in the BARCAP inventory. See Section 4 -Uncertainties and Future Improvements for more information on CO_2_bio.

- **Methane (CH_4)**: CH_4 is a major constituent of natural gas. In the BARCAP region, CH_4 is primarily emitted from leakage of natural gas across the oil and gas and energy infrastructure, anaerobic decomposition of solid and liquid organic waste (at municipal landfills and wastewater treatment plants), direct emissions from livestock and other agricultural operations, and to a lesser extent, incomplete combustion of fossil fuels.

- **Nitrous Oxide (N_2O)**: N_2O is primarily emitted from nitrification and denitrification processes in soils (arising from fertilizer use for both agricultural and commercial/residential purposes). Other emission sources include tailpipe emissions from automobiles, incomplete combustion of fossil fuels, and organic waste decomposition at municipal landfills and wastewater treatment plants.

- **Fluorinated Gases**: These long lasting GHGs are synthetically generated (human-produced) and emitted as fugitive losses across a variety of households, commercial and industrial applications and processes. Fluorinated gases included in this inventory are:
  - Hydrofluorocarbons (HFCs),
  - Perfluorocarbons (PFCs),
  - Sulfur Hexafluoride (SF_6),
  - Chlorofluorocarbons (CFCs), and
  - Hydrochlorofluorocarbons (HCFCs).

  These gases are typically inert, and they stay in the atmosphere for hundreds of years once emitted; therefore, local and federal regulations are focused on phasing out their use. CFCs and HCFCs were widely used as refrigerants and solvents until ozone depleting substances were banned as part of a 1989 global agreement under the Montreal Protocol.[15] Minor contributions of CFCs and HCFCs are included in the GHG inventory due to recycling and salvage of pre-ban and legacy equipment. HFCs and PFCs are substitutes for ozone depleting substances and are widely used as refrigeration and air conditioning agents, solvents, and aerosols. They are also byproducts of semiconductor manufacturing process. Emissions of these pollutants occur across all major sectors and are collectively represented as one group, known as high-global warming potential (GWP) gases. SF_6 is the most potent man-made GHG per Intergovernmental Panel on Climate Change (IPCC) and is used as an insulating gas in electrical transmission equipment (e.g., circuit breakers). Most of the fluorinated gases are emitted in exponentially smaller quantities as compared to CO_2, CH_4, and N_2O; however, due to their extremely high GWPs (described below), the combined emissions of these fluorinated high-GWP gases are a significant portion of the overall GHG inventory.

The BARCAP GHG inventory incorporates the GWPs reported in the IPCC Fifth Assessment report, released in 2014,[16] which includes impacts of climate feedback in GWP calculations. The GWP value of each GHG reflects the climate forcing caused by a kilogram of emissions relative to the same mass of carbon dioxide (CO_2). Thus, GWP of CO_2 is set equal to one while all other GHG pollutants have GWP

relative to CO_2. The GWP of a GHG is determined by the intensity of infrared absorption and how long emissions remain in the atmosphere. GWPs are calculated using a set time horizon. The GWPs used for the BARCAP GHG inventory are considered over a 100-yr timeframe, consistent with the approach adopted by the USEPA and CARB for their GHG inventories. Since the effective radiative impact of short-lived GHGs (e.g., CH_4 has a lifetime of 10-12 years) is more profound over a shorter time-horizon, the Air District may use short-term GWPs (such as 20 years) for estimating emissions inventories for rulemaking and climate action purposes.

1.3. BASE YEAR

The BARCAP GHG inventory covers annual emission estimates from permitted and non-permitted stationary sources, as well as on-road and off-road mobile sources, from 2000 to 2050. The year 2022 serves as the base year for this emissions inventory as it is the latest year with comprehensive assessment conducted to estimate total emissions across all source categories and sectors. The inventory for this base year is used as a reference point or benchmark to:

- Track trends in emissions over time to evaluate progress towards achieving targets;
- Develop current and future GHG-related analysis scenarios; and
- Support development of local climate action plans and mitigation strategies.

The year 2022 emissions include effects of adopted regulations but exclude the influence of non-enforceable climate protection guidelines and recommended policies. Socioeconomically, year 2022 is also considered a representative “business as usual” year, reflecting a return to typical activity levels following the COVID-19 pandemic. In some cases, emissions may be estimated using the pre-pandemic base year 2019 when data for 2022 are unavailable. The GHG emissions for 2023 and beyond are typically projected based on the base year emissions under a business-as-usual scenario.

1.4. ORGANIZATIONAL HIERARCHY

The BARCAP GHG inventory follows an inventory framework that aligns with CARB’s GHG inventory categorization scheme to:

- Use emission factors and methodology by source category consistent with CARB’s statewide GHG emissions inventory;[17]
- Extract source category-specific emissions inventory for criteria air pollutants (CAPs) at a county-scale from CARB’s California Emissions Projection Analysis Model,[18] and to use CAPs as surrogates to derive and proportion GHG emissions; and,
- Leverage growth projections from CARB’s 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan)[19] to forecast future GHG emissions for equivalent source categories, wherever applicable.

The regional GHG inventory is classified into four levels with the first level based on the economic sector, followed by two lower levels describing the general and specific processes generating the emissions, respectively. These three sector levels are ultimately linked to the source-category level, the most granular grouping in which emissions are reported in this GHG inventory, as shown below:



In Level 1 classification, GHG emission sources are classified across six economic sectors,[20] which align with USEPA' s classification and are also used by CARB to develop and implement GHG emission reduction strategies:

- **Transportation** – The transportation sector encompasses emissions from all mobile sources including on-road vehicles (passenger cars, light and heavy-duty trucks, and buses etc.) and all non-road transportation modes (aircraft, locomotives, ships, etc.). It is the largest contributor of the six assumed sectors to California's GHG emissions, primarily due to combustion of fossil fuels. The contribution of this sector to GHG emissions would grow larger if upstream emissions associated with production and processing of transportation-related fuels were included in this group instead.

- **Buildings** – This sector includes direct emissions from energy consumption in buildings, such as heating, cooling, cooking, lighting, and appliance use, as well as some off-road machinery (e.g., lawn and garden equipment, airport ground support equipment, etc.). The primary emissions sources are combustion of natural gas and other fuels for space and water heating, and fugitive emissions of high-GWP gases from refrigeration and air conditioning systems.

- **Industrial** – The industrial sector includes emissions from manufacturing, construction, petroleum refining, and oil and gas extraction activities, as well as some off-road machinery (e.g., construction and mining equipment, etc.). It encompasses emissions from the combustion of fossil fuels for energy, chemical reactions during industrial processes, and fugitive emissions from equipment leaks and other sources. Key currently operating and/or now shutdown industrial sources in this sector include refineries, cement plants, food processing facilities, and chemical manufacturing that are permitted by the Air District.

- **Power** – This sector covers emissions from the production of electricity at power plants and cogeneration facilities located within the BARCAP region. GHG emissions arise from the combustion of fossil fuels (such as natural gas) to produce electrical energy and fugitive leaks of methane from natural gas infrastructure at power plants. GHG emissions from imported electricity generated outside the BARCAP region are not included in the regional emissions

total. A review of annual power content labels of the BARCAP region's electricity retailers[21] indicates that, increasingly, most of the electricity consumed in the BARCAP region is generated from less carbon-intensive or carbon-free renewable energy sources (e.g., wind, solar, hydroelectricity, etc.). This trend lowers the demand for fossil fuel-based electricity from local generation sources.

- **Waste** – This sector includes emissions from the treatment and disposal of solid waste and wastewater at facilities located within the BARCAP region. It is conceivable that a minor fraction of this waste disposal and treatment activity may occur at facilities located outside the Air District's geographical jurisdiction. Major sources include methane emissions from landfills, emissions from composting and anaerobic digestion, and nitrous oxide emissions from wastewater treatment processes.

- **Agriculture** – The agriculture sector encompasses emissions from agricultural activities, including crop cultivation and livestock production. Key sources of emissions are enteric fermentation in ruminant animals (producing methane), manure management, fertilizer application (leading to nitrous oxide emissions), and fuel combustion for agricultural equipment. Agricultural practices also influence carbon sequestration in soils and vegetation, which is covered for all land classification types in Appendix B – 2022 Natural and Working Lands Inventory.

The definition and source composition of the economic sectors, along with exceptions to account for organizational differences at the regional level, are presented in more detail in Appendix A1.

Each economic sector is then split into four groups under Level 2, aggregated by the general processes generating GHG emissions:

- **Fuel Combustion** – This group includes emissions from combustion of all gaseous, liquid and solid fuels in internal or external combustion engines to produce energy and/or heat and steam to perform work.

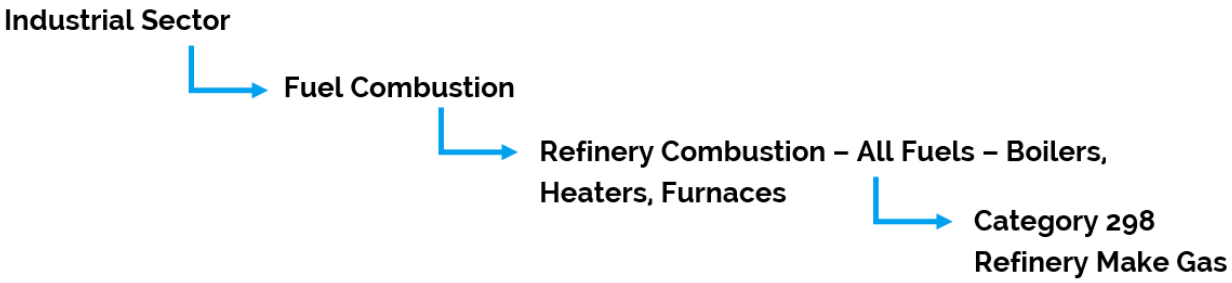
- **Process** – This group includes GHG emissions resulting from chemical, physical and biological processes within various source categories such as petroleum refining, manufacturing processes, waste management, enteric fermentation in livestock, etc.

- **Fugitive and Evaporative** – This group includes GHG emissions from intentional and unintentional leaks such as natural gas leakage across the oil and gas infrastructure, fugitive losses of SF_6 at circuit breakers, refrigerant leaks, etc.

- **Other Combustion** – This group includes GHG emissions from combustion of non-energy sources like controlled agricultural burns and waste incineration, or fires of accidental nature (e.g., structural, automobile, wildland fires, etc.).

The third level is a categorization of more detailed and similar processes grouped together called 'subsectors' (e.g., type of emissions equipment, type of fuel burned, size of source device, type of chemical or biological process). There are over 50 subsectors in the regional GHG inventory (see Appendix A2 for a detailed list) and some examples include aircraft, domestic wastewater treatment, commercial cooking, residential natural gas combustion, etc.

At the category level, the Air District starts by estimating emissions for over 560 unique source categories that are grouped into one of 55 Level 3 subsectors, which are then aggregated by general processes at Level 2 and finally catalogued by economic sector in Level 1. An example depicting this organization hierarchy is provided below. Appendix A2 summarizes the sector-process-subsector hierarchy that each of the 560+ GHG source categories fall under.



2. INVENTORY METHODOLOGY

The Air District uses a production-based approach to develop the BARCAP GHG inventory, focusing mainly on emissions released directly into the atmosphere from sources located within the region. This differs from a consumption-based approach, which attributes emissions to regional consumers by accounting for the full life-cycle emissions of goods and services consumed locally, regardless of where those emissions occur globally.

2.1. SOURCE TYPES

Emissions are estimated for each of the 560+ unique sources in the inventory based on the fundamental characteristics of the source. Emission sources generally fall into three main types depending on the emissions estimation methodology that is applicable:

- **Permitted Stationary Sources**: These sources (and related processes) are subject to the Air District's permitting requirements and the facilities with these sources have been issued permits to operate (PTO). Most of these sources are often referred to as 'point' sources due to their emissions characteristics. Some key characteristics of these sources include:

    - Most permitted source emissions are released at a fixed, defined location, such as a stack, but there are exceptions. The Air District also permits diffuse area sources including fugitive emissions from stockpiles and leaks from multiple pressure relief valves.
    - Emissions are required to be reported or calculated for each source at regular intervals, typically annually.
    - A bottom-up approach is typically used for emissions estimation (further explanation below).
    - These sources often involve combustion equipment.
    - Examples: fuel combustion emissions from reciprocating engines, prime and backup diesel generators, and industrial boilers.

- **Non-permitted Stationary Sources**: These sources are not subject to the Air District's permitting requirements and do not need a PTO, although they could be located at facilities that have obtained a PTO for other emissions sources. These sources are often referred to as 'area' sources due to their emissions characteristics. Some key characteristics of these sources include:

    - Emissions originate from numerous diffuse points that may be difficult to locate or track individually.
    - Emissions are not required to be systematically reported or calculated.
    - Emissions estimation method may involve either a bottom-up or a top-down scaling approach.
    - These sources often involve fugitive emissions or diffuse processes.

- Examples: biologically produced methane emissions at closed landfills, anaerobic decomposition at wastewater treatment plants, and livestock manure management emissions.

- **Mobile Sources**: These sources (and related processes) are subject to federal and state-level regulations but are not within the Air District's regulatory authority. These sources are usually grouped into on-road and off-road source categories. Some key characteristics of these sources include:

    - Emissions originate from sources that typically move from place to place as they operate.
    - Source activities are not tracked individually (e.g., vehicle miles traveled per vehicle) but are typically estimated as an aggregate for the whole source group (e.g., total vehicle miles for light-duty vehicles).
    - Emission rates can vary by emission process (e.g., running exhaust, start exhaust, idling exhaust, tire or brake wear, etc.); hence emissions factors are process dependent.
    - To account for vehicle/equipment fleet complexities, the Air District uses modeling tools (e.g., EMFAC2021 for on-road sources and OFFROAD2021 for off-road sources) that apply a bottom-up, top-down, or a hybrid calculation approach for emissions estimation.
    - Examples: exhaust, tire wear, and brake wear emissions from passenger cars, heavy-duty trucks, and buses; exhaust emissions from bulldozers, forklifts, and tractors; exhaust emissions from ships and aircraft.

2.2. EMISSION CALCULATIONS

As previously mentioned, the Air District typically uses two types of estimation approaches—a bottom-up or a hybrid method—to estimate GHG emissions, depending on source types and available calculation support data.

Bottom-up Permitted Source Approach

Permitted sources are stationary operations that emit air pollution into the atmosphere at fixed location(s) within a facility, and for which the Air District has issued a PTO (e.g., steam reforming at refinery hydrogen plants).

During the permitting process, the Air District collects site-specific information from the operating facility and/or determines from published literature, e.g., U.S. Environmental Protection Agency's (USEPA) AP-42,[22] source characteristics including maximum throughput, emission factors by pollutant, and temporal profile. The Air District may require an abatement device to be installed, in which case control factors will be incorporated to account for the reduced emissions. Facilities that hold an Air District PTO are required to renew their permit periodically (this period varies based on facility and source types). Upon renewal, the facilities are requested to provide updates on the source characteristics and throughput

since the past permit issuance (typically, twelve months). The throughput, emission factors, and control factors, stored in the Air District's permitting database, are used to estimate annual emissions at the source level for each county using the following equation:

$$\text{Base Year(s) Emissions}_{\text{source i, pollutant}} = \text{Activity Data}_{\text{source i}} \times \text{Emission Factor}_{\text{pollutant}} \times \text{Control Factor}_{\text{pollutant}} \times \text{GWP}_{\text{pollutant}}$$

$$\text{Base Year(s) Emissions}_{\text{county, pollutant}} = \sum_{i=1}^{N} \text{Emissions}_{\text{source i, pollutant}}$$

Where:

- **Base Year(s)** are any years for which source category-specific activity data are available and hence emissions can be directly derived.
- **Activity Data** are the throughput or activity (e.g., amount of fuel consumed, number of goods produced, counts of sources operated, etc.) at the source/equipment level. This data is typically provided by the facility during permit renewal.
- **Emission Factor** is a rate that expresses the mass of a specific pollutant emitted per unit of activity. For example, emission factors can be stated as tons of CO_2 per gallon of gasoline burned or pounds of N_2O per million standard cubic feet of natural gas combusted. GHG emissions are calculated by applying emission factors to activity data reported by facilities, which are verified or validated through source tests. When source-specific emission factors are unavailable (which is common), the Air District uses default factors derived from published literature such as USEPA's AP-42 or CARB's Mandatory Reporting Requirement[23] for Greenhouse Gases.
- **Control Factor** is a fractional ratio (between 0 and 1) to account for estimated reduction in emissions as a result of Air District's regulations or installation of a control device.
- **GWP** is the Global Warming Potential that measures the warming potential of different greenhouse gases by quantifying their radiative forcing, or the ability to trap heat, relative to CO_2. The current version of the GHG emissions inventory incorporates the GWPs reported in the Fifth Assessment report of the Intergovernmental Panel for Climate Change,[24] when calculated on a 100-year basis with climate-carbon feedback included.
- **N** is the number of permitted or non-permitted sources in a county.

Bottom-up Non-Permitted Source Approach

Non-permitted sources are diffuse, areawide sources (e.g., agricultural soil management) or small-scale stationary and exempt sources (e.g., cargo handling equipment) that typically fall outside of the Air District's direct permitting authority. As a result, GHG emissions from these sources are not systematically reported to the Air District but are estimated based on publicly available throughput or activity data for the BARCAP Region. The base year emissions estimates, using a bottom-up approach, are commonly derived by applying the following equation. Most of the terms in the equation below are defined above.

$$\text{Base Year(s) Emissions}_{\text{county, pollutant}} = \text{Activity Data}_{\text{Air District}} \times \text{Emission Factor}_{\text{pollutant}} \times \text{Fraction}_{\text{county}} \times \text{Fraction}_{\text{in Air District}} \times \text{Control Factor}_{\text{pollutant}} \times \text{GWP}_{\text{pollutant}}$$

Where:

- **Fraction$_{\text{county}}$** is the fraction of total regional emissions (between 0 and 1) estimated to be allocated to a particular county.
- **Fraction$_{\text{in Air District}}$** is an additional allocation (between 0 and 1) to account for the fraction of Solano and Sonoma County emissions that are within the Air District's jurisdiction.

Non-Permitted and Mobile Source Hybrid Approach

For some non-permitted source categories (e.g., vegetation and structural fires, high-GWP gases, etc.) and for most mobile sources (on-road and off-road categories except for the aviation subsector), source-by-source or equipment-level activity data or emission factors at county-scale are often incomplete or unavailable. In such cases, a hybrid (or custom) calculation approach is adopted to utilize a combination of bottom-up estimation and top-down scaling that starts off with a pre-existing bottom-up emissions inventory, developed for a region, state, or the nation. Scaling factors, based on key determinants such as population, housing units, and motor vehicle fuel sales, etc. are derived. These scaling factors are then applied to 1) proportion emissions from the larger inventory to each county in the region (top-down), or 2) adjust estimated emissions to reflect real-world scenarios. The scaling approach is explained with the formula below. A few of the terms in the equation below have been defined previously.

$$\text{Base Year(s) Emissions}_{\text{county, pollutant}} = \text{Emissions}_{\text{pre-existing, pollutant}} \times \text{Scaling Factor}_{\text{Air District}} \times \text{Control Factor}_{\text{pollutant}} \times \text{GWP}_{\text{pollutant}}$$

Where:

- **Emissions$_{\text{pre-existing, pollutant}}$** is the pre-existing source category emissions inventory developed for the region, state, or nation by USEPA or CARB.
- **Scaling Factor$_{\text{Air District}}$** is a representative fraction of the original inventory emissions (between 0 and 1) developed for the BARCAP region using activity proxies, surrogate socioeconomic indicators, pollutant ratios etc. (for example, population, motor vehicle fuel sales, electricity consumed, employment, etc.) to apportion the emissions to the BARCAP region county level or adjust the modeled county-level emissions to reflect a real-world scenario.

2.3. HISTORICAL AND FUTURE PROJECTION

Once base year emissions are determined, historical backcasting and forecasting of emissions relative to the base year are conducted at a source category level, using growth profiles as follows:

$$\text{Historical Emissions}_{\text{year, county}} = \text{Base Year(s) Emissions}_{\text{county}} \times \text{Growth Factor}_{\text{year, backcasting}}$$

$$\text{Future Emissions}_{\text{year, county}} = \text{Base Year Emissions}_{\text{county}} \times \text{Control Factor}_{\text{pollutant}} \times \text{Growth Factor}_{\text{year,forecasting}}$$

Where:

- **Base Year(s)** are the years for which activity data are available and emissions are directly derived.
- **Historical** refers to all years prior to the base year(s) where activity data are unavailable and emissions are extrapolated from the base year(s) emissions.
- **Future** refers to all years following the base year(s) for which the Air District forecasts emissions by applying growth factors.
- **Control Factor** is a ratio (between 0 and 1) to account for estimated additional future control and reduction in base year emissions, beyond effective control in the base year.
- **Growth Factor** is a fractional ratio (between 0 and 1) representing the normalized growth of emissions relative to the base year value. The growth profile is source specific and can be based on projected activity or other socio-economic indicators such as population.

It is important to note that when forecasting emissions, the additional control factor described above is applied to future years only in that scenario where an existing Air District regulation has not reached its full implementation or enforcement by the base year based on the schedule set in the rule.

2.4. QUALITY ASSURANCE PROTOCOL

The primary objectives for the BARCAP are to develop reliable inventories for each of the GHG-emitting sectors in the BARCAP region, and to identify options for reducing emissions from those sectors. As per the USEPA's CPRG guidelines, the BARCAP was required to develop and implement a quality assurance program that promotes confidence in the developed emissions inventory and all subsequent policy initiatives and regulatory programs based on the inventory estimates.

Accordingly, all quality objectives and criteria are aligned with the overall BARCAP objectives and laid out in a Quality Assurance Project Plan[25] (QAPP). The BARCAP GHG inventory is subject to a data review and quality control process that is described in the QAPP. All activities under this project will conform to the QAPP. The quality system used for this project is the joint responsibility of the Air District Project Manager (PM), Task Leaders (TLs), Technical Reviewers (TRs), and an organizationally independent Quality Assurance (QA) Manager.

A detailed quality assessment is applied to each of the six major sectors during the GHG inventory development process with a seven-step planned quality assessment and control activity (for each sector). This seven-step approach includes:

- Determining quality of existing Air District inventory for the BARCAP region
- Identifying, researching, and collecting other published data
- Characterizing the data
- Assessing data for accuracy and applicability

- Deriving emissions estimates
- Verification of quality
- Quantification of reduction measure options

The Air District followed the QAPP guidelines as required by the CPRG grant to assure quality of the data and validity of the inventory process, as reviewed and approved by an independent Quality Assurance (QA) manager.

3. EMISSIONS SUMMARIES AND TRENDS

This section provides a closer look into the GHG emission inventory, including process and subsector level apportionment, county breakdown by sector, and long-term emissions trends up to 2050.

3.1. EMISSIONS BY PROCESS

The majority of GHG emissions in the BARCAP region are attributed to fuel combustion (~80%), as summarized in Table 2. Although chemical and biological process emissions account for only 14% of the region's total GHG emissions, their contributions to industrial (27%), waste (>99%), and agriculture (89%) sectors are much higher. Fugitive leaks and evaporative losses make up the remaining emissions (7%), primarily consisting of CH_4 and high-GWP gases.

Table 2: Contribution of Level 2 general processes to the greenhouse gas emissions inventory for 2022.

Region	Emissions (as %)			
	Fuel Combustion	General Process	Evaporative & Fugitive	Other Combustion
BARCAP	79.3%	13.7%	7%	<0.1%

3.2. EMISSIONS BY SUBSECTOR

Figure 4 presents a sunburst chart that visually represents the major Level 3 subsectors within each of the Level 1 economic sectors contributing to the BARCAP GHG emissions inventory. The chart conveys the relative contribution of each subsector as a percentage of total regional GHG emissions. The inner ring displays the proportional emissions share of the six economic sectors, while the outer ring breaks down each economic sector's share into its major contributing subsectors (see Table 3 for the GHG emissions by subsector used to derive Figure 4).

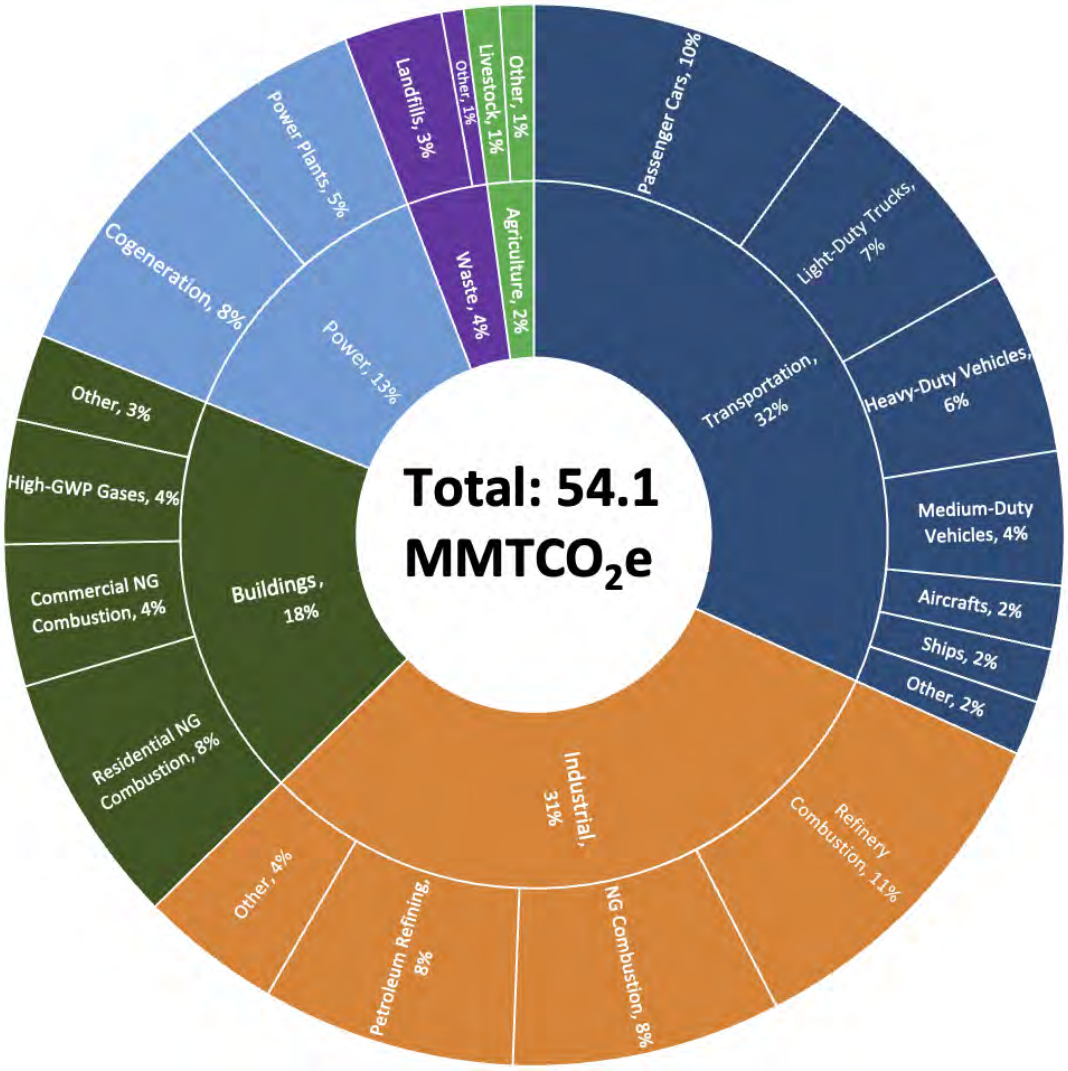


Figure 4: Level 1 (sector) and grouped Level 3 (subsector) contributions to the BARCAP regional greenhouse gas emissions inventory for 2022.

The following bullets highlight trends and changes in the current 2022 base year GHG emissions compared to the previous 2015 base year inventory:[26]

- As indicated in Figure 4 and Table 3, in year 2022, passenger vehicles (10% of total regional GHG emissions) and light-duty trucks (7%) contribute the largest share of GHG emissions to the transportation sector (31% and 22%, respectively), which is consistent with results from the 2015 GHG inventory.

- In the industrial sector, combustion of all fuels in boilers, heaters and flares at refineries (11%), non-refinery natural gas combustion (>8%), and petroleum refining process emissions (~8%) are major regional GHG sources. Refinery-related operations account for over 60% of the current industrial sector GHG emissions. In past inventories, oil refineries accounted for over 70% of GHG emissions in this sector. The transition of two refineries to process renewable feedstocks and a noted reduction in their throughput are expected to result in overall reduction of industrial sector GHG emissions in the future. The sector may see further reductions in GHG emissions from the petroleum refining subsector as gasoline consumption in the transportation sector continues to decline.

- Combustion of natural gas in the residential subsector (8%) and commercial subsector (<5%) are the major sources of GHGs in the buildings sector. Emissions in this sector are predicted to decline as regional regulations requiring the use of zero-NO_X appliances come into effect (see Emissions Trends).

- Power plants and cogeneration combined (13%) are major power sector emissions sources in the region. Electrification of buildings and transportation are expected to increase electricity demand, potentially leading to higher GHG emissions from the power sector. However, this projected increase is mitigated by the BARCAP region's growing reliance on electricity generated from renewable sources.

- About 2% of regional GHG total (or one-third of the cogeneration subsector emissions) are attributed to self-generated electricity production at petroleum refineries. As regional demand for fossil-based transportation fuels declines, crude oil throughput processed at the BARCAP region's refineries is expected to decrease as well, which would lead to a corresponding reduction in GHG emissions from this subsector within the power sector.

- Fugitive emissions from fluorinated high-GWP gases across all sectors account for 6% of the regional GHG inventory.

- Landfills constitute the largest share of GHG emissions within the waste sector and are also the largest source of CH_4 emissions, although they only account for a little more than 3% of the BARCAP GHG inventory.

Presently, the transportation sector only accounts for GHG emissions from the combustion (end-use) of fossil fuels to move people and goods (e.g., tailpipe emissions from on-road motor vehicles, fuel combustion exhaust from ships and airplanes, etc.). However, every lifecycle stage of fossil fuel extraction, processing, and use for the transportation sector generates GHG emissions. While the BARCAP region has negligible fossil fuel extraction sources, processing of fossil fuels for the transportation sector at the BARCAP region's refineries contributes significantly to the industrial sector emissions, accounting for over 60% (~10 MMTCO2e) of that sector's total GHG emissions. In addition, on-site cogeneration of electricity for use at these refineries, categorized under the power sector, adds another 1.4 $MMTCO_2e$ or 20% to that sector's total. When combined with the transportation sector emissions, the GHG emissions related to transportation that are associated with both production (extraction and processing) and consumption (combustion) of fossil fuels account for over half of the total regional GHG emissions in 2022 (53% or 28.6 $MMTCO_2e$**).**

Table 3: Sector and subsector contributions to the BARCAP region's greenhouse gas emissions inventory for 2022.

Sector	Sub-sector	Emissions ($MMTCO_2e$)	Emissions (% in sector)	Sector	Sub-sector	Emissions ($MMTCO_2e$)	Emissions (% in sector)
Transportation	Passenger Cars	5.35	31.1%	**Industrial**	Refinery Combustion – All Fuels - Boilers, Heaters and Flares	5.78	34.5%
	Light-Duty Trucks	3.79	22.1%		Non-Refinery Combustion - Natural Gas - Boilers, Heaters and Furnaces	4.44	26.5%
	Heavy-Duty Vehicles	3.02	17.6%		Petroleum Refining	4.18	25.0%
	Medium-Duty Vehicles	2.19	12.8%		Off-Road Equipment	0.68	4.1%
	Aircraft	1.05	6.1%		High-GWP Gases	0.4	2.4%
	Ships	0.89	5.2%		Other (Non-Refinery Combustion - Natural Gas - Boilers, Heaters and Furnaces, Refinery and Non-Refinery Combustion – All Fuels - Turbines & Engines etc.)	1.25	7.5%
	Other (High-GWP Gases, Buses, etc.)	0.89	5.2%		**Total**	**16.73**	
	Total	**17.18**		**Buildings**	Residential Combustion - Natural Gas	4.17	41.8%
Power	Cogeneration	4.16	58.8%		Commercial Combustion – Natural Gas	2.33	23.4%
	Power Plants	1.81	25.6%		High-GWP Gases	2.07	20.8%
	Consumption	1.11	15.7%		Other (Fuel Distribution, Natural Gas Leakage etc.)	1.4	14.0%
	Total	**7.08**			**Total**	**9.97**	
Waste	Landfills	1.61	80.9%	**Agriculture**	Livestock	0.58	50.9%
	Domestic Wastewater Treatment	0.24	12.1%		Agricultural Soil Management	0.44	38.6%
	Other (Composting, Industrial Wastewater Treatment, etc.)	0.14	7.0%		Other (Agricultural Equipment, etc.)	0.12	10.5%
	Total	**1.99**			**Total**	**1.14**	

3.3. EMISSIONS BY COUNTY

Table 4 provides a detailed breakdown of the distribution of GHG emissions by county across the BARCAP region.

- Most of the BARCAP region's refineries (industrial sector) and power plants (power sector) are located in Contra Costa County. The demand for natural gas in this county is therefore relatively high (Table 1 in Section 1 – Inventory Scope and Organization) and the county's GHG emissions consequently account for 45% of the BARCAP region's total GHG emissions. The concentration of heavy industry and dependence on natural gas also make Contra Costa County one of the few counties in the BARCAP region where the transportation sector is not the primary source of GHG emissions at the county level.

- Similarly, Solano County's largest source of GHG emissions is the industrial sector due in part to the presence of refinery operations. Emissions from the transportation sector are less than half those from the Industrial sector.

- Alameda, Marin, Napa, San Mateo and Sonoma counties, which have less heavy industry, follow a traditional trend with most of the GHG emissions coming from the transportation (vehicle fuel-use) and buildings (space- and water-heating) sectors. The GHG emissions of these two sectors in these counties are proportionally aligned with vehicle registration counts and the county population (shown in Table 1), respectively.

- The buildings sector emissions are the largest GHG source in San Francisco County exceeding the transportation sector. This is primarily due to the prevalence of commercial real estate and office spaces in the county, which drives up natural gas combustion-related GHG emissions from space- and water- heating, while the high urban density and a robust public transportation network drive down the demand and need for private vehicles in the county.

Table 4: Sector contributions to the BARCAP regional greenhouse gas emissions inventory for each county for 2022.

County	Sector	Emissions ($MMTCO_2e$)	Emissions (% in county)	County	Sector	Emissions ($MMTCO_2e$)	Emissions (% in county)
Alameda	Agriculture	0.12	1.2%	**San Francisco**	Agriculture	0.01	0.2%
	Commercial + Residential	2.48	24.2%		Commercial + Residential	2.03	49.3%
	Electricity Generation	0.69	6.7%		Electricity Generation	0.24	5.8%
	Industrial	0.88	8.6%		Industrial	0.2	4.9%
	Transportation	5.52	53.9%		Transportation	1.61	39.1%
	Waste Management	0.54	5.3%		Waste Management	0.04	1.0%
	Total	**10.24**			**Total**	**4.12**	
Contra Costa	Agriculture	0.22	0.9%	**San Mateo**	Agriculture	0.05	1.0%
	Commercial + Residential	1.91	8.1%		Commercial + Residential	1.59	30.9%
	Electricity Generation	5.48	23.4%		Electricity Generation	0.17	3.3%
	Industrial	12.21	52.0%		Industrial	0.24	4.7%
	Transportation	3.29	14.0%		Transportation	2.73	53.0%
	Waste Management	0.36	1.5%		Waste Management	0.49	9.5%
	Total	**23.46**			**Total**	**5.15**	
Marin	Agriculture	0.17	8.1%	**Solano** (Bay Area Air District portion only)	Agriculture	0.15	2.9%
	Commercial + Residential	0.6	28.7%		Commercial + Residential	0.45	8.6%
	Electricity Generation	0.05	2.4%		Electricity Generation	0.33	6.3%
	Industrial	0.04	1.9%		Industrial	2.89	55.0%
	Transportation	1.08	51.7%		Transportation	1.26	24.0%
	Waste Management	0.14	6.7%		Waste Management	0.18	3.4%
	Total	**2.09**			**Total**	**5.25**	
Napa	Agriculture	0.15	13.4%	**Sonoma** (Bay Area Air District portion only)	Agriculture	0.27	10.5%
	Commercial + Residential	0.27	24.1%		Commercial + Residential	0.64	25.0%
	Electricity Generation	0.04	3.6%		Electricity Generation	0.08	3.1%
	Industrial	0.11	9.8%		Industrial	0.17	6.6%
	Transportation	0.49	43.8%		Transportation	1.2	46.9%
	Waste Management	0.06	5.4%		Waste Management	0.18	7.0%
	Total	**1.12**			**Total**	**2.56**	

3.4. EMISSIONS BY POLLUTANT

Figure 5 provides a breakdown of the GHG emissions by pollutant in million metric tons of CO_2 equivalents for the six economic sectors.

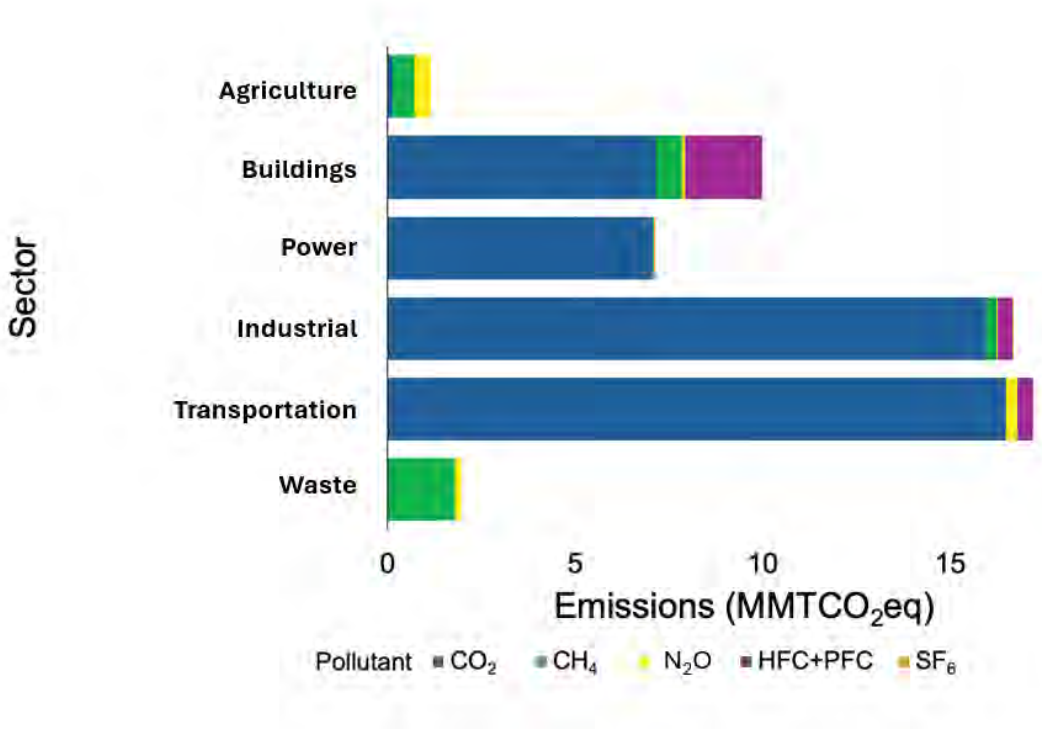


Figure 5: Pollutant contributions by sector to the BARCAP region's greenhouse gas emissions inventory for 2022.

- CO_2 is the predominant GHG pollutant representing 86% of the GHG emissions in the BARCAP region, mostly from combustion of fuels from goods movement and passenger cars in the transportation sector, space heating in the buildings sector, electricity production in the power sector, and petroleum refining in the industrial sector.

- About half of the BARCAP region's CH_4 emissions (>6% of the regional GHG inventory) are emitted from the landfill subsector in the waste sector; however, recent measurement studies have indicated that the real-world emissions may be higher than what is estimated using a bottom-up inventory approach (see Section 4 – Uncertainties and Future Improvements).

- About 45% of all N_2O emissions in the BARCAP region can be attributed to the agriculture sector, mostly due to fertilizer use.

- Nearly 6% of regional GHG emissions are attributed to leakages and fugitive losses of fluorinated high-GWP gases (including HFCs, PFCs, CFCs, HCFCs, and SF_6), a majority of

which occur in the building sector. With the adoption of SB1206 in 2022, HFCs will be phased out in California by 2033, to be replaced with lower-GWP and/or non-GHG options.[27] The regulation will not impact existing appliances that use high-GWP gases as refrigerants, solvents, or aerosols until they are replaced or re-filled (SB1206 prohibits the sale of bulk virgin HFCs while allowing the sale of reclaimed HFCs).

3.5. EMISSIONS TRENDS

Figure 6 presents the change in GHG emissions for each sector over time.

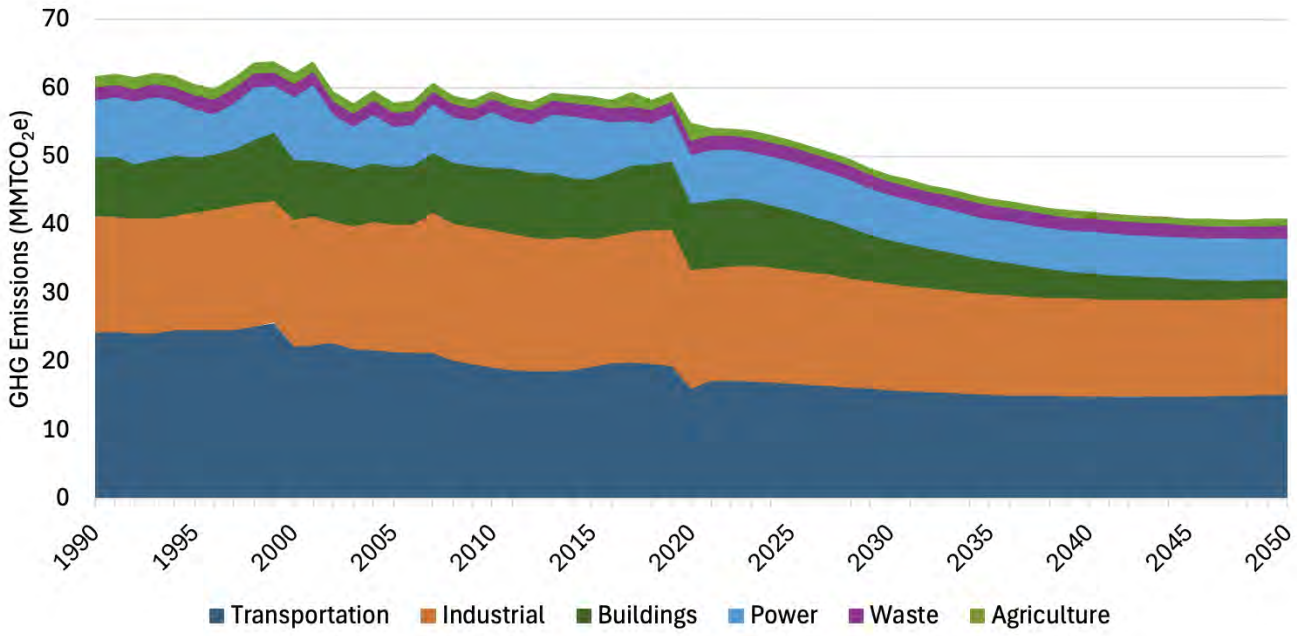


Figure 6: Changes in GHG emissions (in $MMTCO_2e$) by sector over time

Historical Trends

- The BARCAP region's total GHG emissions have dropped from 62.2 $MMTCO_2e$ in 2000 to 54.1 $MMTCO_2e$ in 2022, representing a 13% change, primarily resulting from reduction in emissions in the transportation (-23%), industrial (-9%), and power (-23%) sectors.

- The decline in GHG emissions from the power sector is largely driven by the growing proliferation of renewable energy, which has reduced SFBA's reliance on natural gas for power production. This trend is further strengthened by an increase in residents opting to purchase cleaner and renewable energy through public Community Choice Aggregators.[28]

- Over the past two decades, declining natural gas use in electricity generation has been offset by the increased demand for natural gas use for space- and water- heating in the buildings sector, driven by the BARCAP region's tech-driven economic growth and rising population.

Forecasts

- Projected annual GHG emissions by 2050 are expected to decline in the BARCAP region across major sectors including transportation (-12%), industrial (-16%), and power (-15%), relative to year 2022. This anticipated trend reflects the impact from California's aggressive reduction of fossil fuel reliance and promotion of zero-emission transportation,[29] the state's cap and trade system that disincentivizes and puts a cap on 'allowed' industrial sector GHG emissions,[30] and the continuing decarbonization of the BARCAP region's electric power generation mix as evident from California Energy Commission's retail electricity annual power content label data.[31]

- In comparison, annual GHG emissions of the buildings sector is currently expected to decline by 73% by 2050. This is primarily due to the Air District's Regulation 9 Rule 4 and Regulation 9 Rule 6,[32] which requires new water heaters and furnaces to meet a zero-NO_x emissions standard starting with water heaters in 2027. Currently, only water and space heaters operating on electricity can meet this standard, and thus there are substantial projected GHG co-benefits. Those co-benefits may not be fully realized if alternative natural gas-fired appliances which can meet the zero-NO_X emissions standard are used instead.

- It is expected that high-GWP emissions will decline significantly as state regulations like SB1206 expedite the phase out of HFCs in California by 2033, and result in eventual replacement with lower-GWP and/or non-GHG options.[33]

4. UNCERTAINTIES AND FUTURE IMPROVEMENTS

The BARCAP GHG inventory reflects methodological advancements over the previous base year 2015 inventory.[34] Nonetheless, limitations remain in the latest emissions estimation—ranging from incomplete datasets and uncertain assumptions to high variability in some source categories. Understanding these limitations is essential for accurate interpretation and proper application of emissions data. Below are several illustrative, though not exhaustive, examples of limitations and considerations:

- **Uncertainty in Estimations:** All emissions inventories involve qualitative and quantitative uncertainties. Source categories estimated using top-down scaling methods from statewide or national inventories often have higher uncertainties due to coarse spatial and temporal resolution.

- **Variability in Emission Factors**: Emission factors, particularly for fugitive and leak-related sources, can vary widely due to differences in operational practices and equipment performance. These emission factors are often derived from limited or outdated reference data and research, which may not reflect current field conditions. As a result, emission estimates based on these factors may differ significantly from source test results and may also diverge from estimates generated through other measurement-based methods.

- **Data Lag Between Base Year and Release Year**: The estimation of emissions inventory is always evolving, because there is an inherent lag between the base year chosen for inventory development and its release year, following complete quality assurance and review process. The base year is usually selected to be the year for which the most recent and complete datasets are readily available during inventory development. However, compiling the inventory involves time-consuming processes, including updating methodologies, aggregating and validating data, conducting quality assurance, and preparing supporting documentation. For example, the current inventory estimates for the transportation sector are based on CARB's EMFAC2021 model. CARB has released the updated EMFAC2025 model (May 2025), which incorporates revised vehicle activity data, updated emission factors, and the effects of newly adopted on-road mobile source regulations for the 2021–2024 period. These updates are not reflected in the current inventory yet but will be incorporated in future inventory updates.

- **Forecasting assumptions**: Emission forecasts assume business-as-usual trends that consider routine operations only and regulations currently adopted and in-force. These projections do not account for unexpected emission incidents, socioeconomic disruptions (e.g., pandemics, economic recessions), or future policy statutory or regulatory changes. This is also a notable difference from the approach taken in the previous GHG emissions inventories,[35] which anchored on a scenario that included some "likely" policies.

- **Uncertainties in CH_4 emissions inventories**: Measurement studies performed within the Bay Area and in California[36] indicate that methane emissions from waste management processes (including landfills, wastewater treatment and composting) and from refineries are likely to be

significantly underestimated in the bottom-up inventories. Methodological improvements are needed to more accurately quantify emissions from these subsectors in future inventories.

- **Classification of biogenic CO_2**: In line with CARB protocols,[37] CO_2 emissions from biogenic sources such as ethanol combustion, landfill biogas, or organic decay from composting and landfills are excluded from total anthropogenic GHG emissions. These emissions are estimated and reported as biogenic CO_2; they are considered part of the natural carbon cycle and therefore excluded from the inventory totals. However, CH_4 emissions from these sources are considered anthropogenic and are included in the inventory, as these emissions are assumed to not have occurred if the carbon from the feedstock (or source) had decomposed naturally. Similarly, wildfire CO_2 emissions are also excluded, even if their higher frequency and intensity in the state is indirectly linked to anthropogenic climate change.

- **Scope of electricity generation emissions**: The regional inventory includes direct emissions from electricity generation facilities located within the BARCAP region, regardless of where the electricity is consumed. These emissions fall under the regulatory jurisdiction of the Air District. In contrast, indirect emissions from electricity imported into the region (generated outside the BARCAP region and whether fossil- or non-fossil-based) are excluded from this inventory to maintain a production-based accounting framework aligned with the Air District's regulatory jurisdiction.

- **Scope of landfill subsector emissions**: Similar to the issue of import and export of electricity, it is currently assumed that all waste produced in the BARCAP region is processed and buried at landfills that are located within the Air District's jurisdiction. If a significant amount of the regional waste is transported to landfills outside of BARCAP region boundaries, the landfill GHG emissions total could be quite different from that calculated on a per-capita consumption basis.

- **Aircraft subsector emissions methodology**: The current inventory for the aviation subsector has a base year of 2023 (due to greater representativeness of data following the COVID pandemic) and uses Air District methodologies. However, future inventory updates will align with a standardized statewide model[38] that is under development, improving consistency with statewide planning efforts and potential aviation-related regulatory initiatives.

APPENDIX A1 – SOURCE COMPOSITION OF SECTORS

For the San Francisco Bay Area GHG emissions inventory, six major sectors have been identified based on an economic classification. These sectors include:

- Transportation,
- Industrial,
- Buildings,
- Power,
- Waste, and
- Agriculture.

The sectors are further divided into sub-sectors (see Appendix A2). The definition and source composition of the economic sectors generally align with the USEPA's classification of GHG emissions sources[39] with some exceptions and deviations to account for differences at the regional level. Definitions for each sector are provided below.

Transportation

The emissions in this sector are comprised of direct and indirect combustion, non-combustion, and process emissions, occurring from complex machines including cars, trucks, aircraft, railroads, ships, off-road equipment etc., whose primary objective is to transport people and goods from one place to another. The emission sources in this sector include, but are not limited to, the following:

- Emission from passenger cars, light duty vehicles, medium duty vehicles, and heavy-duty vehicles;
- Emissions from aircraft, marine vessels, and locomotives;
- On-road and off-road emissions sources which act as a residence / home are also included in the transportation sector (e.g., motorhomes, houseboats, RVs);
- Emissions from the use of lubricants to perform maintenance on on-road and off-road mobile equipment; and
- Emissions of high-GWP gases resulting from the use of air conditioners in vehicles and refrigerated transport.

Emission sources not included in this sector are:

- On-road and off-road emissions sources with wheels and/or ability to move if the primary objective is to provide a service, e.g., lawn mowing and garden equipment (included in buildings sector) or tractors (included in agriculture sector);
- Emissions from transportation of natural gas via pipelines and water through water distribution network (this is considered a service to the general population for commercial, residential, and industrial purposes, and both combustion and non-combustion emissions are excluded from this sector),

- Emissions from off-road equipment that pertains to agricultural activities, and from construction, mining, and industrial activities (included in agriculture and industrial sectors, respectively); and
- Fugitive emissions from all kinds of fueling activities of primary sources included in the transportation sector as well as combustion emissions from support equipment for the fueling (and other support) infrastructure. These emissions are accounted for under the buildings sector (e.g., gasoline dispensing facilities, aircraft ground support equipment, etc.).

Industrial

This sector consists of emissions related to the production of goods and raw materials. This sector includes:

- Direct GHG process emissions that originate at the facility, primarily from combustion processes;
- Emissions resulting from chemical reactions in metal, cement, and mineral production; and
- Leaks from industrial processes, equipment, natural gas, and petroleum systems, including that of high-GWP gases.

Exceptions not included in this sector are:

- Indirect emissions that occur off-site but are associated with the facility's use of electricity (these are included in the power sector); and
- Emissions from food processing of agricultural products, for example, ethanol emissions from wineries and emissions from food processing industries, etc. (included in the agriculture sector).

Buildings

This sector includes the following direct emissions from homes, commercial businesses, office spaces, places of business, worship, and congregation, entertainment venues, etc. (excluding those classified as agricultural and industrial activities):

- Direct emissions resulting from fossil fuel combustion for heating, cooling, and cooking needs, for transport and management of waste and wastewater, and leaks of refrigerants from equipment;
- Direct emissions from all maintenance and service equipment, e.g., lawn mowing equipment, leaf blowers, floor cleaning and polishing, etc.; and
- Direct emissions from use of personal products and consumer goods within commercial and residential facilities.

Emissions sources that are not reported in this sector include:

- Indirect emissions produced by burning fossil fuel at a power plant to generate electricity (that occurs offsite) which is meant for consumption in residential and commercial facilities, such as lighting and for appliances (these emissions are included in the power sector);
- Landfill waste emissions (like CH_4) that are generated from organic waste that originated at commercial and residential facilities (these emissions are included in the waste sector);
- On-site wastewater treatment plant emissions of CH_4 and N_2O, or emissions from sewer network (these emissions are included in the waste sector);
- Energy required to produce and transport clean water consumed at commercial and residential facilities (these emissions are included in the power sector);
- Anaerobic digestion and composting emissions of CH_4 at biogas facilities that supply energy/product to commercial and residential buildings and venues (these emissions are included in the waste sector);
- Emissions/sinks from production of construction materials, for example, upstream emissions from production of cement, emissions and sinks from land use changes, etc. (these emissions are included in the industrial sector); and
- Direct emissions from onsite energy combustion and electricity production for energy-intensive warehouses and factories are typically included in the industrial sector.

Power

This sector includes emissions from activities and processes involved in the generation, transmission, and distribution of electricity within the BARCAP region. These emissions are direct and involve combustion of fossil fuels, such as coal, oil, and natural gas, etc., in a centralized power generation plant to produce electricity, or fugitive/leak-related emissions. This definition is independent of whether the produced electricity is consumed within the BARCAP region or imported. Other sources include:

- Emissions from cogeneration facilities producing both heat and power are included in this sector, even if this heat and power is being consumed within the industrial sector;
- Emissions of sulfur hexafluoride (SF_6), which is an insulation chemical used in electricity transmission and distribution equipment; and
- Onsite emissions from non-fossil fuel source generation facilities, including nuclear, and renewable energy sources like hydroelectricity, biomass, and wind.

A source that is not included in this sector is:

- Indirect emissions from the production of electricity imported from outside of the BARCAP region and used in the region. These emissions are not accounted for in the BARCAP GHG inventory.

Waste

This sector includes direct and fugitive emissions from centralized waste management activities that focus on solid waste, wastewater, industrial, and non-hazardous waste. These activities usually occur at municipal solid waste (MSW) landfills, industrial waste landfills, industrial wastewater treatment, publicly owned wastewater treatment plants (POTWs), composting operations, anaerobic digesters, biogas facilities, and can also include processes like manure spreading / application, waste incineration, etc. Other direct emissions included are as follows:

- Direct emissions from combustion activities occurring at waste management facilities to provide heat and power;
- Fugitive emissions from the urban collection network of sewers, waste pipes, manholes, etc.; and
- Emissions from standalone septic systems.

Sources not included in this sector are:

- Waste management emissions occurring outside of the BARCAP region from management of waste originating within the region;
- Direct emissions from on-site waste treatment at commercial and residential facilities (included in the buildings sector);
- Direct emissions from manure management at animal and dairy farms (included in the agriculture sector); and
- CO_2 emissions from the combustion of biomass, which is considered biogenic.

Agriculture

This sector includes direct emissions from all agricultural and farming activities related to crop and livestock production including land and soil management activities, such as application of synthetic and organic fertilizers, the growth of nitrogen-fixing crops, the drainage of organic soils, livestock enteric fermentation, manure management and storage, soil liming, burning of crop residues, and rice cultivation. All on-site combustion-related activities supplying energy to agricultural equipment (like diesel generators and pumps) and for farm-related activities are included. All emissions sources with wheels and/or ability to move are included if the primary objective is to provide a service to the agricultural industry (e.g., airplane fertilizer application, mechanical cotton picker, etc.). Also included in this sector are wildfires over natural lands and forests.

Organization of sources of high GWP fluorinated gases

The group of emission sources termed fluorinated gases or high-GWP compounds are emitted almost entirely from human-related activities. Their primary sources include:

1. Use of substitutes for ozone-depleting substances (referred to as ODSS compounds) - Hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) are ODSS that are considered

replacements for chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) because they do not deplete the stratospheric ozone layer. ODSS are high-GWP gases and contribute to the greenhouse gas effect (CFCs and HCFCs are also high-GWP gases). Example applications include refrigerants, aerosol propellants, foam blowing agents, solvents, and fire retardants.

2. Industrial processes such as aluminum and semiconductor manufacturing - PFCs are produced as a byproduct of aluminum production and are used in the manufacturing of semiconductors. Sulfur hexafluoride (SF_6) is used in magnesium processing and semiconductor manufacturing. Nitrogen trifluoride (NF_3) is used in semiconductor manufacturing. HFC-23 is produced as a byproduct of HCFC-22 production and is used in semiconductor manufacturing.

3. Transmission and distribution of electricity - SF_6 is used as an insulating gas in electrical transmission equipment, including circuit breakers.

The GHG emissions from this group of sources and source categories are not considered as a separate sector, as has been done in the past in the Bay Area region's inventory and in the current statewide California GHG inventory. This is because the prevailing logic for sector-level classification of GHG emissions sources is an economic activity driven classification, rather than a chemical family / pollutant-type based classification. Thus, all source categories associated with this group of emissions are assigned to different sectors based on the following logic:

- ODSS are assigned (under high-GWP gas subsectors) to the buildings, transportation, and industrial sectors based on category hierarchy and end-use information.
- Emissions of PFCs, NF_3, SF_6 and any other F-gas that is used for product manufacturing or metal production are assigned to the industrial sector.

Emissions from SF_6 from electrical transmission equipment are assigned to the power sector.

APPENDIX A2 - INVENTORY SOURCE CATEGORIZATION

Level 1 – Sector	Level 2 – General Process	Level 3 – Subsector
Transportation	Fuel Combustion	Aircraft
Transportation	Fuel Combustion	Buses
Transportation	Fuel Combustion	Heavy-Duty Vehicles
Transportation	Fuel Combustion	Light-Duty Trucks
Transportation	Fuel Combustion	Locomotives
Transportation	Fuel Combustion	Medium-Duty Vehicles
Transportation	Fuel Combustion	Motorhomes
Transportation	Fuel Combustion	Motorcycles
Transportation	Fuel Combustion	Passenger Cars
Transportation	Fuel Combustion	Ships
Transportation	Fuel Combustion	Transportation Refrigeration Units
Transportation	Fugitive & Evaporative	Refrigeration, Air Conditioning, Aerosols
Transportation	Other Combustion	Vehicle Fires
Buildings	Fuel Combustion	Airport Ground Support Equipment
Buildings	Fuel Combustion	Commercial Combustion – Natural Gas
Buildings	Fuel Combustion	Lawn and Garden Equipment
Buildings	Fuel Combustion	Light Commercial Equipment
Buildings	Fuel Combustion	Off-Road Recreational Vehicles
Buildings	Fuel Combustion	Residential Combustion – Liquid Fuel
Buildings	Fuel Combustion	Residential Combustion – Natural Gas
Buildings	Fuel Combustion	Residential Combustion – Wood Burning
Buildings	Fugitive & Evaporative	Fuels Distribution
Buildings	Fugitive & Evaporative	Natural Gas Leakage
Buildings	Fugitive & Evaporative	Refrigeration, Air Conditioning, Aerosols, Foam, Fire Protection
Buildings	Process	Commercial Cooking
Industrial	Fuel Combustion	Non-Refinery Combustion – Natural Gas – Boilers, Heaters & Furnaces

Industrial	Fuel Combustion	Non-Refinery Combustion – Non-Natural Gas – Boilers, Heaters & Furnaces
Industrial	Fuel Combustion	Off-Road Equipment
Industrial	Fuel Combustion	Refinery & Non-Refinery Combustion – All Fuels – Turbines & Engines
Industrial	Fuel Combustion	Refinery Combustion – All Fuels – Boilers, Heaters & Flares
Industrial	Fugitive & Evaporative	Metal Recycling & Shredding Operation
Industrial	Fugitive & Evaporative	Natural Gas Leakage
Industrial	Fugitive & Evaporative	Refrigeration, Air Conditioning, Aerosols, Foam, Fire Protection
Industrial	Fugitive & Evaporative	Semiconductor Manufacture
Industrial	Other Combustion	Structural Fires
Industrial	Process	Manufacturing
Industrial	Process	Petroleum Refining
Power	Fuel Combustion	Cogeneration
Power	Fuel Combustion	Power Plants
Power	Fugitive & Evaporative	Transmission & Distribution
Waste	Fuel Combustion	Landfills
Waste	Other Combustion	Incineration
Waste	Process	Ancillary Processes
Waste	Process	Biosolids Land Application
Waste	Process	Composting
Waste	Process	Domestic Wastewater Treatment
Waste	Process	Industrial Wastewater Treatment
Waste	Process	Landfills
Agriculture	Fuel Combustion	Agricultural Equipment
Agriculture	Other Combustion	Agricultural Burns
Agriculture	Other Combustion	Wildfires
Agriculture	Process	Food Processing
Agriculture	Process	Liming
Agriculture	Process	Livestock
Agriculture	Process	Managed Soils

APPENDIX A3 - REFERENCE DATASETS

Listed below is a list of some major data models, repositories, forecasts, and inventories that have been used to derive and generate emissions estimates for the BARCAP GHG inventory. This list is not exhaustive and represents the most commonly referenced and utilized datasets.

- Association of Bay Area Governments – Plan Bay Area (ABAG, 2021; for regional population, employment and other socio-economic data)
- California Air Resources Board (CARB) GHG Emissions Inventory (CARB, 2024; for statewide GHG emissions data from equivalent emission source categories)
- CARB California Emissions Projection Analysis Model database (CEPAM, 2024; for emissions data on criteria air pollutants from Air District emission source categories)
- CARB 2022 Scoping Plan (CARB, 2022; for forecast and growth profiles)
- CARB EMFAC Web Platform (EMFAC, 2021; for data on On-Road Mobile Sources)
- CARB OFFROAD Database (OFFROAD, 2021; for data on Off-Road Mobile Sources including Rail Transport and Marine Vessels)
- California Department of Finance (CADF, 2024; for data on population and employment statistics)
- California Energy Commission (CEC, 2023b; for residential and non-residential fuel and energy consumption data)
- California Solid Waste Information System (CALSWIS, 2024; for activity data on Waste Management sector)
- Intergovernmental Panel for Climate Change (IPCC, 2014; for Global Warming Potentials)
- United States Department of Agriculture National Agricultural Statistics Service (USDA, 2024; for activity data on Agriculture sector)
- United States Environment Protection Agency– AP-42: Compilation of Air Emissions Factors (USEPA, 2024)

[1] The California Air Resources Board (CARB) maintains the responsibility to prepare, adopt, and update the statewide GHG emissions inventory which starts from year 2000 (https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/ghg_inventory_tsd_00-14.pdf). In 2006, Assembly Bill 32 required that the CARB determine the statewide GHG emissions level in 1990 and approve a statewide GHG emissions limit for year 2020. CARB does not publish a GHG emissions inventory for the years 1990 to 1999. Although, the Air District's GHG emissions inventory extends from year 1990 to 2050, the inventory estimates for years 1990 to 1999 are generally those that have been extrapolated from year 2000 emissions data and have a higher degree of uncertainty. Thus, any discussion on and analysis of inventory trends in this report focuses on emissions data from year 2000 onwards, which also ensures consistency with the statewide GHG emissions inventory. (https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf)

[2] "Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II, and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change" *Intergovernmental Panel for Climate Change,* Geneva, Switzerland, 151 pp. Available here: https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf

[3] The Montreal Protocol on Substances that deplete the Ozone layer, Office of Environmental Quality, United States Department of State. https://www.state.gov/the-montreal-protocol-on-substances-that-deplete-the-ozone-layer

[4] The sector naming convention for the BARCAP GHG inventory differ slightly from those used in the Air District's regional GHG inventory that covers the Air Districts full 9-county jurisdiction, although emission sources remain the same under the

corresponding sector names. The BARCAP inventory sector names buildings, power, and waste correspond with the sector names commercial + residential, electricity generation, and waste management in the Air District's regional GHG inventory, respectively. All other sector names are the same in both inventories. The slight difference in naming convention is due to the two inventories serving different purposes, with the BARCAP inventory aligning with the sector focus areas for BARCAP measures.

[5] "California's 2000-2022 GHG Inventory Data," *California Air Resources Board*, 2024. https://ww2.arb.ca.gov/applications/california-ghg-inventory-documentation

[6] "California's 2000-2022 GHG Inventory Data," *California Air Resources Board*.

[7] "Inventory of U.S. Greenhouse Gas Emissions and Sinks," *United States Environmental Protection Agency*, 2025. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

[8] Available at https://www.baaqmd.gov/en/about-air-quality/emission-inventory/climate-forcing-pollutants

[9] "Inventory of U.S. Greenhouse Gas Emissions and Sinks," *United States Environmental Protection Agency*.

[10] "California's 2000-2022 GHG Inventory Data," *California Air Resources Board*: "Inventory of U.S. Greenhouse Gas Emissions and Sinks," *United States Environmental Protection Agency*.

[11] Regulation 9 Rule 4: Nitrogen Oxides from Natural Gas-Fired Furnaces, *Bay Area Air Quality Management District*. https://www.baaqmd.gov/rules-and-compliance/rules/reg-9-rule-4-nitrogen-oxides-from-fan-type-residential-central-furnaces; Regulation 9 Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters, *Bay Area Air Quality Management District*. https://www.baaqmd.gov/rules-and-compliance/rules/reg-9-rule-6-nitrogen-oxides-emissions-from-natural-gasfired-water-heaters

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[14] "California's 2000-2022 GHG Inventory Data," *California Air Resources Board*.

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[17] "California's 2000-2022 GHG Inventory Data," *California Air Resources Board*.

[18] California Emissions Projection Analysis Model 2024, CEPAM2019v1.04, *California Air Resources Board*, 2024. https://ww2.arb.ca.gov/applications/cepam2019v1-04-standard-emission-tool. Accessed 2024.

[19] "CARB 2022 Scoping Plan for Achieving Carbon Neutrality," *California Air Resources Board*, December 2022, https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf.

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[29] "CARB 2022 Scoping Plan for Achieving Carbon Neutrality," *California Air Resources Board.*

[30] "Cap and Trade Program," *California Air Resources Board,* 2018. https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/about

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[37] California's 2000-2014 GHG Inventory - Technical Support Document, *California Air Resources Board*, 2016. https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/ghg_inventory_tsd_00-14.pdf

[38] California Aircraft Emissions Inventory Draft Technical Documentation for Public Comment, *California Air Resources Board,* 2024. https://ww2.arb.ca.gov/sites/default/files/2024-10/CAI2024%20-%20Main%20Document_Final1021_ada.pdf

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Appendix B

2022 Natural Working Lands Inventory

March 2026

Bay Area Regional Climate Action Plan



September 2025

2022 Natural Working Lands Inventory Memorandum

Submitted to:

Bay Area Air District,
Planning & Climate Protection
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Glossary of Acronyms and Abbreviations

BARCAP: Bay Area Regional Climate Action Plan

CARB: California Air Resources Board

C: Carbon, as in MT C/ha

CO_2: Carbon Dioxide

CO_2e: Carbon Dioxide Equivalent

CH_4: Methane

EVC: Existing Vegetation Cover

EVH: Existing Vegetation Height

EVT: Existing Vegetation Type

GHG: Greenhouse Gas

Ha: or ha. Hectare; 10,000 square meters

IPCC: Intergovernmental Panel on Climate Change

KSSL: Kellogg Soil Survey Laboratory

MT: Metric Ton

MMT: Million Metric Ton; 1,000,000 MT

N_2O: Nitrous Oxide

NLCD: National Land-Cover Database

NWL: Natural & Working Lands

NSSC: National Soil Survey Center

NRCS: Natural Resources Conservation Service

ROI: Region of Interest

TSD: Technical Support Document

Definitions

Air District Planning Area: The planning area covered in this analysis, which corresponds to the land area that falls under the regulatory jurisdiction of the Bay Area Air District (the Air District). The planning area encompasses the following counties in their entirety: Alameda, Contra Costa, Marin, Napa, San Francisco, and San Mateo. Additionally, the planning area includes portions of Southwestern Solano and Southern Sonoma counties. Note that the Air District's jurisdictional area does cover Santa Clara, which is not covered in this analysis.

BARCAP: An acronym for the Bay Area Regional Climate Action Plan, which is an initiative aimed at reducing greenhouse gas (GHG) emissions and addressing climate change in the Bay Area. This plan is being developed by the Bay Area Air District with funding from the U.S. Environmental Protection Agency's Climate Pollution Reduction Grant program.

BARCAP—Region: The region of interest for this analysis, the counties and partial counties that make up the Bay Area Regional Climate Action Planning (BARCAP) initiative; as opposed to all Bay Area counties. For this purpose of this analysis, this subset of counties does not include any portion of Santa Clara County, which is otherwise a part of the Air District's jurisdiction, but is not included under BARCAP as Santa Clara and San Benito County are writing a separate federally funded climate action plan.

Biomass: The total mass of organic material in a given area or system at a given time. This includes both above- and below-ground live biomass (e.g. roots, trucks, and branches) as well as dead (e.g. litter and dead wood).

Biomass Carbon Stock: The amount of carbon stored in biomass. In this analysis, Biomass Carbon Stock is represented in units of MT carbon per hectare.

California Air Resources Board (CARB): CARB is responsible for safeguarding the public from the adverse impacts of air pollution and creating initiatives to combat climate change. CARB's mission is to enhance and preserve public health, welfare, and environmental resources by efficiently reducing air pollutants, while also taking economic impacts into account. As the primary agency for climate change initiatives, CARB supervises all air pollution control activities in California to achieve and uphold air quality standards that protect health.

Total Carbon Stock: Carbon stock refers to the amount of carbon stored in a given area or system at a given time. This includes carbon stored in living biomass (ex. plants, animals), dead biomass (ex. litter, dead wood), and soil. In this analysis, Total Carbon Stock was calculated by summing Biomass Carbon Stock and Soil Carbon Stock and is represented in units of MT carbon per hectare.

Carbon Density: The carbon stock per unit area or weight.

Climate Smart Land Management: Managing lands to deliver climate benefits. Specific actions or practices may be called climate smart practices, and in the case of agricultural practices may be referred to as climate smart agriculture.

Greenhouse Gas (GHG): Gases that trap heat in the atmosphere (e.g., carbon dioxide, methane, nitrous oxide, and ozone).

gSSURGO: A database of soil data produced and distributed by USDA NRCS in partnership with the National Cooperative Soil Survey (NCSS). The acronym stands for Gridded Soil Survey Geographic Database and is a geodatabase variant of the traditional SSURGO product. gSSURGO is sometimes referred to as SSURGO, as gSSURGO is derived from SSURGO and the data can often be used interchangeably.

Intergovernmental Panel on Climate Change (IPCC): IPCC was established in 1988 by the World Meteorological Organization and the United Nations Environmental Programme. It is a coalition of governments from UN or WMO member states, tasked with delivering regular evaluations of the scientific foundations of climate change, its effects, future risks, and strategies for adaptation and mitigation. Hundreds of specialists examine thousands of research studies to compile assessment reports, which provide thorough summaries of the current understanding of climate change.

Kellogg Soil Survey Laboratory (KSSL): Part of the Natural Resources Conservation Service and is the primary source for soil analytical data for the National Cooperative Soil Survey (NCSS). KSSL conducts comprehensive soil analyses to support soil classification and conservation efforts. The laboratory maintains a vast collection of soil samples and provides critical data for soil health, wetlands, and ecological site conservation.

LANDFIRE: The Landscape Fire and Resource Management Planning Tools is a collaborative program focused on mapping vegetation, fire, and fuel characteristics. Sponsored by the United States Department of the Interior and the United States Department of Agriculture, Forest Service, LANDFIRE generates a detailed, uniform, and scientifically reliable collection of geo-spatial data layers covering the entire United States.

National Land-cover Database (NLCD): A comprehensive program that provides nationwide data on land cover and land cover changes. Managed by the U.S. Geological Survey (USGS), NLCD offers detailed, consistent, and scientifically reliable geo-spatial data layers that help in understanding the landscape of the United States.

National Soil Survey Center (NSSC): Part of the Natural Resources Conservation Service and manages extensive databases on soils, ecology, and botany. The NSSSC provides technical support and data to help landowners and managers conserve natural resources and make informed decisions about soil use and management.

Natural Resources Conservation Service (NRCS): An agency within the United States Department of Agriculture. NRCS provides technical assistance to farmers, ranchers, and other private landowners to help them conserve natural resources. The agency supports voluntary conservation efforts to improve soil, water, air, and habitat quality across the United States.

Map Unit: A term from SSURGO/gSSURGO describing classifications of soils with similar landform and landscape characteristics. The name of the map unit usually includes the major soil type and the slope range of the area described.

ROI: The Region of Interest (ROI) for this analysis is a specifically defined portion of the Bay Area Air District. This ROI encompasses the Bay Area Air District Planning Area, excluding Santa Clara County.

SC Land Cover Class: Refers to the land cover classifications used in the Sonoma County inventory[1], published in October 2023.

Soil Carbon Stock: This refers to the amount of carbon stored in soil. In this analysis, soil carbon stock is estimated as the amount contained in the top 0 to 30 cm of the soil column and is represented in units of MT carbon per hectare.

United States Geological Survey (USGS): A scientific agency within the United States Department of the Interior. USGS conducts research on the landscape, natural resources, and natural hazards of the United

[1] https://sonomacounty.ca.gov/Main%20County%20Site/Administrative%20Support%20%26%20Fiscal%20Services/CAO/Documents/Climate%20Action%20and%20Resiliency/Sonoma-County-Carbon-Inventory-and-Study-with-Executive-Summary.pdf

States. The agency provides valuable scientific data on water, energy, minerals, ecosystems, and the impacts of climate and land-use changes.

Executive Summary

A carbon inventory provides a comprehensive assessment of the amount of carbon stored across a landscape, establishing a baseline of existing carbon stocks and the sequestration potential of natural and working lands (NWL). By offering a snapshot in time, an inventory captures the current state of carbon storage and sequestration, helping to inform land use decisions and climate strategies. Categorizing NWL by land cover type—such as forests, wetlands, and croplands—enables more precise, data-driven insights for local planning.

One key application of a carbon inventory is its ability to quantify and locate carbon at risk of being lost due to disturbance such as wildfires or land conversion. At the same time, it highlights opportunities to enhance carbon sequestration through improved land management practices and targeted climate initiatives.

This analysis represents the first detailed quantitative estimate of carbon stocks and their distribution for the Bay Area Air District (Air District). The resulting inventory will support the Bay Area Regional Climate Action Plan (BARCAP), providing critical data to guide climate-smart land management and NWL greenhouse gas reduction efforts. The inventory's quantitative estimates of carbon stock and biomass was the foundation for modeling the effects of NWL climate change mitigation measures in BARCAP. This memorandum outlines the methodology and key findings from the Bay Area District's 2022 NWL inventory, which was designed to align with the California Air Resources Board's (CARB) 2022 Scoping Plan.[2]

This analysis was conducted for the Air District, creating an inventory of lands located in eight counties: 1) Alameda, 2) Contra Costa, 3) Marin, 4) Napa, 5) San Francisco, 6) San Mateo, 7) Solano, and 8) Sonoma. Notably, the area included in the analysis is limited to the official Air District boundary, which does not include the totality of area in all counties. Furthermore, although included in the complete Bay Area Air District jurisdiction, Santa Clara county was omitted from this analysis by request of the Air District as the Santa Clara County and San Benito County are conducting a parallel and aligned analysis as part of their EPA-funded comprehensive climate action plan effort.

As of 2022, the counties that make up the region of interest (ROI) subset of the Bay Area Air District held a total of approximately 92 MMT C total carbon stock, as reflected in the totals row of Tables 1 and 2.

[2] https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf

When categorized by land cover type, forests contain the highest carbon density (Table 1). At the county level, Napa County has the highest carbon density among all the counties in the Bay Area Regional Climate Action Plan (BARCAP) counties (Table 2).

Table 1. 2022 Total Carbon Stock by Land Cover Class.

The data in this table only includes the area (counties and partial counties) under Bay Area Air District jurisdiction, omitting Santa Clara County.

Land Cover Class	Area in Hectares	Biomass Carbon Stock in MT C	Soil Carbon Stock in MT C	Total Carbon Stock in MT C	Total Carbon Stock in MT C per Hectare
Barren	3,811	9,238	130,149	139,387	37
Orchard	4,133	234,565	142,928	377,494	91
Vineyard	40,909	163,636	1,509,421	1,673,057	41
Cultivated and Field Crops	25,826	167,420	2,230,023	2,397,443	93
Pasture and Hay	30,989	197,012	2,373,114	2,570,126	83
Open Water	49,452	--	3,668,746	3,668,746	74
Shrub/Scrub	77,799	2,701,805	2,568,656	5,270,461	68
Wetland	65,094	1,899,193	6,733,661	8,632,855	133
Grassland/ Herbaceous	244,303	1,612,456	8,684,481	10,296,937	42
Development	304,801	893,301	9,759,188	10,652,489	35
Forest	266,268	37,001,485	9,654,650	46,656,135	175
Total	*1,113,384*	*44,880,113*	*47,455,018*	*92,335,131*	*83*

Table 2. 2022 Total Carbon Stock by BARCAP—Region.

The data in this table only includes the area (counties and partial counties) under Bay Area Air District jurisdiction, omitting Santa Clara County.

BARCAP – Region	Area in Hectares	Biomass Carbon Stock in MT C	Soil Carbon Stock in MT C	Total Carbon Stock in MT C	Total Carbon Stock in MT C per Hectare
San Francisco	12,227	67,555	158,842	226,397	19
Solano	98,304	1,168,051	7,402,503	8,570,553	87
Alameda	192,639	5,517,260	5,927,448	11,444,708	59
Sonoma	159,680	5,387,751	6,594,216	11,981,967	75
San Mateo	117,769	8,458,669	3,846,532	12,305,201	104
Marin	135,530	8,796,059	5,371,978	14,168,036	105
Contra Costa	193,136	4,601,826	10,270,398	14,872,224	77
Napa	204,099	10,882,942	7,883,101	18,766,043	92
Total	*1,113,384*	*44,880,113*	*47,455,018*	*92,335,131*	*83*

Methodology

Overview of Bay Area Air District Inventory Methods

The natural and working lands (NWL) carbon stock within the Bay Area Air District (Air District). was calculated for the 2022 inventory year. This analysis utilized LANDFIRE[3] land cover classification raster data, which was matched with biomass carbon stock estimates from the 2018 California Air Resources Board (CARB) inventory[4] for each land cover class. This matching was based on alignment between the two datasets on the following three metrics: Existing Vegetation Type (EVT), which represents the distribution of vegetation types; Existing Vegetation Height (EVH), which indicates the average height of dominant vegetation; and Existing Vegetation Canopy Cover (EVC), which refers to the percentage of ground covered by tree and shrub canopy. The resulting dataset produced a spatially explicit map of biomass carbon stock by carbon pool across the Bay Area Air District (see Figure 1A). Furthermore, this analysis incorporated measurements of soil carbon stock throughout the Air District, utilizing raster data from gSSURGO[5], and added those values to the values of biomass carbon stock throughout the region to produce estimates of total carbon stock (see Figures 1B and 1C). In short, biomass carbon stock (Figure 1A) + soil carbon stock (Figure 1B) = total carbon stock (Figure 1C).

As described further in the sections below, the Air District inventory is aligned with state and local analyses. Differences in methodology are described, and are due to application of expert judgement, data availability given the large 8-county scale of the BARCAP—Region, and knowledge that the State of California will soon be updating their methodology for carbon stocks on a statewide level, though finalized results of the inventory was not available at the time of conducting this analysis (State carbon inventory results and methodology are projected to be available in late winter of 2025).

Assumptions and Interpolations

All unique combinations of EVT, EVC, and EVH that do not have an associated biomass carbon stock value were interpolated with a value of total biomass multiplied by the coefficient 0.55 as per FAO guidelines[6]. This coefficient is a widely used standard for converting biomass carbon stock to total biomass (above- and below-ground). The following land cover classes did not have total biomass measurements from CARB, as CARB assumes all annually harvested areas to have a total biomass of 0: Development, Cultivated and Field Crops, Orchard, Pasture and Hay, Vineyard. For these classes, the FAO interpolation was employed.

In less than 2% of the land cover area, missing data or mismatches occurred between EVT, EVC, and EVH classifications from the LANDFIRE and CARB datasets that could not be corrected using the FAO guideline. In these cases, values were interpolated using expert judgment and using two primary methods: (1) adjusting missing EVT, EVC, or EVH values to the most similar neighboring classification (e.g., increasing herbaceous cover from 25% to 55% while maintaining the same EVT classification) or (2) redefining an EVT without data to align with a similar EVT with available data (e.g., using biomass and

[3] https://www.landfire.gov/
[4] https://ww2.arb.ca.gov/sites/default/files/2025-02/CARB-2018-NWL-Carbon-Inventory-Report.pdf
[5] https://www.nrcs.usda.gov/resources/data-and-reports/gridded-soil-survey-geographic-gssurgo-database
[6] https://www.fao.org/4/y5490e/y5490e07.htm

carbon stock values from Mixed Conifer Forests to estimate values for Developed Mixed Conifer Forests).

Furthermore, in approximately 7% of the land cover area, gSSURGO did not contain estimates of soil carbon stock. Roughly 3% of the land cover area missing estimates of soil carbon stock could be assumed to be equal to 0. This occurred mostly with soil types describing water (including open water, dam, etc.), since gSSURGO does not quantify soil carbon underlying water, but also in quarries, pits, or other broken land. For the remaining 4% of land cover area, this analysis manually interpolated those regions by assigning the values of soil carbon stock from the closest matching map unit (e.g., replacing the null SOC value from "Rock outcrop-Xerorthents complex, 50 to 75 percent slopes" with the value of SOC from the closest matching map unit category of "Rock outcrop-Kidd complex, 50 to 75 percent slopes").

Despite gSSURGO not containing any measurements of soil carbon stock from soils underlying water, the land cover classification 'Open Water' is estimated as containing 3,668,746 MT C/ha (over 49,452 hectares in the ROI) from soil carbon. This is because the gSSURGO soils dataset did not map exactly to the LANDFIRE classifications. For example, a particularly wet marshland may be grouped into "Water" using LANDFIRE data, because of the high degree of wetness that is likely to mislead spectral imagery classification. However, gSSURGO uses different underlying data, including ground truthing, which may lead to the of that same area as "Wetland". Furthermore, the LANDFIRE dataset has a resolution of 30 m^2 and gSSURGO has a resolution of $10m^2$, meaning that the gSSURGO dataset has a finer resolution to differentiate land cover boundaries. Pixels from LANDFIRE may be classified as 'Open Water', but gSSURGO has a higher resolution and is able to quantify the soils alongside rivers, creeks, and other water bodies at a finer granularity (higher precision). These slight spatial margins are critically important and can lead to the large amount of carbon noted above. Since the carbon in soils alongside water bodies tends to be highly organic in the ROI, the category of 'Open Water' contains lots of carbon-rich soil, skewing this category higher than expected.

Figure 1A, 1B. Biomass Carbon Stock in MT C/ha (left); Soil Carbon Stock in MT C/ha (right)

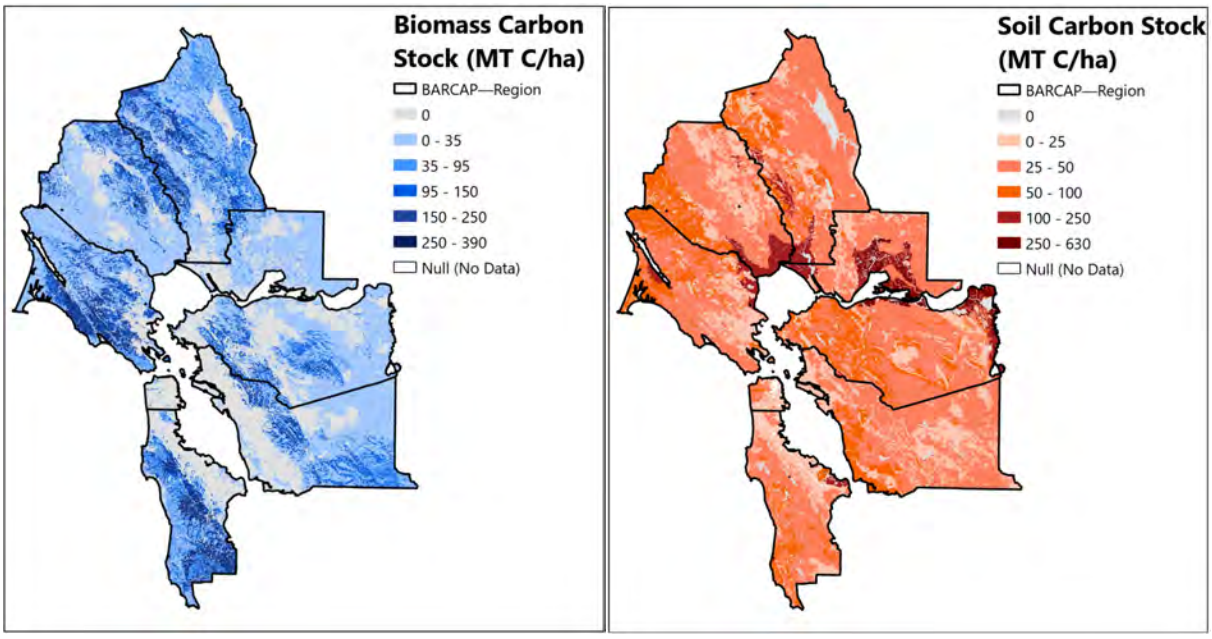
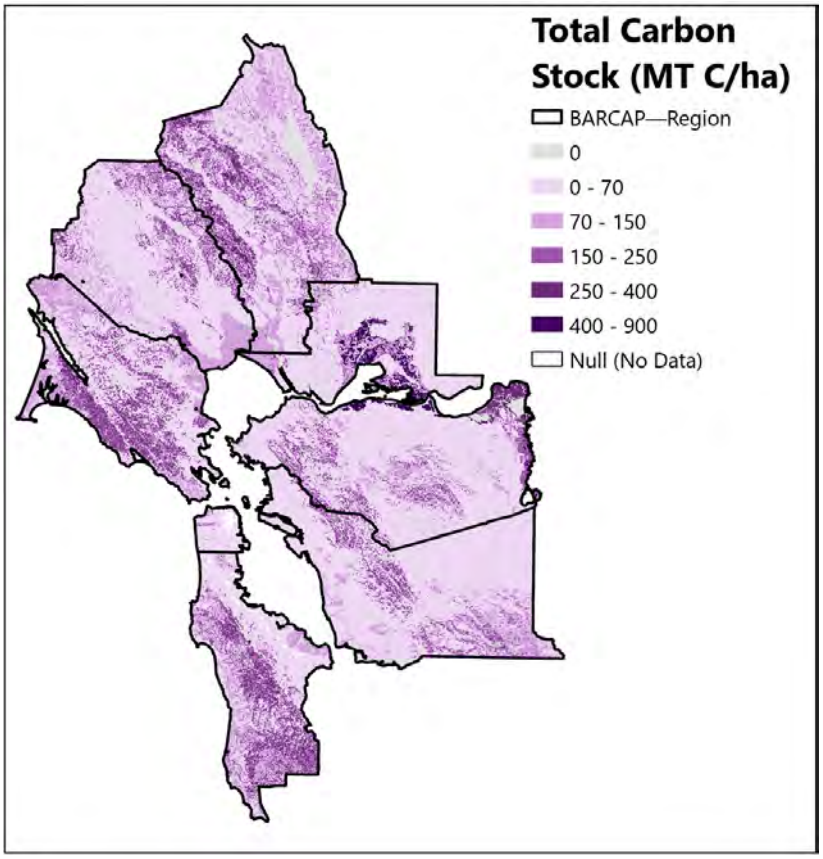


Figure 1C. Total Stock in MT C/ha

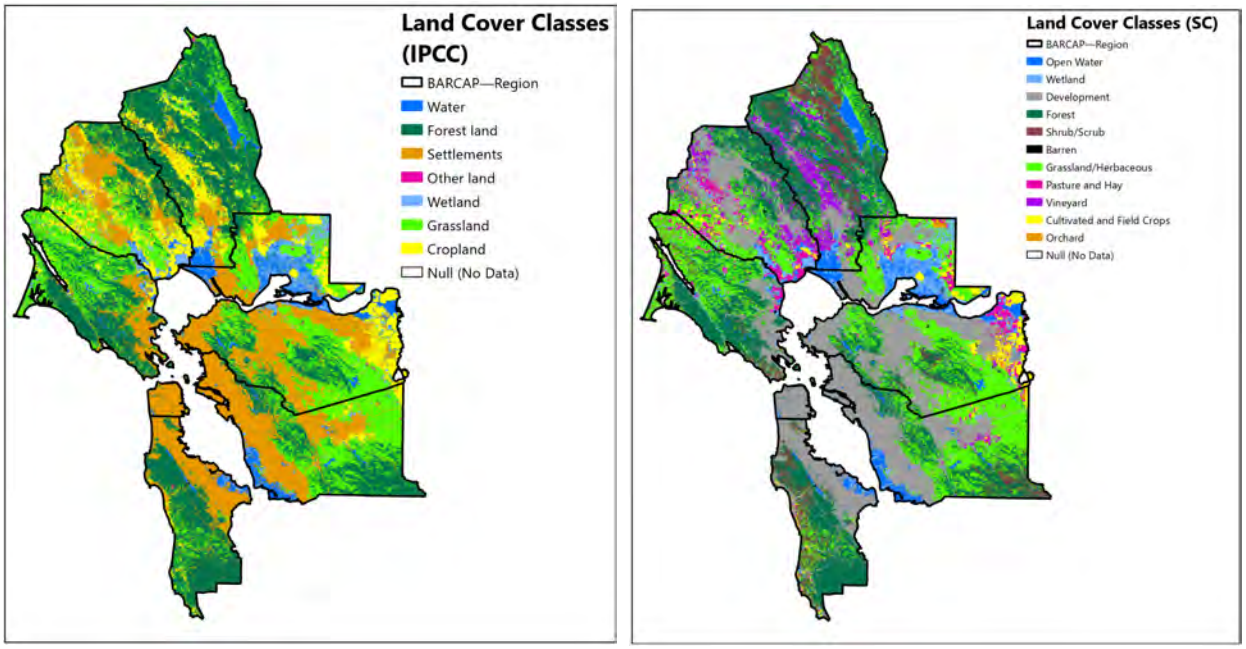


After determining carbon stocks; additional maps were created to illustrate land cover classifications to align with both international (IPCC) and local (Sonoma County) frameworks, as shown in Figures 2A and

2B. The IPCC classifications were already embedded within the California Air Resources Board (CARB) dataset, thus Figure 2A reflects the application of these classifications across the region of interest (ROI).

The Sonoma County classification in this analysis represents manual groupings of Existing Vegetation Type (EVT) from LANDFIRE that were understood to best align with Sonoma County land cover definitions. In cases of uncertainty surrounding the dominant vegetation type in a mixed-vegetation EVT, documentation originally used to establish EVTs in LANDFIRE[7] informed the best possible classification. The original classification methodology, outlined in detail in Appendix B of the 2023 Sonoma County Carbon Inventory and Sequestration Potential Study[8] could not be replicated in this analysis due to data availability constraints. See Appendix Table 1 for a full list of Sonoma County land cover definitions and the accompanying definitions used in this analysis; and see Appendix Table 2 for the result of that classification work.

Figure 2A, 2,B. A. Land Cover Classes, IPCC Classifications (left); B. Land Cover Classes, Sonoma County Classifications (right)



[7] https://www.natureserve.org/sites/default/files/pcom_2003_ecol_systems_us.pdf
[8] https://sonoma-county.legistar.com/LegislationDetail.aspx?ID=6399747&GUID=42EF9CFA-1B23-4B80-BE5C-6DC2B882A484

Relation to the CARB NWL Inventory and Scoping Plan

The most recent California statewide inventory was published by CARB[9] in 2018. CARB's inventory utilized a combination of remotely sensed, survey, and field-based datasets to create a comprehensive, statewide assessment of biomass and soil carbon stocks. The foundation of this inventory was the LANDFIRE[10] dataset, which provided consistent, wall-to-wall land cover and vegetation data for the State of California. To ensure accuracy and alignment with international standards, CARB processed this data according to Intergovernmental Panel on Climate Change (IPCC) guidelines, and integrated ground-based measurements with remote sensing technology to monitor changes in land cover and biomass carbon stocks over time.

The LANDFIRE-based database of biomass carbon stocks from CARB quantifies above- and below-ground biomass carbon, including but not limited to living trees, roots, shrubs, standing dead trees, and leaf litter, but does not account for soil carbon. As in the CARB inventory, this analysis incorporated estimates of soil carbon stocks using raster data from gSSURGO. A detailed description of all data sources, models, and methodologies used in the CARB inventory can be found in the 2018 CARB Natural and Working Lands Inventory Technical Support Document (TSD)[11] and a table of all data sources can be found replicated below, in Table 3.

This inventory utilized the CARB methodology and database of carbon stock densities, based on the previously mentioned LANDFIRE datasets, as the foundation to produce spatially explicit carbon stock estimates in the Bay Area Air District for inventory year 2022. Inventory improvements and region-specific refinements that were made to this inventory include:

- Mapping LANDFIRE categories not included in the dataset delivered by CARB to carbon stocks in the existing datasets based on updated LANDFIRE classification manual and expert judgement,
- Adding in soil carbon stock estimates from missing regions based on closest available data by map unit, and
- Producing grouped land cover classifications that both align with CARB's IPCC mapping and the region-specific land cover classifications identified by Sonoma County, as detailed in Section 3.1.

[9] https://ww2.arb.ca.gov/sites/default/files/2025-02/CARB-2018-NWL-Carbon-Inventory-Report.pdf
[10] https://www.landfire.gov/
[11] https://carbstage.arb.ca.gov/resources/documents/2018-natural-and-working-lands-carbon-inventory-technical-support-document

Table 3. Data Used for the California Statewide CARB Inventory (2018).

Inventory Method	Tier	Data	Publication Frequency	Latest Year
Forest and Other Natural Lands	Tier 3	USFS FIA Data	Annual	2016
		LANDFIRE	2 years	2014
		MODIS	Annual	2012
Wetland	Tier 2	Tier 2 San Francisco Estuary Inst.	Undefined	2016
		gSSURGO	Annual	2016
		LANDFIRE	2 years	2014
Cropland Biomass	Tier 3	Digital Globe	Varies *	2018
		LANDSAT	16 days	2018
		Google Street	~5 years for rural areas*	2018
		USDA NASS Census	5 years	Census - 2012
		USDA NASS Survey	1 year	Survey - 2017
		USDA Cropscape	Annual	2017
Urban Forest Biomass	Tier 3	USDA NAIP data	Usually every 2 years	2016
		USGS DOQQ data	No longer refreshed*	1999
		USFS Urban FIA data	5 years	2015
		UFORE	Not refreshed*	Varies (2003-2015)
		Municipal tree inventories	Varies / Decadal*	Varies (2003-2015)
Soil Carbon	Tier 3 for croplands outside of the Delta Tier 1 for all other lands	DayMET	Annual	2017
		NASS Census	5 years	2012
		NASS Survey	Annual	2017
		LANDFIRE	2 years	2014
		gSSURGO	Annual	2016
		National Atmospheric Deposition Program	Annual	2017
		California Ag Commissioner	Annual	2017
		SoilGrids	Annual	2017

*Not needed for annual/biannual refresh

Relation to the Contra Costa County Inventory

The most recent Contra Costa inventory[12], which is relevant as like Sonoma County, it is also a recent local analysis of carbon stocks in the BARCAP—Region, published in October 2023, calculated carbon stocks using similar methods to those employed in this inventory of the Bay Area Air District. The Contra Costa inventory similarly leveraged the CARB methodology and LANDFIRE carbon density data to estimate carbon stocks from Natural Lands (Forest, Shrubland, Grassland, etc.), and Agricultural Lands (Pasture and Hay, Orchards, Cultivated Crops, and Vineyards), along with gSSURGO raster data to estimate soil carbon stocks.

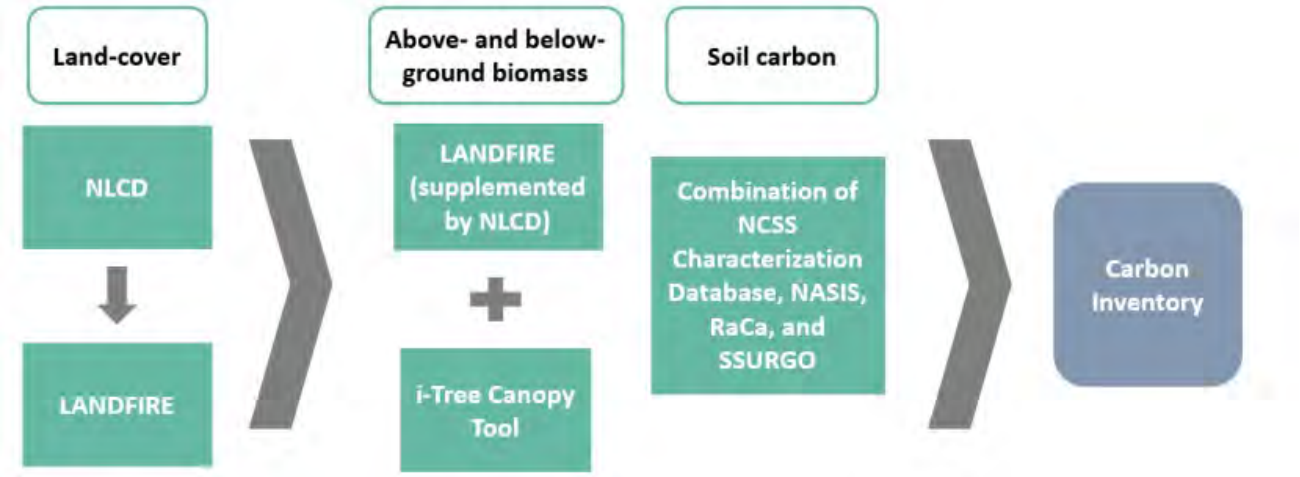
Unlike in this inventory, the Contra Costa inventory adjusted land cover classifications (originally from LANDFIRE) using satellite imagery from the National Land-Cover Database (NLCD). This additional imagery for categorization was employed after the developers of the Contra Costa inventory identified inaccuracies in shrubland classification from the LANDFIRE dataset in Contra Costa (ex. grassland/herbaceous areas categorized as shrub/scrub). Additionally, in another deviation from the Air District Inventory, Contra Costa sourced urban forest density data, which was used to calculate development carbon stock, from USDA Forest Service i-Tree Canopy (i7), rather than using the forest canopy data provided by LANDFIRE in the EVC layer.

The Contra Costa inventory similarly supplemented SSURGO data with estimates of soil carbon stock from a wide range of datasets (NCSS Characterization Database from the National Soil Survey Center (NSSSC)/Kellogg Soil Survey Laboratory (KSSL); National Soil Information System (NASIS) from USDA National Resource Conservation Service (NRCS); and Rapid Carbon Assessment (RaCA) from USDA NRCS). Instead of manually interpolating missing areas from SSURGO, as in this analysis, Contra Costa created a collective database of soil carbon stock measurements from all available data sources and interpolated that dataset, along with SSURGO, to produce wall-to-wall soil carbon stock estimates. All data used in establishing the Contra Costa inventory is illustrated below, in Figure 3.

There are key deliverable differences that differentiate this analysis from the Contra Costa analysis. In Contra Costa, land cover was classified using LANDFIRE data, as in this analysis, but Contra Costa invested additional resources in categorizing inaccuracies in the LANDFIRE (namely shrubland and grassland in the county) using NLCD data, as well incorporating the i-Tree Canopy Tool for urban forest density estimates, along with desktop ground truthing. In contrast, this analysis relied solely on LANDFIRE data for estimates of biomass carbon stock, with manual interpolation to proxy missing areas. Additionally, Contra Costa incorporated estimates of soil carbon from gSSURGO and various additional data sources, whereas this analysis solely accounted for soil carbon using gSSURGO data. Like this final inventory, the final Contra Costa Carbon inventory product is classified according to Existing Vegetation Type from LANDFIRE and NLCD, see Appendix Table 1 for the definitions and differences from this analysis. This classification ensures continuity between the two inventories.

[12] https://www.contracosta.ca.gov/DocumentCenter/View/79768/Healthy-Lands-Healthy-People-Final-Report

Figure 3. Data Used for the Contra Costa County Inventories (2001 and 2021). Copied from the 2023 Contra Costa County inventory.



Relation to the Sonoma County Inventory

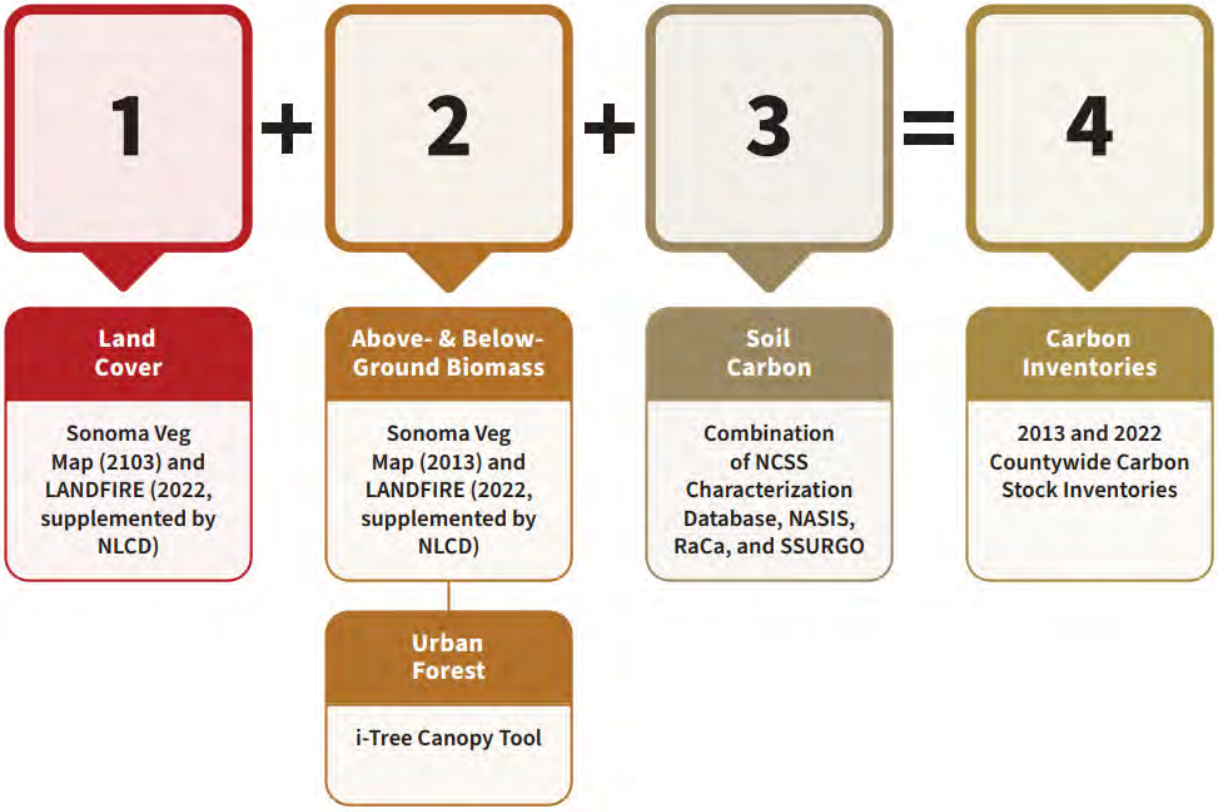
The most recent Sonoma County inventory[13], published in October 2023, calculated carbon stocks using similar methods to those employed in this inventory of the Bay Area Air District that established land cover types from LANDFIRE data, measured carbon within each land cover type, then summed the amount of carbon by land cover type.

Sonoma County employed a similar methodology to CARB and this analysis in using LANDFIRE to calculate above- and below-ground biomass as part of the total carbon stock calculation. However, unlike in this inventory, and similarly to the Contra Costa inventory-- Sonoma County combined multiple data sources to create the final biomass carbon stock estimations (see Figure 4). Like in this Air District inventory, Sonoma County estimated values for soil carbon using SSURGO raster data. Unlike in this inventory, Sonoma County employed additional datasets (the NCSS Characterization database, NASIS, RaCa) to create a database for further soil carbon stock estimation via interpolation. All data used in establishing this inventory is illustrated below, in Figure 4.

There are key deliverable differences that differentiate this analysis from the Sonoma County analysis. Primarily, in 2013, Sonoma County used the Sonoma Veg Map for land classification, which is unique to the county. This produced deliverables and results that could not be replicated by any other analysis. In 2022, Sonoma County classified land cover using LANDFIRE data, as in this analysis, but Sonoma County invested additional resources in categorizing inaccuracies in the LANDFIRE (using NLCD for additional satellite imagery, similar to the Contra Costa inventory). Additionally, Sonoma County incorporated estimates of urban tree density (and associated carbon) from i-Tree, rather than consistently utilizing the LANDFIRE EVC, EVH, and EVT layers. Furthermore, Sonoma County quantified soil carbon using SSURGO raster data and various other data sources, detailed above, whereas this analysis consistently leveraged gSSURGO. Like this analysis, the final Sonoma County inventory product from 2022 is classified according to Existing Vegetation Type from LANDFIRE and NLCD, see Appendix Table 1 for the definitions and differences from this analysis. This classification facilitates continuity and comparison between the two inventories.

[13] https://sonomacounty.ca.gov/Main%20County%20Site/Administrative%20Support%20%26%20Fiscal%20Services/CAO/Documents/Climate%20Action%20and%20Resiliency/Sonoma-County-Carbon-Inventory-and-Study-with-Executive-Summary.pdf

Figure 4. Data Used for the Sonoma County Inventory (2013 and 2022). Copied from the 2023 Sonoma County inventory.



Results and Discussion

To better understand land cover distribution throughout the ROI, land cover area was summed by BARCAP—Region proportionally to area, Figure 3, and independently of area, Figure 4. This illustrates the dominant land cover classification in and among each county (or partial county; as BARCAP—Region), respectively. A discussion of carbon stocks, disaggregated by SC land cover type, follows below.

Figure 5. Percent Land Cover by BARCAP—Region.

The data in this figure only includes the area (counties and partial counties) under Bay Area Air District jurisdiction, omitting Santa Clara County.

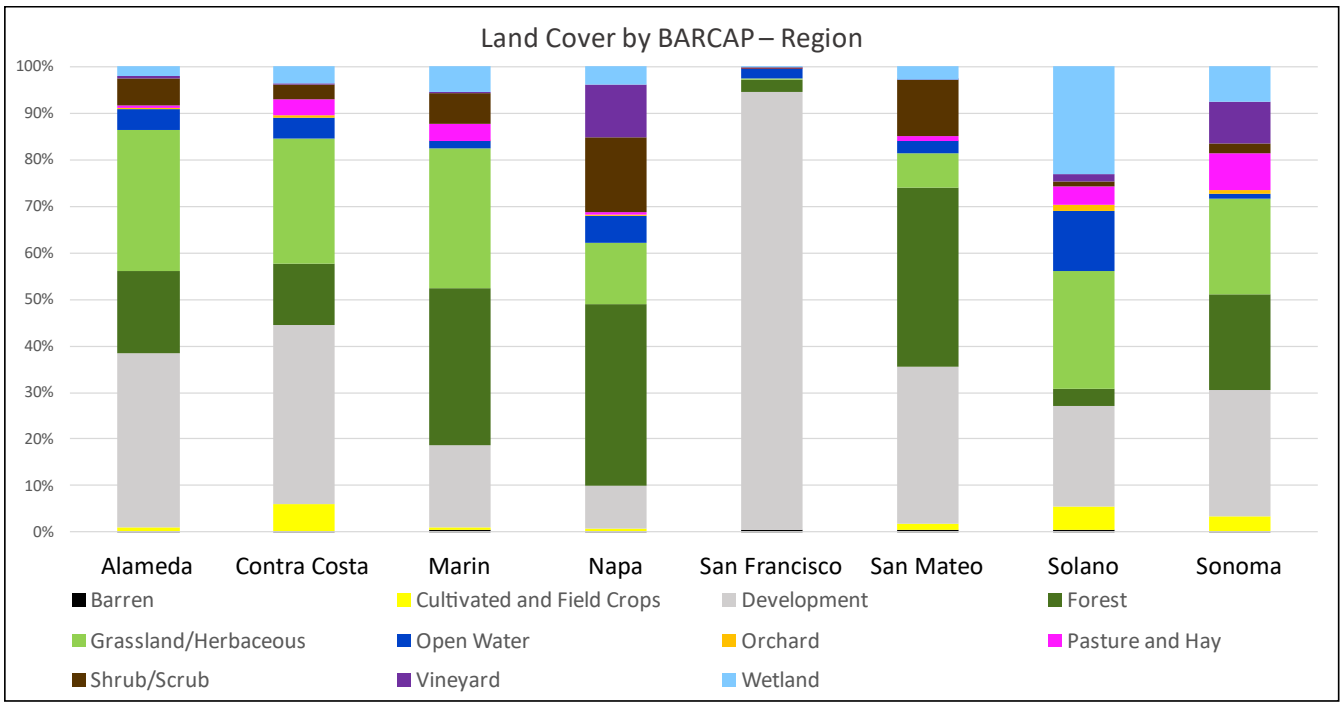


Table 4. Percent Land Cover Area by BARCAP—Region.

The data in this table only includes the area (counties and partial counties) under Bay Area Air District jurisdiction, omitting Santa Clara County.

Land Cover Classes (SC) Area Percentages by BARCAP—Region												
	Barren	Cultivated and Field Crops	Development	Forest	Grassland/ Herbaceous	Open Water	Orchard	Pasture and Hay	Shrub/ Scrub	Vineyard	Wetland	Total
Alameda	9%	6%	24%	13%	24%	18%	11%	3%	14%	3%	6%	17%
Contra Costa	12%	43%	24%	9%	21%	17%	29%	21%	8%	2%	11%	17%
Marin	19%	3%	8%	17%	17%	5%	1%	15%	12%	0%	12%	12%
Napa	21%	3%	6%	30%	11%	24%	4%	4%	43%	56%	12%	18%
San Francisco	1%	0%	4%	0%	0%	1%	0%	0%	0%	0%	0%	1%
San Mateo	15%	6%	13%	17%	4%	6%	3%	3%	18%	0%	5%	11%
Solano	14%	19%	7%	1%	10%	26%	30%	12%	1%	3%	35%	9%
Sonoma	8%	20%	14%	12%	13%	4%	21%	41%	4%	35%	19%	14%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Figure 6. Land Cover Area by BARCAP—Region.

The data in this figure only includes the area (counties and partial counties) under Bay Area Air District jurisdiction, omitting Santa Clara County.

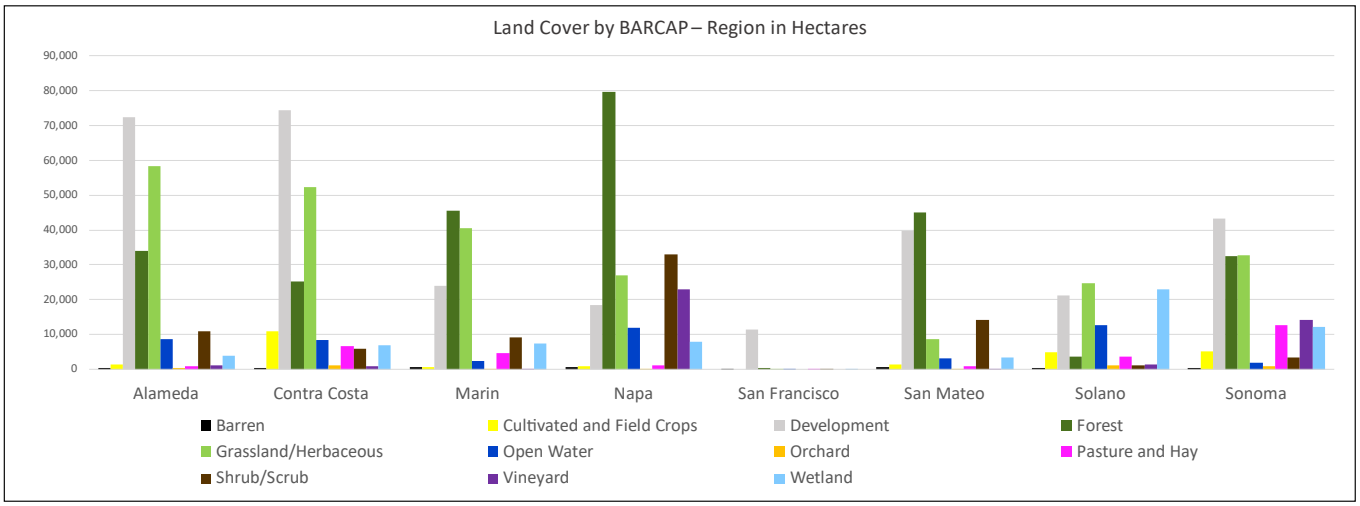


Table 5. Land Cover Area by BARCAP—Region.

The data in this table only includes the area (counties and partial counties) under Bay Area Air District jurisdiction, omitting Santa Clara County.

Land Cover Classes (SC) Area in Hectares by BARCAP—Region												
	Barren	Cultivated and Field Crops	Development	Forest	Grassland/ Herbaceous	Open Water	Orchard	Pasture and Hay	Shrub/ Scrub	Vineyard	Wetland	Total
Alameda	335	1,520	72,390	33,921	58,240	8,674	462	942	10,885	1,209	4,061	192,639
Contra Costa	468	11,058	74,339	25,212	52,210	8,352	1,189	6,651	5,836	828	6,993	193,136
Marin	743	753	23,899	45,599	40,560	2,330	40	4,696	9,262	102	7,546	135,530
Napa	786	882	18,514	79,705	26,952	11,896	184	1,166	33,093	22,979	7,941	204,099
San Francisco	50	0	11,495	330	22	263	0	1	22	0	44	12,227
San Mateo	567	1,462	39,810	45,138	8,769	3,169	117	986	14,222	83	3,446	117,769
Solano	549	4,987	21,106	3,748	24,745	12,732	1,257	3,808	1,113	1,394	22,866	98,304
Sonoma	313	5,164	43,249	32,614	32,805	2,036	884	12,740	3,365	14,314	12,197	159,680
Total	3,811	25,826	304,801	266,268	244,303	49,452	4,133	30,989	77,799	40,909	65,094	1,113,384

Development

San Francisco is dominated by developed, urban land (Figure 5). Over such a small land area, San Francisco could be an ideal choice to implement a climate-smart land management strategy for developed areas, as it would be targeted towards the dense development in the area. Alternatively, Contra Costa and Alameda have the most developed land by area (Table 5) and therefore have the most in which to invest.

The 2022 CARB Scoping Plan[14] recommends an increase in urban forestry investment by 200% above current levels, and tree watering that is 30% less sensitive to drought. In BARCAP, this could be accomplished through urban greening initiatives, which target an increase in urban canopy cover through improved maintenance of existing trees or planting of new trees. CARB Scoping Plan suggests an increase in urban forestry investment annually by 20 percent, relative to business as usual, which could be supported through BARCAP.

Forest

Napa is dominated by forest and contains the most forest of any county (Figure 6, Table 5). This large expanse of forested area, which is also the highest of the land cover classifications in both MT carbon per hectare (Table 1), can be leveraged in implementing climate-smart forestry strategies.

This is especially critical, given that the 2022 CARB Scoping Plan prescribes treating at least 2.3 million acres statewide of forests, shrublands/chaparral, and grasslands with regionally specific, climate-smart management strategies[15]. Given the large risk of wildfire in these areas, the Scoping Plan recommends implementing climate-smart forest management strategies in line with the California Wildfire and Forest Resilience Action Plan[16]. In forests found throughout the BARCAP—Region, this could be fulfilled through engaging in Forest Slash Treatment (CPS 384) or prescribed burning, to reduce fuel loads and limit wildfire risk.

Moreover, the Scoping Plan recommends no land conversion to any other class from forests. Protecting existing forested land from conversion to agricultural or developed land in each county (or partial county) within the BARCAP—Region is in clear alignment with the CARB Scoping Plan, due to the carbon sequestration sustained by maintaining carbon-dense land cover. In BARCAP, this could be implemented through practices like Native Oak Restoration/Silvopasture (CPS 381) or planting of riparian forest buffer.

Wetland

Solano County, for the purposes of this analysis meaning the southwestern portion from this ROI, has the most wetlands in the BARCAP—Region. Wetlands are the second most carbon-dense of the land cover classifications in MT per hectare of carbon (Table 1) and can be targeted to meet carbon sequestration goals.

The 2022 CARB Scoping Plan recommends the restoration of approximately 15 percent of all Sacramento–San Joaquin River Delta (Delta) wetlands, summing to 60,000 acres, by 2045. This emphasis on Deltaic wetland management in the Scoping Plan is due to the enormous carbon sink capacity of wetlands and the risk of carbon emissions from wetlands under certain conditions. Wetlands function as

[14] https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf
[15] https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf
[16] https://wildfiretaskforce.org/wp-content/uploads/2022/12/californiawildfireandforestresilienceactionplan.pdf

a carbon sink so long as the wet soils remain wet, once dried the soil carbon is more vulnerable to consumption by oxygen-loving microbes and emission as gas.

The Bay Area Air District contains Delta wetlands in Alameda, Contra Costa, and Solano counties, and so strategies under the BARCAP have large potential to uplift climate solutions for and using wetlands. This is particularly important, given that Delta wetland soils are some of the carbon-richest in the world[17]. Wetland restoration, alongside wetland creation and wetland enhancement, are strategies to bolster carbon sequestration from wetlands and help meet this goal.

Cultivated Crops, Field Crops, and Vineyards

Regarding agriculture throughout the BARCAP—Region, Napa has the most vineyards and Contra Costa has the most farmland (Table 5). These agricultural lands already require active land management, and are therefore ready targets for the shift to a wide variety of climate-smart agriculture strategies.

The 2022 CARB scoping plan calls for implementation of climate smart practices for annual and perennial crops on ~80,000 acres annually. Some activities that help meet this goal include but are not limited to: Mulching (CPS 484), Residue and Tillage Management - No Till (CPS 329), Cover Cropping (CPS 340), Conservation Crop Rotation (CPS 328), Compost Application (CPS 808), and Nutrient Management (CPS 590).

Grassland/Herbaceous and Shrub/Scrub

Alameda and Contra Costa are closely tied as counties (or partial counties) within the BARCAP—Region with the most land classified as Grassland/Herbaceous, and Napa has the most land classified as Shrub/Scrub (Table 5). These land cover types are grouped together for the purpose of this discussion as they require similar climate-smart land management strategies.

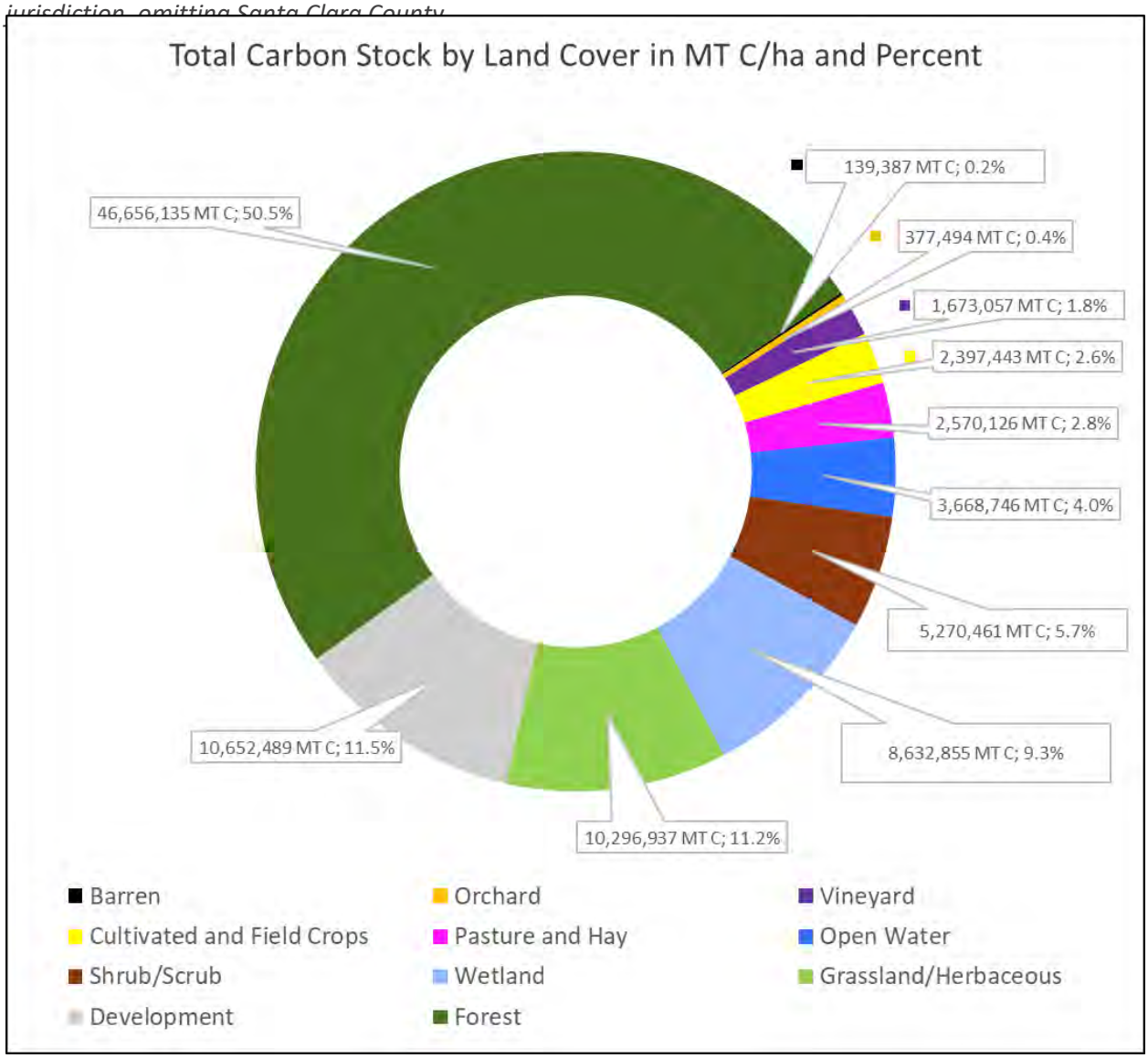
Guidance from the 2022 CARB scoping plan suggests the establishment and expansion of mechanisms that ensure both grasslands and shrublands are protected from land conversion or parcellation. Additionally, CARB recommends the implementation of management strategies that support soil carbon sequestration, biodiversity, and other ecological improvements. In the BARCAP, this could include native grassland restoration or riparian restoration.

BARCAP—Region Carbon Stock

The carbon stocks from each land cover (e.g., Forest, Wetland) and each carbon stock source (e.g., Biomass, Soil) can be summed together to create an overall estimate of Total Carbon Stock throughout the BARCAP—Region. Over an area of 1,113,384 hectares, the ROI for this analysis accounted for 92,335,131 MT carbon. Figure 7, below, illustrates this.

[17] https://deeply.thenewhumanitarian.org/water/community/2017/06/09/californias-delta-poised-to-become-massive-carbon-bank

Figure 7. Carbon Stocks in Bay Area Air District by Land Cover. *The first number in each callout bubble represents Total Carbon Stock in MT C, the second represents the percentage of carbon contained in a given land cover class in the ROI. The land cover classifications reflect the Sonoma County classifications. The data in this figure only includes the area (counties and partial counties) under Bay Area Air District jurisdiction, omitting Santa Clara County.*

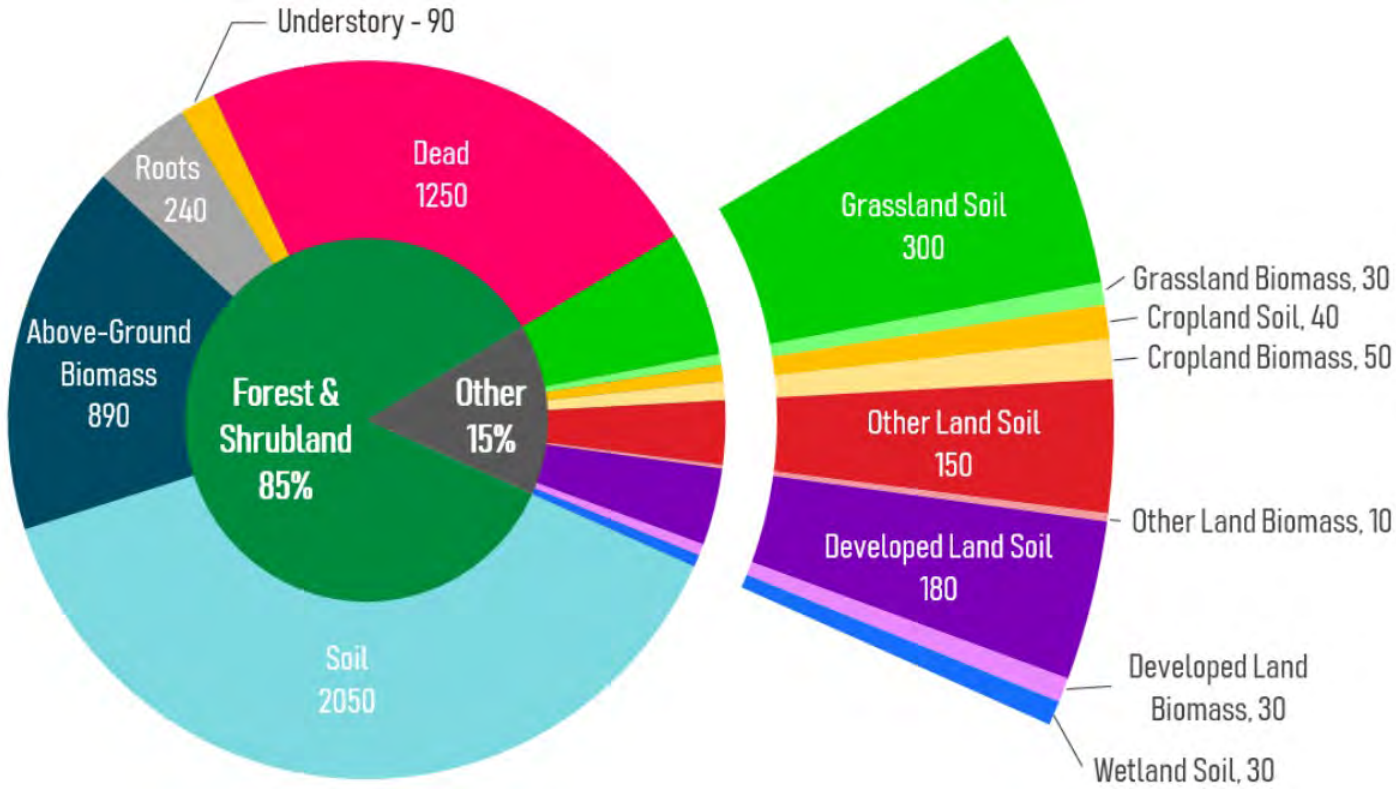


Previously Published Results in the Region

California Air Resources Board Results

According to CARB's 2018 ecosystem carbon inventory[18], built mainly using data from 2014, California's natural and working lands hold approximately 5,340 million metric tons of carbon. The majority of this carbon stock is found in forests and shrublands, which dominate California's landscape and boast the highest carbon density among all land cover types. Despite comprising over 35 percent of California's total acreage, other land categories account for only 15 percent of the carbon stocks. Approximately half of the 5,340 MMT of carbon is stored in soils, while the other half is contained within plant biomass. Figure 8, below, illustrates these findings. Note that Figure 5 uses 2014 distribution of biomass and soil carbon stocks on the California landscape in MMT carbon (rounded to the nearest 10 MMT).

Figure 8. 2014 Carbon Stocks in California NWLs, copied from the 2018 CARB inventory



[18] https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/NWL%20Inventory%20Report%20Website.pdf

Quantitative Comparison with the CARB Inventory

Although the CARB inventory and the Air District inventory disaggregate results using different land cover classifications (CARB using IPCC, Air District using SC classes), enough similarities exist between the two classifications that comparison between the two inventories is possible and appropriate. See Tables 6 and 7, below, for a breakdown of carbon stock by land cover class throughout California (as quantified by CARB) and the Bay Area Air District, respectively.

Both directionally and quantitatively, the two inventories are very similar. The land cover classification Forest and Shrubland from CARB and Forest from the Air District are the most carbon dense per hectare (197 and 175 MT C/ha, respectively). In both inventories, Wetland follows close behind as the next most carbon dense per hectare (142 and 133, respectively). CARB and the Air District inventories agree that Developed Land/Development are low in carbon density (55 and 35 MT C/ha, respectively).

However, CARB and the Air District inventory disagree on the relative density of IPCC Cropland (which corresponds to a combination of Cultivated and Field Crops, Orchard, Pasture and Hay, and Vineyard from the SC classification). CARB estimates Cropland as one of the least carbon dense classifications, only 24 MT C/hectare, whereas the Air District estimates this value in the 41-93 MT C/hectare range. This is likely due to the Air District's relatively high proportion of woody crops (e.g. orchards and vineyards) and higher SOC density as compared to the state as a whole. Given the various forms and densities of biomass that exist throughout the ROI and in each class, this estimation method is limited in its ability to predict biomass carbon stock.

Table 6. Total Carbon Stock per Hectare and Total Carbon Stock (2014), from the 2018 CARB inventory.

CARB Carbon Stock per Hectare and Total Carbon Stock (2014)			
Land Category	**Average Carbon Stock per Hectare (MT C/Hectare)**	**Total Carbon Stock (MT C)**	**Carbon Stock per Hectare Rank**
Other Land	20	160,000,000	6
Cropland	24	90,000,000	5
Developed Land	55	210,000,000	4
Grassland	78	330,000,000	3
Wetland	142	30,000,000	2
Forest and Shrubland	197	4,520,000,000	1
Total	*126*	*5,340,000,000*	*NA*

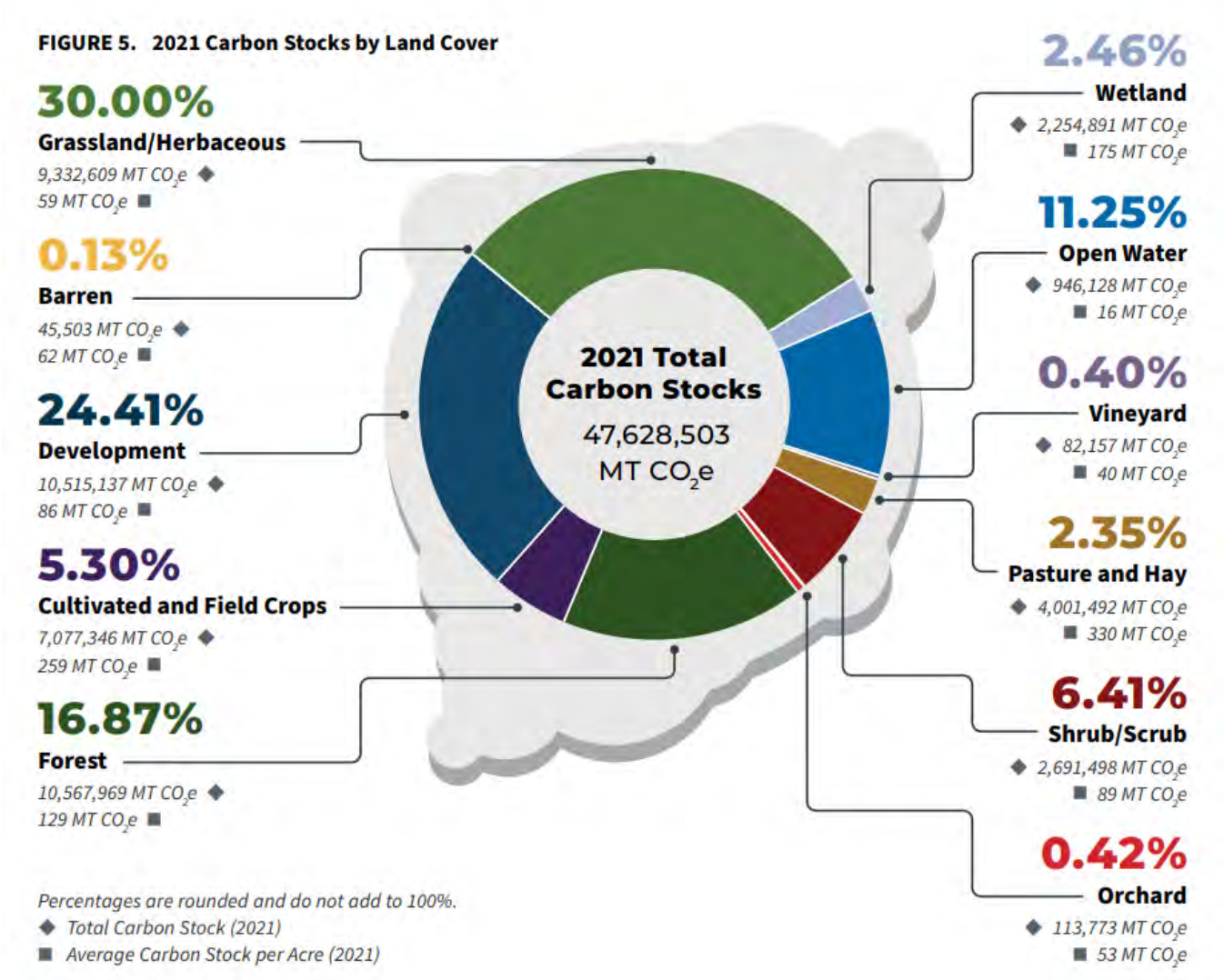
Table 7. BARCAP—Region Carbon Stock per Hectare and Total Carbon Stock (2022), modified from Table 1.

BARCAP—Region Carbon Stock per Hectare and Total Carbon Stock (2022)			
Land Cover Class	**Average Carbon Stock per Hectare (MT C/Hectare)**	**Total Carbon Stock (MT C)**	**Carbon Stock per Hectare Rank**
Development	35	10,652,489	11
Barren	37	139,387	10
Vineyard	41	1,673,057	9
Grassland/Herbaceous	42	10,296,937	8
Shrub/Scrub	68	5,270,461	7
Open Water	74	3,668,746	6
Pasture and Hay	83	2,570,126	5
Orchard	91	377,494	4
Cultivated and Field Crops	93	2,397,443	3
Wetland	133	8,632,855	2
Forest	175	46,656,135	1
Total	*83*	*92,335,131*	*NA*

Contra Costa County Results

The 2023 Contra Costa inventory[19] found total carbon stocks using data from 2021 summing to 47,628,503 MT CO2e. In that inventory, grasslands covered an estimated 30% of land cover, developed land covered an estimated 24% of land cover, and forested land covered an estimated 17% of land cover in the county. Figure 9, below, illustrates these findings.

Figure 9. 2021 Carbon Stocks by Land Cover, copied from the 2023 Contra Costa County inventory



Quantitative Comparison with the Contra Costa County Inventory

Given that the entirety of Contra Costa County falls within the ROI for this analysis, there exists a unique opportunity to validate this analysis against the previously published Contra Costa inventory[20]. The Contra Costa inventory calculated 12,978,222 MT C (originally published as 47,626,503 MT CO2e) in

[19] https://www.contracosta.ca.gov/DocumentCenter/View/79768/Healthy-Lands-Healthy-People-Final-Report
[20] https://www.contracosta.ca.gov/DocumentCenter/View/79768/Healthy-Lands-Healthy-People-Final-Report

2021 over approximately 208,892 hectares (originally published as 516,185 acres). In comparison, for Contra Costa County, this inventory of the Bay Area Air District calculated 14,872,224 MT C over approximately 193,136 hectares (Table 2, above). The difference in hectares between the two inventories is negligible (the percent difference between 208,892 hectares and 193,136 hectares is 7.84%). Furthermore, the difference in MT C between the two inventories is relatively unsurprising (the percent difference between 12,978,222 MT C and 14,872,224 MT C is 13.6%). See Tables 8 and 9, below, for a breakdown of carbon stock by land cover class in Contra Costa and the Bay Area Air District, respectively.

The 13.6% difference in MT C between the two inventories is difficult to explore, as the documentation describing the inventory development process in Contra Costa County is limited, but can likely be partially attributed to differences in data sources. The decision by Contra Costa to employ multiple data sources, instead of manual interpolation from LANDFIRE as in this Air District inventory, may have introduced some slight uncertainty in the resultant estimations of carbon stock. There exists a risk in deriving insights from multiple data sources, because different data sources employ varied quantification methods which may not be readily comparable. For example, one dataset may contain an additional covariate that other datasets do not account for, leading to a higher skew in the regions where that dataset is applicable and resulting in a spike in carbon stock estimation in those regions. Furthermore, the re-classification from the LANDFIRE land cover classifications limits the degree to which these two inventories can be compared using land cover class, especially using the grassland/herbaceous category, which was specifically called out by the Contra Costa inventory as requiring reclassification.

When comparing the order of carbon stock per unit area between Contra Costa County (Table 8) and the Air District (Table 9); agricultural classes (Pasture and Hay, Cultivated and Field Crops) are far more relatively carbon-dense in the Contra Costa County inventory than in the Air District (ranked 1, 2 in CCC; ranked 3, 5 in the Air District). Furthermore, the per acre estimates of these categories and of wetlands are slightly higher than in the Air District inventory (for example, Pasture and Hay average 90 MT C/acre in Contra Costa but only 71 MT C/acre in the Air District). According to the Contra Costa inventory report, this high reported carbon density in those classes is likely because Contra Costa County pasture and hay, cultivated and field crops, and wetlands border the Delta and therefore hold some of the highest soil carbon per acre.

Table 8. Contra Costa County Carbon Stock per Acre and Total Carbon Stock (2021), from the 2023 Contra Costa County inventory.

Contra Costa County Carbon Stock per Acre and Total Carbon Stock (2021)			
Land Cover Class	**Average Carbon Stock per Acre (MT C/Acre)**	**Total Carbon Stock (MT C)**	**Cabon Stock per Acre Rank**
Open Water	4	*257,820*	11
Vineyard	11	*22,388*	10
Orchard	14	*31,003*	9
Grassland/Herbaceous	16	*2,543,136*	8
Barren	17	*11,855*	7
Development	23	*2,865,375*	6
Shrub/Scrub	24	*733,433*	5
Forest	35	*2,879,772*	4
Wetland	48	*614,458*	3
Cultivated and Field Crops	71	*1,928,577*	2
Pasture and Hay	90	*1,090,407*	1
Total	NA	*12,978,222*	*NA*

Table 9. BARCAP—Region Carbon Stock per Acre and Total Carbon Stock (2022), modified from Table 1.

BARCAP—Region Carbon Stock per Acre and Total Carbon Stock (2022)			
Land Cover Class	**Average Carbon Stock per Acre (MT C/Acre)**	**Total Carbon Stock (MT C)**	**Carbon Stock per Acre Rank**
Barren	15	139,387	11
Development	14	10,652,489	10
Vineyard	17	1,673,057	9
Grassland/Herbaceous	17	10,296,937	8
Shrub/Scrub	27	5,270,461	7
Open Water	30	3,668,746	6
Pasture and Hay	34	2,570,126	5
Orchard	37	377,494	4
Cultivated and Field Crops	38	2,397,443	3
Wetland	54	8,632,855	2
Forest	71	46,656,135	1
Total	*34*	*92,335,131*	*NA*

Sonoma County Results

The 2023 Sonoma County inventory[21] analysis using data from 2013 found total carbon stocks summing to 117,593,161 MT CO2e. Using data from 2022, the same inventory found total carbon stocks summing to 105,365,950 MT CO2e. In both years, forest dominates as the land cover class contributing the most to the total carbon stock; about 60%. Figure 10, below, organizes these findings between years in a singular table for ready comparison.

Figure 10. 2013 and 2022 Carbon Stocks by Land Cover, copied from the 2023 Sonoma County inventory.

Land Cover Class	2013 Total Carbon Stock (MT CO_2e)	2022 Total Carbon Stock (MT CO_2e)	Percent Change between 2013 and 2022 (MT CO_2e)
Barren	440,119	367,468	-17
Cultivated and Field Crops	100,577	101,027	0
Development	6,962,559	7,749,627	11
Forest	78,034,944	61,577,998	-21
Grassland/ Herbaceous	18,109,720	17,986,840	-1
Open Water	675,920	1,303,248	93
Orchard	239,362	202,396	-15
Pasture and Hay	2,396,328	3,944,917	65
Shrub/Scrub	4,094,253	5,196,075	27
Vineyard	3,593,475	4,582,317	28
Wetland	2,945,905	2,354,039	-20
Total	117,593,161	105,365,950	-10

Quantitative Comparison with the Sonoma County Inventory

The Sonoma County inventory calculated 28,712,221 MT C (originally published as 105,365,950 MT CO2e) in 2022 over approximately 422,698 hectares (originally published as 1,044,510 acres). In comparison, for Sonoma County, this inventory of the Bay Area Air District calculated 11,981,967 MT

[21] https://sonomacounty.ca.gov/Main%20County%20Site/Administrative%20Support%20%26%20Fiscal%20Services/CAO/Documents/Climate%20Action%20and%20Resiliency/Sonoma-County-Carbon-Inventory-and-Study-with-Executive-Summary.pdf

CO2e over approximately 159,680 hectares (Table 2, above). The difference in both hectares and acreage is unsurprising, given that the entirety of Sonoma County does not fall under the ROI for this analysis, the Air District only includes the southern portion of Sonoma County. See Tables 10 and 11, below, for a breakdown of carbon stock by land cover class in Sonoma County and the Bay Area Air District, respectively.

When comparing the order of carbon stock per unit area between Sonoma County Table 8) and the Air District (Table 7); the order of classes remains relatively directionally consistent (wetland and forest are first or second most carbon dense, vineyard is relatively low when compared to other classes). Moreover, all classes are relatively similar in carbon density between the two inventories; the Sonoma County inventory spans 16-48 MT C/acre and the Air District inventory spans 15-71 MT C/acre. This slight difference can be attributed to the inclusion of additional data sources in the Sonoma County inventory but not in this inventory, as outlined in the Methodology section above.

As in the Contra Costa inventory, the decision by Sonoma County to employ multiple data sources, instead of manual interpolation from LANDFIRE as in this Air District inventory, may have introduced uncertainty in the resultant estimations of carbon stock. Furthermore, the re-classification from the LANDFIRE land cover classifications limits the degree to which these two inventories can be effectively compared using land cover class.

Table 10. Sonoma County Carbon Stock per Acre and Total Carbon Stock (2022), from the 2023 Sonoma County inventory.

Sonoma County Carbon Stock per Acre and Total Carbon Stock (2022)			
Land Cover Class	**Average Carbon Stock per Acre 2022 (MT C/Acre)**	**Total Carbon Stock 2022 (MT C)**	**Carbon Stock per Acre Rank**
Vineyard	16	1,*248*,681	11
Open Water	16	355,135	10
Orchard	18	55,153	9
Development	20	2,111,773	8
Cultivated and Field Crops	22	27,530	7
Grassland/Herbaceous	23	4,901,414	6
Barren	24	100,135	5
Pasture and Hay	26	1,074,990	4
Shrub/Scrub	27	1,415,930	3
Forest	33	16,780,004	2
Wetland	48	641,476	1
Total	*NA*	*28,712,221*	*NA*

Table 9. BARCAP—Region Carbon Stock per Acre and Total Carbon Stock (2022), modified from Table 1. (Reprinted)

BARCAP—Region Carbon Stock per Acre and Total Carbon Stock (2022)			
Land Cover Class	**Average Carbon Stock per Acre (MT C/Acre)**	**Total Carbon Stock (MT C)**	**Carbon Stock per Acre Rank**
Barren	15	139,387	11
Development	14	10,652,489	10
Vineyard	17	1,673,057	9
Grassland/Herbaceous	17	10,296,937	8
Shrub/Scrub	27	5,270,461	7
Open Water	30	3,668,746	6
Pasture and Hay	34	2,570,126	5
Orchard	37	377,494	4
Cultivated and Field Crops	38	2,397,443	3
Wetland	54	8,632,855	2
Forest	71	46,656,135	1
Total	*34*	*92,335,131*	*NA*

Appendix 1: Land Cover Classes Definitions

Land Cover Class	Definition from 2023 Sonoma County Inventory	Definition from 2023 Contra Costa Inventory	Definition from this analysis
Barren	Areas where vegetation accounts for less than 15 percent of total cover, for example areas of bedrock, sand dunes, or gravel pits.	Areas with very little vegetative cover and accumulations of earthen material such as bedrock, beaches, desert, sand dunes, strip mines, gravel pits, and so on.	Areas of bedrock, sand dunes, or gravel pits.
Cultivated and Field Crops	Areas used for the production of vegetables and field crops generally grown for human consumption, such as squash, tomatoes, leafy greens, rye, and oat.	Areas used to produce annual crops, such as corn, tomatoes, or other vegetables.	Areas used to produce vegetables or field crops, including but not limited to wheat, bush fruit, and row crops.
Development	Areas with constructed materials, including buildings and roads	Areas with impervious surfaces and features generally associated with towns or cities including residential, commercial, and industrial uses.	All constructed areas. For this analysis, this includes all EVTs containing the word “Urban” or “Developed”.
Forest	Areas dominated by trees with more than 10 percent tree cover (includes riparian areas that are dominated by trees with more than 10 percent tree cover).	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover.	Areas dominated by trees, including mixed-vegetation/riparian areas that are generally tree-dominant.
Grassland/Herbaceous	Areas dominated by herbaceous vegetation, with more than 10 percent herb cover, less than 10 percent tree cover and less than 10 percent shrub cover.	Areas dominated by grassy or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management, such as tilling, but can be utilized for livestock grazing.	Areas dominated by herbaceous vegetation, including mixed-vegetation/riparian areas that are generally grass/herbaceous-dominant.
Open Water	Areas of open water such as lakes, reservoirs, rivers, and oceans, generally with less than 25 percent cover of vegetation or soil.	Areas of open water such as lakes, reservoirs, rivers, and oceans, generally with less than 25% cover of vegetation or soil.	EVT of “Open Water”.
Orchard	Areas used to grow perennial woody tree crops such as apples, olives, and stone fruit.	Areas used to grow perennial woody tree crops, such as cherries, almonds, etc.	Areas used to produce fruit or nuts. For this analysis, this is limited to the EVTs of “Western Warm Temperate Orchard” and “Western Cool Temperate Orchard”.
Pasture and Hay	Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture or hay accounts for more than 20 percent of total vegetation.	Areas of grasses and/or legumes planted for livestock grazing, or the production of seed or hay crops, typically perennial plants.	Areas of grasses or areas used to produce seed or hay crops. For this analysis, this is limited to the EVTs of “Western Warm Temperate Pasture and Hayland” and “Western Cool Temperate Pasture and Hayland”.
Shrub/Scrub	Areas dominated by shrubs greater than 10 percent of total shrub cover and less than 10 percent tree cover (includes	Areas dominated by shrubs, less than 5 meters tall, with shrub canopy typically greater than 20% of total vegetation.	Areas dominated by shrubs including mixed-vegetation/riparian areas

Land Cover Class	Definition from 2023 Sonoma County Inventory	Definition from 2023 Contra Costa Inventory	Definition from this analysis
	riparian areas that are dominated by shrubs greater than 10 percent of total shrub cover and less than 10 percent of tree cover.		that are generally shrub-dominant.
Vineyard	Areas planted with grapevines, generally used for producing grapes used in winemaking.	Areas used to grow perennial woody vine crops such as grapes.	Areas used to produce wine. For this analysis, this is limited to the EVTs of "Western Warm Temperate Vineyard" and "Western Cool Temperate Vineyard".
Wetland	Areas where perennial herbaceous vegetation accounts for greater than 80 percent of vegetative cover and the perennial herbaceous vegetation indicate soil or substrate periodically saturated with or covered with water.	Areas where the soil or substrate is periodically saturated or covered with water.	Areas dominated by wetland with periodically saturated soil or substrate.

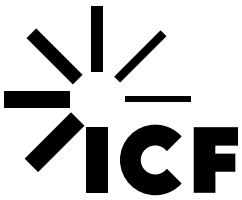
Appendix 2: Comparison of LANDFIRE, Sonoma County, & IPCC Land Cover Classes

LANDFIRE Existing Vegetation Type (EVT)	Sonoma County	IPCC
California Central Valley and Southern Coastal Grassland	Grassland/Herbaceous	Grassland
California Central Valley Mixed Oak Savanna	Forest	Forest land
California Central Valley Riparian Shrubland	Wetland	Forest land
California Central Valley Riparian Woodland	Wetland	Forest land
California Coastal Closed-Cone Conifer Forest and Woodland	Forest	Forest land
California Coastal Live Oak Woodland and Savanna	Forest	Forest land
California Coastal Redwood Forest	Forest	Forest land
California Lower Montane Blue Oak-Foothill Pine Woodland and Savanna	Forest	Forest land
California Lower Montane Blue Oak Woodland and Savanna	Forest	Forest land
California Lower Montane Foothill Pine Woodland and Savanna	Forest	Forest land
California Maritime Chaparral	Shrub/Scrub	Forest land
California Mesic Chaparral	Shrub/Scrub	Forest land
California Mesic Serpentine Grassland	Grassland/Herbaceous	Grassland
California Northern Coastal Grassland	Grassland/Herbaceous	Grassland
California Ruderal Grassland and Meadow	Grassland/Herbaceous	Grassland
California Ruderal Scrub	Shrub/Scrub	Forest land
California Xeric Serpentine Chaparral	Shrub/Scrub	Forest land
Californian Ruderal Forest	Forest	Forest land
Central and Southern California Mixed Evergreen Woodland	Forest	Forest land
Central California Coast Ranges Cliff and Canyon	Barren	Other land
Developed-High Intensity	Development	Settlements
Developed-Low Intensity	Development	Settlements
Developed-Medium Intensity	Development	Settlements
Developed-Roads	Development	Settlements
Mediterranean California Dry-Mesic Mixed Conifer Forest and Woodland	Forest	Forest land
Mediterranean California Foothill and Lower Montane Riparian Shrubland	Wetland	Forest land
Mediterranean California Foothill and Lower Montane Riparian Woodland	Wetland	Forest land
Mediterranean California Lower Montane Black Oak-Conifer Forest and Woodland	Forest	Forest land
Mediterranean California Lower Montane Black Oak Forest and Woodland	Forest	Forest land
Mediterranean California Lower Montane Conifer Forest and Woodland	Forest	Forest land
Mediterranean California Mesic Serpentine Chaparral	Shrub/Scrub	Forest land
Mediterranean California Mesic Serpentine Woodland	Forest	Forest land
Mediterranean California Mixed Evergreen Forest	Forest	Forest land
Mediterranean California Mixed Oak Woodland	Forest	Forest land
Mediterranean California Northern Coastal Dune	Barren	Other land
Mediterranean California Serpentine Foothill and Lower Montane Riparian Shrubland and Seep	Wetland	Wetland
Mediterranean California Serpentine Foothill and Lower Montane Riparian Woodland and Seep	Wetland	Wetland
Northern and Central California Dry-Mesic Chaparral	Shrub/Scrub	Forest land
Northern California Coastal Scrub	Shrub/Scrub	Forest land
Open Water	Open Water	Water
Quarries-Strip Mines-Gravel Pits-Well and Wind Pads	Barren	Other land
Southern California Coastal Scrub	Shrub/Scrub	Forest land
Temperate Pacific Freshwater Emergent Marsh	Wetland	Wetland
Temperate Pacific Subalpine-Montane Wet Meadow	Wetland	Wetland
Temperate Pacific Tidal Salt and Brackish Marsh	Wetland	Wetland
Western Cool Temperate Bush fruit and berries	Cultivated and Field Crops	Cropland
Western Cool Temperate Close Grown Crop	Cultivated and Field Crops	Cropland

LANDFIRE Existing Vegetation Type (EVT)	Sonoma County	IPCC
Western Cool Temperate Developed Deciduous Forest	Development	Settlements
Western Cool Temperate Developed Evergreen Forest	Development	Settlements
Western Cool Temperate Developed Herbaceous	Development	Settlements
Western Cool Temperate Developed Mixed Forest	Development	Settlements
Western Cool Temperate Developed Shrubland	Development	Settlements
Western Cool Temperate Fallow/Idle Cropland	Cultivated and Field Crops	Cropland
Western Cool Temperate Orchard	Orchard	Cropland
Western Cool Temperate Pasture and Hayland	Pasture and Hay	Cropland
Western Cool Temperate Row Crop	Cultivated and Field Crops	Cropland
Western Cool Temperate Row Crop - Close Grown Crop	Cultivated and Field Crops	Cropland
Western Cool Temperate Urban Deciduous Forest	Development	Settlements
Western Cool Temperate Urban Evergreen Forest	Development	Settlements
Western Cool Temperate Urban Herbaceous	Development	Settlements
Western Cool Temperate Urban Mixed Forest	Development	Settlements
Western Cool Temperate Urban Shrubland	Development	Settlements
Western Cool Temperate Vineyard	Vineyard	Cropland
Western Cool Temperate Wheat	Cultivated and Field Crops	Cropland
Western North American Ruderal Wet Meadow & Marsh	Wetland	Wetland
Western North American Ruderal Wet Shrubland	Wetland	Wetland
Western Warm Temperate Bush fruit and berries	Cultivated and Field Crops	Cropland
Western Warm Temperate Close Grown Crop	Cultivated and Field Crops	Cropland
Western Warm Temperate Developed Deciduous Forest	Development	Cropland
Western Warm Temperate Developed Evergreen Forest	Development	Cropland
Western Warm Temperate Developed Herbaceous	Development	Cropland
Western Warm Temperate Developed Mixed Forest	Development	Cropland
Western Warm Temperate Developed Shrubland	Development	Cropland
Western Warm Temperate Fallow/Idle Cropland	Cultivated and Field Crops	Cropland
Western Warm Temperate Orchard	Orchard	Cropland
Western Warm Temperate Pasture and Hayland	Pasture and Hay	Cropland
Western Warm Temperate Row Crop	Cultivated and Field Crops	Cropland
Western Warm Temperate Row Crop - Close Grown Crop	Cultivated and Field Crops	Cropland
Western Warm Temperate Urban Deciduous Forest	Development	Settlements
Western Warm Temperate Urban Evergreen Forest	Development	Settlements
Western Warm Temperate Urban Herbaceous	Development	Settlements
Western Warm Temperate Urban Mixed Forest	Development	Settlements
Western Warm Temperate Urban Shrubland	Development	Settlements
Western Warm Temperate Vineyard	Vineyard	Cropland
Western Warm Temperate Wheat	Cultivated and Field Crops	Cropland
Klamath-Siskiyou Lower Montane Serpentine Mixed Conifer Woodland	Forest	Forest land
California Montane Jeffrey Pine-(Ponderosa Pine) Woodland	Forest	Forest land
Klamath-Siskiyou Xeromorphic Serpentine Chaparral	Shrub/Scrub	Forest land
Klamath-Siskiyou Xeromorphic Serpentine Savanna	Grassland/Herbaceous	Forest land
Mediterranean California Mesic Mixed Conifer Forest and Woodland	Forest	Forest land
North Pacific Oak Woodland	Forest	Forest land
Klamath-Siskiyou Cliff and Outcrop	Barren	Other land
Mediterranean California Subalpine Meadow	Grassland/Herbaceous	Grassland
California Montane Woodland and Chaparral	Shrub/Scrub	Forest land
Mediterranean California Red Fir Forest	Forest	Forest land
Klamath-Siskiyou Upper Montane Serpentine Mixed Conifer Woodland	Forest	Forest land
Northern California Mesic Subalpine Woodland	Forest	Forest land
Mediterranean California Subalpine Woodland	Forest	Forest land
Mediterranean California Alpine Bedrock and Scree	Barren	Other land
North Pacific Maritime Dry-Mesic Douglas-fir-Western Hemlock Forest	Forest	Forest land
Inter-Mountain Basins Cliff and Canyon	Barren	Other land
Columbia Plateau Western Juniper Woodland and Savanna	Grassland/Herbaceous	Forest land

LANDFIRE Existing Vegetation Type (EVT)	Sonoma County	IPCC
Interior Western North American Temperate Ruderal Grassland	Grassland/Herbaceous	Cropland
Columbia Plateau Steppe and Grassland	Grassland/Herbaceous	Grassland
North Pacific Montane Riparian Woodland	Wetland	Forest land
North American Arid West Emergent Marsh	Wetland	Wetland
North Pacific Lowland Riparian Shrubland	Wetland	Forest land
Interior Western North American Temperate Ruderal Shrubland	Shrub/Scrub	Forest land
North Pacific Lowland Riparian Forest	Wetland	Forest land
Columbia Plateau Low Sagebrush Steppe	Shrub/Scrub	Forest land
Inter-Mountain Basins Big Sagebrush Shrubland	Shrub/Scrub	Forest land
North Pacific Montane Riparian Shrubland	Wetland	Forest land
Great Basin & Intermountain Introduced Annual Grassland	Grassland/Herbaceous	Grassland
Great Basin & Intermountain Ruderal Shrubland	Shrub/Scrub	Forest land
Inter-Mountain Basins Big Sagebrush Steppe	Shrub/Scrub	Forest land
Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland	Forest	Forest land
Sierra Nevada Cliff and Canyon	Barren	Other land
Rocky Mountain Aspen Forest and Woodland	Forest	Forest land
Sierran-Intermontane Desert Western White Pine-White Fir Woodland	Forest	Forest land
Inter-Mountain Basins Montane Sagebrush Steppe	Shrub/Scrub	Forest land
Sierra Nevada Subalpine Lodgepole Pine Forest and Woodland	Forest	Forest land
North Pacific Active Volcanic Rock and Cinder Land	Barren	Other land
North Pacific Wooded Volcanic Flowage	Barren	Forest land
North Pacific Montane Shrubland	Shrub/Scrub	Forest land
North Pacific Montane Massive Bedrock-Cliff and Talus	Barren	Other land
North American Glacier and Ice Field	Barren	Other land
Mediterranean California Alpine Dry Tundra	Grassland/Herbaceous	Grassland
North Pacific Alpine and Subalpine Dry Grassland	Grassland/Herbaceous	Grassland
Great Basin Pinyon-Juniper Woodland	Forest	Forest land
Great Basin Foothill and Lower Montane Riparian Shrubland	Wetland	Forest land
Columbia Plateau Silver Sagebrush Seasonally Flooded Shrub-Steppe	Shrub/Scrub	Forest land
Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	Forest	Forest land
Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest	Forest	Forest land
Great Basin Foothill and Lower Montane Riparian Woodland	Wetland	Forest land
Great Basin & Intermountain Introduced Annual and Biennial Forbland	Grassland/Herbaceous	Grassland
Inter-Mountain Basins Semi-Desert Shrub-Steppe	Shrub/Scrub	Forest land
Inter-Mountain Basins Playa	Barren	Other land
Inter-Mountain Basins Wash	Barren	Other land
Inter-Mountain Basins Alkaline Closed Depression	Barren	Wetland
Inter-Mountain Basins Greasewood Flat	Shrub/Scrub	Wetland
Inter-Mountain Basins Mixed Salt Desert Scrub	Shrub/Scrub	Forest land
Great Basin & Intermountain Introduced Perennial Grassland and Forbland	Grassland/Herbaceous	Grassland
Great Basin Xeric Mixed Sagebrush Shrubland	Shrub/Scrub	Forest land
Rocky Mountain Subalpine-Montane Mesic Meadow	Grassland/Herbaceous	Grassland
Columbia Plateau Scabland Shrubland	Shrub/Scrub	Forest land
Rocky Mountain Alpine-Montane Wet Meadow	Grassland/Herbaceous	Wetland
Inter-Mountain Basins Semi-Desert Grassland	Grassland/Herbaceous	Grassland
Columbia Plateau Ash and Tuff Badland	Barren	Other land
Northern Rocky Mountain Montane-Foothill Deciduous Shrubland	Shrub/Scrub	Forest land
Southern Rocky Mountain Montane-Subalpine Grassland	Grassland/Herbaceous	Grassland
Rocky Mountain Subalpine-Montane Riparian Shrubland	Wetland	Forest land
Great Basin Foothill and Lower Montane Riparian Herbaceous	Wetland	Grassland
Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland	Forest	Forest land
Rocky Mountain Subalpine-Montane Riparian Woodland	Wetland	Forest land
Rocky Mountain Lower Montane-Foothill Shrubland	Shrub/Scrub	Forest land
Great Basin Semi-Desert Chaparral	Shrub/Scrub	Forest land
Sierra Nevada Alpine Dwarf-Shrubland	Shrub/Scrub	Forest land

LANDFIRE Existing Vegetation Type (EVT)	Sonoma County	IPCC
Interior West Ruderal Riparian Forest	Wetland	Wetland
Interior West Ruderal Riparian Scrub	Wetland	Wetland
Rocky Mountain Cliff Canyon and Massive Bedrock	Barren	Other land
Mojave Mid-Elevation Mixed Desert Scrub	Shrub/Scrub	Forest land
Inter-Mountain Basins Subalpine Limber-Bristlecone Pine Woodland	Forest	Forest land
Rocky Mountain Alpine Turf	Grassland/Herbaceous	Grassland
Mediterranean California Alpine Fell-Field	Grassland/Herbaceous	Forest land
Sonora-Mojave Mixed Salt Desert Scrub	Shrub/Scrub	Forest land
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	Shrub/Scrub	Forest land
Inter-Mountain Basins Active and Stabilized Dune	Barren	Other land
North American Warm Desert Pavement	Barren	Other land
North American Warm Desert Bedrock Cliff and Outcrop	Barren	Other land
North American Warm Desert Badland	Barren	Other land
North American Warm Desert Ruderal & Planted Scrub	Shrub/Scrub	Forest land
North American Warm Desert Ruderal & Planted Grassland	Grassland/Herbaceous	Grassland
North American Warm Desert Volcanic Rockland	Barren	Other land
North American Warm Desert Active and Stabilized Dune	Barren	Other land
North American Warm Desert Playa	Barren	Other land
Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland	Forest	Forest land
Sonora-Mojave Semi-Desert Chaparral	Shrub/Scrub	Forest land
North American Warm Desert Lower Montane Riparian Shrubland	Wetland	Forest land
North American Warm Desert Lower Montane Riparian Woodland	Wetland	Forest land
North American Warm Desert Riparian Shrubland	Wetland	Forest land
North American Warm Desert Wash Shrubland	Wetland	Forest land
North American Warm Desert Riparian Woodland	Wetland	Forest land
North American Warm Desert Wash Woodland	Wetland	Forest land
North American Warm Desert Cienega	Wetland	Wetland
North American Warm Desert Riparian Mesquite Bosque Shrubland	Wetland	Forest land
North American Warm Desert Riparian Herbaceous	Wetland	Wetland
North American Warm Desert Riparian Mesquite Bosque Woodland	Wetland	Forest land
Southern California Dry-Mesic Chaparral	Shrub/Scrub	Forest land
Southern California Oak Woodland and Savanna	Forest	Forest land
Southern California Coast Ranges Cliff and Canyon	Barren	Other land
Mediterranean California Southern Coastal Dune	Barren	Other land
Rocky Mountain Gambel Oak-Mixed Montane Shrubland	Shrub/Scrub	Forest land
Southern Rocky Mountain Ponderosa Pine Woodland	Forest	Forest land
Baja Semi-Desert Coastal Succulent Scrub	Shrub/Scrub	Forest land
Sonoran Granite Outcrop Desert Scrub	Shrub/Scrub	Forest land
Sonoran Paloverde-Mixed Cacti Desert Scrub	Shrub/Scrub	Forest land
Agriculture-Cultivated Crops and Irrigated Agriculture	Cultivated and Field Crops	Cropland
Western Warm Temperate Aquaculture	Open Water	Cropland
Developed-Open Space	Development	Settlements



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Appendix C

Technical Methodology for Quantifying GHGs, Co-pollutants, and Costs

March 2026

Bay Area Regional Climate Action Plan



Measure Quantification Technical Reference Appendix to the Bay Area Regional Climate Action Plan

November 24, 2025

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Executive Summary

As part of the development of the 2025 Bay Area Regional Climate Action Plan (BARCAP), the Air District engaged ICF Incorporated, LLC (ICF) to conduct technical analyses to support the planning process. This report presents the methodologies, assumptions, and results of the analysis conducted to evaluate the greenhouse gas (GHG), co-pollutants, and cost impacts of the BARCAP measures.

The baseline for calculating estimated emission reductions from BARCAP measures is the Air District's future projections of the GHG inventory. The future projections estimate GHG emissions through 2050 and are based on the California 2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan) Reference Scenario, with adjustments made to reflect emission changes expected from implementation of the Air District's Rules 9-4 and 9-6.[1] The state's Advanced Clean Cars II (ACCII) regulation and the Metropolitan Transportation Commission/Association of Bay Area Governments (MTC/ABAG) Plan Bay Area 2050+ are accounted for separately from the quantification of measures in the transportation sector. The 2022 Scoping Plan Reference Case includes SB100 power sector targets through 2030. Additionally, an estimate of GHG sequestration and emissions were developed for the natural and working lands (NWL) sector.

The Air District's future projections reflect reductions in GHG emissions based on a variety of factors, including expected decreases in certain activities, expected increases in technological efficiencies, and already-in-effect state and Air District policies, regulations, and programs. Across all sectors, the future projections of the BARCAP GHG Emissions Inventory show a 35% reduction in GHG emissions from 2022 to 2045.[2] Total gross GHG emissions were 54.1 million metric tons of carbon dioxide equivalent (MMTCO2e) in 2022. The largest emitting sector is transportation, followed by industry, buildings, and power. Agriculture and waste each contribute less than 5% to the GHG inventory. See Appendix A of the BARCAP for a full overview of the BARCAP GHG Inventory and Projections.

Ten measures were assessed across the buildings, transportation, waste, power, and NWL sectors. With implementation of these measures, GHG emissions decrease 40% from 2022 to 2045, with the transportation sector measures driving the largest GHG reductions. Cumulatively, they lead to an additional reduction in GHG emissions by approximately 50 $MMTCO_2e$ from 2025 through 2045. The measures focus on feasible, actionable, and widely supported strategies, many of which also complement work at the state level or remove barriers and scale projects at the local level. While they contribute significantly towards the GHG reduction targets for 2030 and 2045, they do not achieve them by themselves. Rather, the BARCAP measures are designed to help achieve the targets by working in concert with state and local actions, many of which are enabled by BARCAP measures. Table 1 shows the cumulative GHG reductions by measure.

Table 1. Cumulative GHG Reductions by Measure, 2025 - 2045

Measure	$MMTCO_2e$
B1	1.52
B2	0.09
B3	NE

T1	4.99
T2	6.84
T3	9.87
T4	NE
W1	(0.14)
W2	NE
W3	NE
P1	3.28
P2	NE
NWL1	NE
NWL2	12.22
NWL3	0.12
NWL4	11.29
Total	**50.07**

Note: NE – Not Estimated. Measures B3, T4, W2, W3, P2, and NWL1 were not estimated since they are primarily supporting measures.

In some cases, measures included in the BARCAP address GHG emissions that were not included in the GHG inventory for future emission projections. For example, measure P-1 in Table 1 includes the emission reductions associated with the installation of behind-the-meter (BTM) solar. These emission reductions result from replacing grid electricity, some of which could be generated outside of the BARCAP region, with electricity generated by solar panels on site. However, the BARCAP inventory and future projections only include GHG emissions that are generated within the region.

Further, the BARCAP region is part of the interconnected CAISO electricity system, which includes electricity that is both imported into and exported out of the region. As a result, changes in electricity supply and demand within the BARCAP region – such as increased BTM solar generation or demand from electric vehicle (EV) charging – may not directly reduce natural gas-powered electricity generation within the region. Natural gas power plants in the BARCAP region may also serve broader CAISO demand and may export electricity outside the region. Conversely, power plants located outside the region can provide electricity that is consumed within the region. Therefore, to estimate avoided GHG emissions from power plants, GHG emission reductions for measure P-1 are evaluated based on the overall consumption of electricity occurring within the region, regardless of where the electricity was generated.

Both the upfront cost of implementing measures in this plan, and any savings achieved due to decreased energy costs, were modeled and presented in terms of net present value (NPV). NPV is calculated in real dollars (2025$) using a 3% discount rate. The estimated costs to implement measures range from over $22 million for Measure B2 to over $1.4 billion for Measure T1. Implementation costs are included in GHG and Cost Quantification Methodology descriptions for each measure in this report.

Costs are estimated from a societal framing and generally include capital costs, such as upfront equipment costs, and operating costs and savings, such as impacts on fuel and electricity bills, related to measure activities. Program administration and related costs incurred during implementation of the measures are not explicitly quantified in the societal framing approach. For measure W-1 because there are no operational or capital costs the societal framing was not appropriate, and therefore program administration and related programmatic costs were used to estimate the cost to implement. Cost estimates do not consider the value of other benefits, including reduction in criteria air pollutants, improvements in public health, water quality, quality of life, and other difficult to quantify factors. Also, perhaps most importantly, the estimates do not assign dollar values for carbon removed.

Two measures, P-1 and T-2, show a net cost savings from 2025 – 2045. The net cost savings are due to initial upfront costs of implementation being offset over the longer term by savings. For example, measure P-1 shows a net cost savings of approximately $16 billion from 2025 – 2045. The overall cost savings are derived from estimated electricity bill savings resulting from on-site generation of electricity and current and projected electricity rates in the region. More details on the costs and savings associated with P-1 are shown in Table 40.

In addition to GHG emissions, emissions of criteria air pollutants and their precursors (CAPs) and toxic air contaminants (TACs) from sources covered by measures may harm public health and the environment. Like the GHG inventory, tracking these co-pollutants (CAPs and TACs) in an inventory over time provides an understanding of what pollutants are being released, how much, and their key sources.

In addition to reducing GHG emissions, the proposed measures simultaneously reduce emissions of certain co-pollutants. Cumulative reductions of co-pollutant emissions from 2025 through 2045 across the BARCAP region include: 246,000 MT of carbon monoxide (CO), 11,000 MT (metric tons) of nitrogen oxides (NO_x), 630 MT of particulate matter 10 (PM_{10}), and 120 MT of sulfur dioxide (SO_2), as shown in Table 51. The majority of these emission reductions result from reduced tailpipe emissions in the transportation sector due to increased zero-emission vehicle adoption. However, these vehicles still contribute to PM emissions through road dust and tire wear/brake wear emissions throughout the BARCAP region.

GHG and Cost Quantification Methodology, Assumptions, and Results

B-1: Support implementation of the Air District's zero NO_x building appliances rules by addressing key challenges

Measure description: Support an equitable and affordable transition to healthy, zero NO_x water and space heating for buildings in the region by addressing key implementation challenges of the Air District's appliance rules, which go into effect for small gas residential water heaters in 2027 and gas furnaces in 2029. Actions are informed by the Air District's Implementation Working Group in addition to BARCAP stakeholder engagement.

Methodology for Estimating GHG Reductions

GHG emission reductions from Measure B-1 were quantified by assessing the extent to which targeted education and outreach programs can accelerate the adoption of zero NO_x appliances relative to the future projections of the GHG inventory. Changes in scope 2 emissions associated with the increases in electricity use from the implementation of this measure were excluded from this analysis.

First, the existing stock of residential gas water heaters and furnaces in the BARCAP region was estimated using data from NREL's ResStock dataset and the BayREN Existing Buildings Dashboard (Table 2). The building stock was segmented to develop separate stock turnover models for residential space heating systems, small residential water heating systems, and large residential water heating systems. Average equipment lifetimes outlined in Table 3 were applied to model the cumulative stock and annual turnover rates from 2025 through 2050. For consistency, key inputs to this model were validated and aligned with assumptions from previous reports published by the Air District.

To establish the baseline scenario, data sources from Table 2 and Table 3 were used to forecast baseline adoption of heat pump technologies prior to the compliance dates included in the Air District's zero NO_x rules. Beginning in 2027 for small gas water heaters, 2029 for gas furnaces, and 2031 for large water heating systems, heat pump technologies were assumed to replace all gas systems reaching the end of their useful life, in accordance with the Air District's zero NO_x appliance rules. Adoption curves and emission trajectories were then calibrated to align with forecasted residential natural gas combustion from the Air District's projections.

Emission reductions from Measure B-1 were evaluated along two pathways, depending on whether interventions occur before or after the Air District's zero NO_x appliance rules compliance dates.

- Prior to the start of the zero NO_x rules compliance dates, customers retain the option to replace systems with like-for-like gas equipment. In this context, emission reductions from Measure B-1 are achieved by incentivizing the early replacement of NO_x-emitting equipment with zero NO_x heat pump systems. By accelerating the transition to zero NO_x options ahead of equipment burnout, pre-rule replacements avoid emissions that would otherwise have occurred from the continued operation of gas appliances over their remaining lifetime.
- After the zero NO_x rules compliance dates, the baseline assumes that natural gas furnaces and water heaters are replaced with heat pumps at the end of their useful life. Under Measure B-1, targeted outreach and education are expected to accelerate retirements of natural gas appliances with an average estimated remaining useful life of five years. The targeted outreach and education interventions were assumed to result in the early replacement of roughly 5 percent of the eligible equipment stock each year.

Stock turnover models were used to estimate annual energy consumption by fuel type and technology. Emission impacts were calculated from avoided natural gas combustion and refrigerant leakage. All heat pumps installed after 2025 were assumed to use low-GWP refrigerants R-32 or R-454B in line with US EPA's Hydrofluorocarbon (HFC) Technology

Transitions rule under the American Innovation and Manufacturing (AIM) Act.[3] For HVAC heat pumps, no incremental leakage was assumed for homes already equipped with central AC systems.

Assumptions

- The average effective useful life (EUL) of a residential gas furnace was assumed to be 18 years, and the EUL of a gas water heater was assumed to be 13 years, consistent with Air District assumptions.
- The remaining useful life (RUL) of equipment replaced early is assumed to be five years, based on averages and industry standard practice reported in Connecticut's Measure Life Study (see Tables 2 and 3 below).
- Outreach and education efforts under Measure B-1 are assumed to drive the early replacement of five percent of each eligible equipment cohort per year.
- All heat pump systems installed after 2025 are assumed to use low-GWP refrigerants R-32 or R-454B, in line with the Technology Transitions regulations covered under the EPA's AIM Act. Regulations covered under the AIM Act require that, beginning in 2025, HVAC equipment must be manufactured using refrigerant having a GWP of no more than 700.
- For HVAC heat pumps, no incremental refrigerant leakage is assumed for households that already have central air conditioning systems. These households represent approximately 42% of the baseline housing stock, based on BayREN's Existing Buildings Study (See Table 2). Values of refrigerant charge, annual leakage rate, end-of-life leakage rate and refrigerant global warming potential (GWP), all come from California's High Global Warming Potential Gases Emission Inventory (See Table 2). Leakage rate assumptions are shown in Table 3.

Limitations

- Modeled energy savings represent averages and may not fully capture variability across building types, vintages, and occupant behaviors. Uncertainty is greater for multifamily buildings due to diverse system types and shared loads. Energy savings and costs for large heat pump water heaters are especially uncertain given the limited availability of performance and cost data.
- The assumption that outreach and education efforts under Measure B-1 will drive the early replacement of five percent of each eligible equipment cohort per year is not grounded in comparable studies or prior programs, as this type of intervention has not been widely tested at scale or in the context of a zero NO_x appliance standard.
- Upfront cost estimates for heat pumps are drawn from the TECH Clean California cost dataset[4], as reported in the Air District's report on Installation Costs for Zero NO_x Space and Water Heating Appliances, as well as data from Community Choice Aggregators (CCAs), Publicly Owned Utilities (POUs) and municipal incentive programs (see Table 6). While these estimates include the cost of panel upgrades, they may understate future costs if early adopters were more likely to live in homes with sufficient electrical capacity and thus faced lower upgrade expenses. In the TECH Clean dataset, only 4% of single-family homes undergoing space heating upgrades reported panel upgrade costs. By comparison, a 2024 UCLA study found that 32% of single-family homes in California have electrical panels of intermediate capacity (100 amps) and would likely require load management or panel optimization.[5]

Data Sources

Table 2. Data Sources for Measure B-1 GHG Quantification

Data Source	Application
NREL's ResStock Dataset 2024.2	Bay Area housing stock characteristics, including share of single-family and multifamily units, fuel mix for space heating and water heating, and average energy consumption from gas space heating and water heating appliances
NREL's ResStock Dataset 2024.1 Measure Packages	Average change in gas and electricity consumption resulting from heat pump replacements
BayREN Existing Buildings Dashboard	Number of single-family and multifamily units
Air District's GHG Inventory Projections	Baseline emission projections for residential natural gas
Air District Draft Environmental Impact Report for the Proposed Amendments to Building Appliance Rules	EUL for gas furnaces and water heaters
Connecticut Measure Life Study	Average RUL at early replacement
California's High Global Warming Potential Gases Emission Inventory	Refrigerant charge size, leakage rate, refrigerant type, and refrigerant global warming potential
BayREN Existing Buildings Study Building Characteristics Report	Share of homes with existing central AC systems
EPA's HFC Technology Transitions Regulations	Information on GWP requirements for new HVAC systems installed starting in 2025.
California's High Global Warming Potential Gases Emission Inventory	Values of refrigerant charge, annual leakage rate, end-of-life leakage rate, refrigerant type, and refrigerant GWP

Table 3. Key Modeling Assumptions for Measure B1

Key Assumptions	Value
Baseline Gas Furnace Lifetime	18 years
Baseline Gas Water Heater Lifetime	13 years
RUL at Early Replacement	5 years
Share of Homes with Existing AC	54%
HP HVAC Refrigerant Operational Leakage Rate	5.3%
HP Water Heater Refrigerant Operational Leakage Rate	1.0%
HP HVAC Refrigerant End-of-life Leakage Rate	80%
HP Water Heater Refrigerant End-of-life Leakage Rate	100%

GHG Quantification Results

Table 4. Annual Reduction in Scope I GHG Emissions from Measure B-1 ($MMTCO_2e$)

Source	2025	2030	2035	2040	2045
Avoided Natural Gas Combustion	.0126	.0757	.1123	.0735	.0581
Refrigerant Leakage	(.0003)	(.0017)	(.0024)	(.0059)	(.0083)
Net Emissions	.0124	.0741	.1099	.0675	.0498

Table 5. Annual Reduction in Energy Consumption from Measure B-1

Source	2025	2030	2035	2040	2045
Natural Gas (MMBTU)	238,657	1,431,944	2,122,201	1,389,427	1,098,528
Electricity (MWh)	(15,444)	(92,666)	(142,542)	(106,664)	(87,968)

Measure Cost Approach

Two types of customer costs were evaluated: upfront installation costs and long-term impacts on utility bills. Costs related to program administration or ongoing equipment maintenance were not included. Incentives were also excluded due to uncertainty regarding the availability, value, and duration of federal, state, and local funding sources. All estimates are presented in 2025 real dollars, with additional results for early replacements expressed in net present value (NPV) using a 3% real discount rate.

Upfront costs for NO_x-emitting appliances, zero NO_x appliances, and AC systems were sourced from the Air District's Implementation Working Group (IWG) 2024 Report on Installation Costs for Zero-NO_x Space and Water Heating Appliances. These estimates (shown in columns 1-3 of Table 6) were initially developed using cost data from the TECH Clean California dataset [6] and include installation, appliance, and labor expenses, as well as electrical panel upsizing where applicable (defined as an increase in capacity of at least 50 amps). These appliance cost estimates provide the starting point for the two early replacement cost calculations described below.

Table 6. Upfront Cost Inputs for Early Replacements

Appliance and Housing Type		Appliance Costs			Early Replacement Costs	
		1. NO_x Emitting	*2. Central AC[1]*	*3. Zero-NO_x*	*A. Pre-Rule Incremental Cost[2]*	*B. Post-Rule Timing Cost (NPV)[3]*
Space Heater[2]	Single Family	$10,731	$3,437	$19,640	$8,909	$2,774
Space Heater[2]	Multifamily	$10,731	$3,437	$20,676	$9,945	$2,921
Water Heater	Single Family	$5,231	$3,437	$7,071	$1,840	$999
Water Heater (Small)	Multifamily	$5,231	$0	$8,309	$3,078	$1,174
Water Heater (Large)[4]	Multifamily	$5,231	$0	$10,289	$4,020	$1,454

[1] *Incremental costs for space heating systems incorporate a weighted average cost for AC systems, reflecting the assumption that AC costs ($8,106 per unit) will be avoided in 42% of homes with existing central AC.*
[2] *Zero NO_x space heating costs were calculated as the average of ducted and non-ducted systems.*
[3] *Zero NO_x water heating costs were calculated as the average of tanked and tankless systems.*
[4] *Additional data from BAMBE program staff were used to refine cost estimates for large water heaters.*

The method for estimating upfront costs from early replacements differs depending on whether installations occurred before or after the zero NO_x rules take effect.

A) **Pre-rule period**: Before the compliance dates, households can still replace equipment with a like-for-like gas system. In this period, the upfront cost impact reflects the additional amount a household would pay to choose a zero NO_x appliance instead of a new NO_x emitting appliance. This comparison is made by subtracting the cost of the NO_x emitting appliance (columns 1-2 of Table 6) from the cost of the zero NO_x appliance (column 3 of Table 6). The resulting pre-rule incremental cost is in column A of Table 6. For space heating appliances, this comparison also accounts for avoided AC costs. 42% of homes have existing central AC and therefore avoid the $8,106 cost of purchasing a new AC system. To reflect this, a weighted average AC cost is applied (column 2 of Table 6).

B) **Post-rule period**: After the compliance dates, all replacement systems were assumed to be zero NO_x appliances. In this period, the calculations rely on a net present value framework (NPV), where the cost impact reflects the cost of replacing equipment earlier than necessary, rather than the cost of choosing one technology over another. Instead of comparing heat pumps to gas systems, the analysis compares the cost of purchasing a heat pump early versus the cost of purchasing the same heat pump five years later. These post-rule timing costs (column B of Table 6) capture only the time value of money. They are calculated by discounting the cost of the zero NO_x appliance (column 3 of Table 6) five years into the future using a 3% annual discount rate. These upfront costs appear only in the NPV results in Table 9. When expressed in real 2025 dollars, the timing cost is $0, so they do not appear in Table 8. An example of this calculation is described in Box 1.

Bill impacts were estimated based on projected changes in natural gas and electricity consumption and corresponding utility rate forecasts. For this analysis, it was assumed that early adopters of zero NO_x appliances were more likely to be higher income households that do not qualify for CARE given the high upfront costs of zero NO_x appliances. Accordingly, baseline electricity and natural gas rates were drawn from the most recent available residential rate schedules for PG&E non-CARE customers.

The CARE program provides income-qualified households in California with a 30-35% discount on electricity bills and a 20% discount on natural gas bills. Because CARE customers receive a larger discount on electricity, their bill increases from electrification are projected to be significantly lower than those of non-CARE customers.

Future rates through 2045 were projected using historical trends in PG&E prices. A key limitation of this analysis is that the relative cost effectiveness of electrification is highly sensitive to utility rate trajectories, which are subject to considerable uncertainty due to market conditions, regulatory policies, and infrastructure investment needs. In this analysis, electricity rates are assumed to increase faster than natural gas rates based on historical trends, resulting in high

long-term operating costs for electrified homes and larger bill impacts over time. Additional details on cost assumptions and data sources are provided below.

Cost Assumptions

- Upfront costs include installation, appliance, and labor expenses, as well as electrical panel upsizing where applicable.
- In homes with existing central AC, incremental costs for heat pump HVAC systems reflect the avoided cost of replacing air conditioning equipment.
- Baseline electricity prices were based on the average regional non-CARE residential rate under PG&E's base plan in June 2024.
- Baseline natural gas prices were based on PG&E's non-CARE residential rate from February 2025.
- Electricity prices were assumed to escalate at 6.18% annually and natural gas delivery charges were assumed to escalate at 5.3% annually. Escalation rates were derived from E3's analysis of historical PG&E trends and converted to nominal values, assuming a 2% annual inflation rate.
- Net present value was calculated using a 3% real discount rate. These costs are shown in Table 8.

Box 1. Example HPWH Upfront Costs from the Pre-Rule and Post-Rule Periods

To help illustrate the estimated cost calculations for measure B-1, the pre-rule period and post-rule period scenarios are described in plain language in the examples below. Cost modeling used the two concepts of Incremental Costs and Timing Costs both pre and post rule scaled to the full implementation of the measure to enumerate costs.

A) Pre-Rule Period: Incremental Costs

It's 2026, and Maria's gas water heater is getting old. Wanting to be proactive and avoid the hassle of a surprise breakdown, she decides to replace it early. At this point, the zero NO_x rules have not yet gone into effect for small water heaters, so purchases of new gas systems are still allowed. When Maria shops around, she receives two quotes:

- A new gas water heater: $5,231
- A new heat pump water heater (HPWH): $7,071

The HPWH costs more upfront, so the incremental cost is the difference between the two: $1,840. Maria decides to move ahead with the HPWH and takes advantage of available rebates (not included in calculation).

B) Post-Rule Period: Timing Costs (NPV)

It's 2030, and the zero NO_x rules have now taken effect. Maria's neighbor, David, also has an older gas water heater. After seeing Maria successfully switch to a HPWH, David starts thinking about replacing his own unit. His water heater hasn't had any major issue and likely has about five years of life left. Because the rules are now in effect, any replacement David buys must be a zero NO_x system (assumed to be a HPWH). David faces two choices:

- Buy a HPWH now ($7,071) to replace his water heater early
- Buy a HPWH five years later when his water heater actually breaks down

If David replaces it early, he ends up buying the HPWH five years sooner than he otherwise would. Although he is buying the same appliance in both scenarios, buying it earlier introduces a new kind of cost: the cost of moving the purchase forward in time. Under the NPV framework, money spent in the future is worth less than money spent today, due to the time value of money. David could have used that money for something else in the meantime, like earning interest or paying down debt. To reflect this "opportunity cost," the future cost of the heat pump is discounted using a 3% annual discount rate: $\$7,071 \times (0.97^5) \approx \$6,070$.

This means that by waiting five years the new hot water heater would "cost" David about $6,070 in today's dollars. By replacing the water heater early requires him to spend the full $7,071 today. The difference ($1,001) is the timing cost of replacing the appliance early.

It is important to note that the early replacement of NO_x-emitting appliances generates the additive GHG emission reductions that are attributed to measure B-1.

Box 2. Key Differences in Key Data Inputs and Assumptions: Implementation Working Group report and BARCAP Analysis

A detailed analysis on Installation Costs for Zero-NO_x Space and Water Heating Appliances and associated bill impacts was conducted as part of the Air District's Implementation Working Group (IWG) process. While many of the same input assumptions were used across both efforts, several key findings from the IWG report are not reflected here due to differences in assumptions and scope. In particular, the IWG's findings show that many households — especially low and moderate income (LMI) households — can benefit from large rebates and bill savings, particularly if they qualify for discounted utility rates through CARE. By contrast, this analysis focuses on the subset of customers most likely to pursue voluntary early replacement. These customers are assumed to be higher-income households given the high upfront costs typically involved. As a result, households modeled in this analysis do not receive CARE discounts or rebates, which leads to higher upfront and operating costs than those shown in the IWG analysis. Other key differences are summarized below:

IWG Cost Assessment	Measure B-1 Cost Assessment
Finds that incentives can average $3,400–$13,900 per household, with the largest rebates going to LMI customers.	Rebates are excluded due to uncertainty surrounding long-term funding and the assumed income profile of customers, leading to higher upfront costs.
Evaluates bill impacts under both CARE and non-CARE rates and finds that most CARE customers see net bill savings.	Assumes all customers use non-CARE rates, resulting in high bill increases after electrification.
Segments customers by electricity usage and shows that high-usage households and those who switch to E-ELEC rates typically experience bill savings from electrification.	Does not account for usage-tier and rate-plan switching. Applies a single average electricity rate (simplified approach), which contributes to higher bill increases.
Assesses bill impacts using current or near-term utility rates.	Projects bill impacts over a longer time horizon using utility rates that increase over time. Under these assumptions, electricity rates are expected to rise more quickly than natural gas rates, resulting in substantially higher bill increases

Cost Data Sources

Table 7. Data Sources for Measure B-1 Cost Quantification

Data Source	Application
Air District Report on Installation Costs for Zero-NO_x Space and Water Heating Appliances (2024)	Installation costs for NO_x-emitting and zero NO_x HVAC and water heating appliances
E3 Report on Benefit-Cost Analysis of Targeted Electrification and Gas Decommissioning in California (2023)	Escalation rate for gas and electricity, derived from historical PG&E data
CPUC California Electric Rate Comparison	Residential electricity rates by county (PG&E Base Plan)
PG&E Rate Schedule for Natural Gas	Residential natural gas rates
US Bureau of Labor Statistics Consumer Price Index	Inflation adjustments (CPI)

Results

Cumulative costs incurred from 2025-2045 are shown in the tables below. As explained in Box 2, these results rely on a simplified set of assumptions and do not capture all cost components modeled in the IWG report.

Table 8 presents cumulative costs in real 2025 dollars. The upfront costs shown here include only pre-rule replacements (see example A in Box 1). These early replacements phase out after 2030, as the final stage of the zero NO_x rules takes effect for large HPWHs in 2031. Most of the net costs in Table 8 come from higher utility bills, driven by the higher price of electricity relative to natural gas. As described in Box 2, these bill impacts are based on a rate simplified analysis and do not account for several features of rate structures that can reduce bills for some customers.

Table 9 presents cumulative costs in NPV terms. Upfront costs are higher in Table 9 because they also include post-rule timing costs (see example B in Box 1). In contrast, bill impacts are lower in NPV terms because bill increases occur over a long period, and costs that occur further in the future are discounted, making them worth less in today's dollars.

Table 8. Measure B-1 Cumulative Costs from 2025-2045 (Million Real 2025 Dollars)

Category	Net Cost
Upfront Costs	$270
Bill Impacts	$558
Net Costs	**$828**

Table 9. Measure B-1 Cumulative Costs from 2025-2045, Net Present Value (Million Real 2025 Dollars)

Category	Net Cost
Upfront Costs	$518
Bill Impacts	$372
Net Costs	**$890**

B-2: Advance decarbonization and public health goals by integrating electrification incentives with home repair and weatherization services and other non-energy programs targeted toward low-income and disadvantaged communities.

Measure description: Perform holistic building retrofits that include energy efficiency, electrification, and home repair and remediation by braiding together and augmenting funding, services, and other assistance from existing programs. Focus retrofits in the BARCAP region's low-income and frontline communities. This measure builds on the Air District's Bay Area Healthy Homes Initiative program, and the initial buildings-focused program concept first articulated in the CPRG Priority Climate Action Plan (called the "Bay Area Clean Homes Initiative," or "BACHI"). The implementation of this measure is highly dependent on seeking and obtaining other funding sources to implement (per B-2.1). BayREN and the Air District are committed to leading this exploration in partnership with other key organizations as noted below.

Methodology for Estimating GHG Reductions

To estimate GHG emission reductions from Measure B-2, a whole-home retrofit program concept that integrates and augments funding, services, and technical assistance from existing state, federal, and local programs was developed. The approach builds on BayREN's EASE and BAMBE programs and assumes that additional resources will be leveraged from California's Equitable Building Decarbonization Direct Install program, Energy Savings Assistance, TECH Clean California rebates, Golden State rebates, USDA's Home Repair program, HEERA, HOMES Pay for Performance, and incentives from utilities and community choice aggregators. As with B-1 changes in scope 2 emissions associated with the increases in electricity use from the implementation of this measure were excluded from this analysis.

Table 10 summarizes measures included in the whole-home retrofit. All participating homes were assumed to electrify both HVAC and water heating systems, and to complete air sealing and insulation upgrades. Cooking electrification, smart thermostat, and lighting upgrades were assumed to occur in a subset of homes, based on baseline saturation levels reported in BayREN's Existing Buildings Study, ResStock, and the California Public Utility Commission's Impact Evaluation of Smart Thermostats.

Table 10. Measure B-2 Whole-Home Retrofit Measures

Measure	Base Case	Upgrade Case
Heat Pump HVAC	Gas furnace	Heat pump HVAC
Heat Pump Water Heater	Gas water heater	Heat pump water heater
Cooking Range Electrification	Gas range	50/50 mix of electric resistance and induction ranges
Lighting	100% fluorescent lighting (compact fluorescent lamps)	100% LED lighting (general service filament-LED lamps)
Smart Thermostat	Manual thermostat	Smart thermostat

Measure	Base Case	Upgrade Case
Air Sealing & Insulation	Base insulation	Attic floor insulation (R-49) and air leakage reduction (30% whole-home reduction in AC

ResStock and BayREN's Existing Buildings Study were used to characterize baseline energy use for single-family and multifamily homes and to estimate achievable savings from retrofit measures. To account for the Air District's zero NO_x appliance standards, energy savings and emission reductions were calculated separately for space heating, water heating, and other measures included in the whole-home retrofit. For HVAC and water heating electrification, calculations followed the methodology used in Measure B-1. Prior to the standards taking effect, savings were credited to early adoption of heat pumps, which displaced the full remaining lifetime of gas appliances. After the standards take effect, gas replacements are no longer permitted in the baseline scenario. In this period post rule compliance dates, savings were credited only for early retirements, assumed to occur when equipment had about five years of remaining useful life.

Because both B1 and B2 offer some of the same opportunities for emissions reductions through the early retirement of NO_x-emitting appliances, there is the possibility for overlap in how these reductions are being counted. However, in the context of the Bay Area's housing stock (over 2.7 million households), the modeled annual installations under B-1 (~14,000) and B-2 (~900) represent a small fraction of the total equipment stock, so instances of double counting are assumed to be relatively small.

For each measure completed through the whole-home retrofit, annual energy savings, avoided emissions from reduced natural gas consumption, and emissions from refrigerant leakage associated with the installation of new heat pumps were estimated. All heat pumps installed after 2025 were assumed to use low-GWP refrigerants in compliance with AIM Act regulations. No incremental refrigerant leakage was assumed for HVAC heat pumps installed in homes already equipped with central air conditioning.

Assumptions

- The modeled program was assumed to operate from 2026 through 2030, serving approximately 900 homes each year, based on input provided by the Air District. Of these, 75% were assumed to be single-family homes and 25% in multifamily homes.
- All participating homes were assumed to electrify both HVAC and water heating systems, and to complete air sealing and insulation upgrades. Cooking electrification, smart thermostat, and lighting upgrades were assumed to occur in a subset of homes, based on baseline saturation levels reported in BayREN's Existing Buildings Study, ResStock, and the California Public Utility Commission's Impact Evaluation of Smart Thermostats
- The average EUL of a residential gas furnace is assumed to be 18 years, while the EUL of a gas water heater is assumed to be 13 years, consistent with Air District assumptions.
- The RUL of equipment replaced early is assumed to be five years, based on values and industry standard practice reported in Connecticut's Measure Life Study.

- All heat pump systems installed after 2025 were assumed to use low-GWP refrigerants R-32 and R-454B to comply with the HFC Technology Transitions rule covered under the AIM Act.
- No incremental refrigerant leakage from HVAC heat pumps was assumed for homes already equipped with central air conditioning. These homes represent approximately 42% of the baseline housing stock according to BayREN's Existing Buildings Study.
- The target audience for this program is assumed to be moderate-income residents. No participants were assumed to receive discounted utility rates through the CARE program.

Limitations

- The feasibility of this program is highly dependent on the availability of state, federal, and local incentives, as well as other funding sources. Achieving the modeled participation levels will also require local staff time and resources. Both the value and duration of these funding sources remain uncertain.
- Modeled energy savings represent averages and may not capture the full variability across building types, vintages, and occupant behaviors. Savings from weatherization measures, in particular, can vary widely depending on the baseline condition of the home. Multifamily buildings also present additional uncertainty given the diversity of system types and shared loads.
- Upfront cost estimates for heat pumps include average panel upgrade costs from the TECH Clean dataset, as reported in the Air District's Installation Costs for Zero NO_x Space and Water Heating Appliances report. However, these estimates may understate future costs if early adopters were more likely to live in homes with sufficient electrical capacity and thus faced lower upgrade expenses. As electrification expands, a larger proportion of households will likely require panel upgrades.

Data Sources

Table 11. Data Sources for Measure B-2 GHG Quantification

Data Source	Application
NREL's ResStock Dataset 2024.2	Bay area housing stock characteristics, including share of SF/MF units and energy consumption from space heating and water heating appliances
Air District Draft Environmental Impact Report for the Proposed Amendments to Building Appliance Rules	EUL for gas furnaces and water heaters
California TRM, Massachusetts TRM	EUL for cooking equipment, lighting, thermostats, and insulation
Connecticut Measure Life Study	Average RUL at early replacement
California's High Global Warming Potential Gases Emission Inventory	Values of refrigerant charge, annual leakage rate, end-of-life leakage rate, and refrigerant GWP
BayREN Existing Buildings Study Building Characteristics Report	Share of homes with existing AC systems

Data Source	Application
CPUC Impact Evaluation of Smart Thermostats - Residential Sector - Program Year 2019	Share of homes with existing smart thermostats

GHG Quantification Results

Table 12. Annual Reduction in Scope I GHG Emissions from Measure B-2 ($MMTCO_2e$)

Source	2025	2030	2035	2040	2045
Avoided Natural Gas Combustion	-	.0089	.0041	.0033	.0011
Refrigerant Leakage	-	(.0002)	(.0001)	(.0005)	(.0005)
Net Emissions	-	.0086	.0040	.0028	.0005

Table 13. Annual Reduction in Energy Consumption from Measure B-2

Source	2025	2030	2035	2040	2045
Natural Gas (MMBTU)	-	166,711	76,346	62,778	19,775
Electricity (MWh)	-	(7,380)	(1,604)	(904)	342

Measure Cost Approach

The range of costs that building owners and occupants may incur when participating in a whole-home retrofit were evaluated. Costs were estimated in 2025 real dollars, and a 3 percent real discount rate was applied to calculate net present value. The analysis considered two primary components: upfront costs and bill impacts. Costs associated with program administration and ongoing equipment maintenance were not included.

Upfront costs encompass installation, appliance, and labor expenses, as well as panel upsizing costs where applicable. Incentives were excluded from the analysis due to uncertainty regarding the availability, value, and duration of federal, state, and local funding sources. For HVAC and water heating measures, incremental upfront costs were defined differently depending on whether installations occurred before or after the zero NO_x rules took effect:

- In the period prior to rule compliance dates, incremental cost was defined as the additional expense of installing a heat pump relative to the cost of replacing the unit with a like-for-like gas system at burnout.
- In the period post rule compliance dates, incremental cost was defined as the present-value difference between purchasing a heat pump early and purchasing the heat pump five years later, when the equipment reaches the end of its useful life. This approach captures the opportunity cost of spending money earlier and accounts for the consumer discount rate.

Bill impacts were estimated based on changes in natural gas use and electricity consumption. No participants were assumed to receive discounted utility rates through the CARE program, as the target audience for this program is moderate-income households. Baseline utility rates for electricity and natural gas were drawn from PG&E residential rate schedules. Electricity rates

were assumed to escalate at 6.18 percent annually, while natural gas delivery rates were assumed to escalate at 5.3 percent annually.

Cost Assumptions

- Upfront costs include installation, appliance, and labor expenses, as well as panel upsizing costs where required.
- In homes with existing central AC, incremental costs for heat pump HVACs include the cost of avoided AC systems.
- Baseline electricity prices were based on the average regional non-CARE residential rate under PG&E's base plan in June 2024.
- Baseline natural gas prices were based on PG&E's non-CARE residential rate from February 2025.
- Electricity prices were assumed to escalate at 6.18% annually, and natural gas delivery charges are assumed to escalate at 5.3% annually, based on E3's analysis of historical PG&E rates.
- Net present value was calculated using a 3% real discount rate.

Cost Data Sources

Table 14. Cost Data Sources for Measure B-2 Cost Quantification

Data Source	Application
Air District Report on Installation Costs for Zero-NO_x Space and Water Heating Appliances (2024)	Upfront costs for HVAC and water heating appliances
NREL Residential Measures Database	Upfront costs for smart thermostats
RMI Green Upgrade Calculator	Upfront costs for cooking appliances
EIA Technology Forecast Updates Residential and Commercial buildings Appendix C (2023)	Upfront costs for lighting
Bay Area Residential Decarbonization Industry and Workforce Overview (2024)	Upfront costs for insulation and air sealing
E3 Report on Benefit-Cost Analysis of Targeted Electrification and Gas Decommissioning in California (2023)	Escalation rate for gas and electricity, derived from historical PG&E data
CPUC California Electric Rate Comparison	Residential electricity rates by county (PG&E Base Plan)
PG&E Rate Schedule for Natural Gas	Residential natural gas rates
US Bureau of Labor Statistics Consumer Price Index	Inflation adjustments (CPI)

Results

Table 15. Measure B-2 Cumulative Costs from 2025-2045 (Million Real 2025 Dollars)

Category	Net Cost
Upfront Costs	$ 51
Bill Impacts	$ (29)

Category	Net Cost
Net Costs	**$ 22**

Table 16. Measure B-2 Cumulative Costs from 2025-2045, Net Present Value (Million Real 2025 Dollars)

Category	Net Cost
Upfront Costs	$ 55
Bill Impacts	$ (20)
Net Costs	**$ 35**

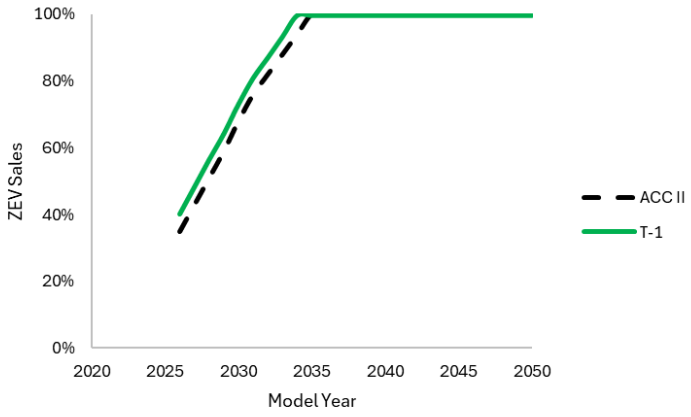
T-1: Accelerate Light-Duty EV Adoption

Measure description: Support the acceleration of light-duty electric vehicle (EV) adoptions through expanded incentives for EVs, coordinated planning for EV charging locations and installation of EV chargers to meet expected demand across the BARCAP region, and expanded support for low-income residents, frontline communities, and local governments in adopting EVs.

Methodology for Estimating GHG Reductions

California's ACC II regulation, which mandates a phased transition to zero-emission vehicles (ZEVs) with the goal of achieving 100% ZEV sales for new light-duty vehicles by 2035, is the state's approach for electrifying the light-duty vehicle market. Emission reductions from this regulation are not included in the quantification of this measure. Additionally, emission reductions that would result from the implementation of vehicle miles traveled (VMT) reducing strategies in MTC/ABAG's Plan Bay Area 2050+ are not included in the quantification of this measure. This measure evaluates the impact of accelerating the transition beyond the ACC II baseline by assuming a 6% increase in light-duty ZEV sales relative to the trajectory established by ACC II. This enhanced adoption scenario results in achieving 100% light-duty ZEV sales by model year 2034—one year earlier than the ACC II target (see Figure 1). Consistent with other measures, changes in scope 2 emissions associated with the increases in electricity use from the implementation on this measure were excluded from this analysis.

Figure 3. LDV ZEV Sales by Year



To quantify the emissions impact of this accelerated pathway, the EMFAC2021 model was used to update the electric VMT fraction for each model year. This allowed for a more precise projection of the reduction in internal combustion engine (ICE) VMT, which directly correlates to decreased fuel consumption and associated greenhouse gas (GHG) emissions. EMFAC2021 model was used to update electric VMT (eVMT) fraction for each model year and project the percentage reduction in ICE VMT and therefore, the fuel consumption and associated GHG emissions. The resulting percentage

reduction was then applied to the light-duty vehicle emissions in the inventory to estimate the emissions after T-1 adoption.

Limitations

- The effectiveness of accelerated EV adoption depends heavily on timely and widespread deployment of charging infrastructure. Delays or gaps in infrastructure could limit actual EV usage and reduce expected emissions benefits.
- GHG emissions reduction estimates do not account for the emissions increase resulting from additional electricity consumption and only focus on direct tailpipe GHG emissions reductions from vehicles.

Data Sources

Table 17. Data Sources for Measure T-1 GHG Quantification

Data Source	Application
EMFAC2021 Model	BARCAP region Light-duty Vehicles Miles Traveled and Energy Consumption for Years 2025 - 2050
Advanced Clean Cars II	Projecting 6% Increased Light-duty EV Sales Compared to ACC II

Assumptions

- ZEVs exist in the vehicle fleet for the same length of time as ICEVs.
- ZEV activity/use is identical to an ICEV.
- The plug-in hybrid vehicles (PHEV) sales were assumed to grow as high as 22% following the recommended percentage[7].
- In model year 2026, a 50/50 split between blended and non-blended PHEVs is assumed. This distribution gradually shifts toward full adoption of non-blended PHEVs, reaching 100% non-blended PHEV penetration by model year 2036.
- The eVMT fraction of PHEV—representing the proportion of total miles traveled using electric power—is projected to improve over time due. For passenger cars, the eVMT fraction of PHEV increases from 60% in 2026 to 79% by 2036. For light-duty trucks, the fraction rises from 54% in 2026 to 74% in 2036.

GHG Quantification Results

Table 18. Annual Reduction in Scope I GHG Emissions from Measure T-1 ($MMTCO_2e$)

Source	2025	2030	2035	2040	2045
GHG Emissions Reduction from Fuel Combustion	-	0.14	0.27	0.35	0.40

Measure Cost Approach

- Capital costs associated with light-duty vehicle electrification were estimated by multiplying the projected number of new vehicle purchases in each model year by the average purchase price per vehicle. These costs were differentiated by vehicle class (e.g., passenger car, SUV, pickup) and engine type (e.g., internal combustion engine, battery electric vehicle, plug-in hybrid). The average cost per vehicle reflects the additional upfront cost of electric vehicles compared to conventional vehicles, accounting for technology improvements and cost declines over time.

- Electric vehicle supply equipment (EVSE) costs were estimated assuming one level 2 charger per plug-in electric vehicle.
- All capital costs were assumed to occur at the time of vehicle sale, consistent with adoption curves and equipment lifetime assumptions.
- Fuel costs were calculated by multiplying the projected annual fuel consumption for each fuel type (e.g., gasoline, diesel) by the corresponding projected cost per unit of fuel, derived from EIA's Annual Energy Outlook 2025. Electricity prices were calculated using unit prices from PG&E residential time-of-use service for plug-in electric vehicles.
- Vehicle sales and energy consumption are derived from EMFAC 2021.
- Vehicle maintenance costs were estimated by multiplying the VMT for each vehicle and engine type by an average maintenance cost per mile ($/mi). These per-mile costs were specific to each powertrain type and reflect differences in maintenance needs between electric and conventional vehicles, such as reduced brake wear and fewer moving parts in electric drivetrains. These per-mile costs were derived from Argonne National Laboratory's AFLEET[8] tool.
- Reported cost estimates represent the net change in total costs between the zero-emission adoption scenario and the reference case scenario.

Cost Data Sources

Table 19. Cost Data Sources for Measure T-1 Cost Quantification

Metric	Data Sources
Vehicle capital costs	ICF's projection of vehicle capital cost by type and fuel using AFLEET (Alternative Fuel Life-Cycle Environmental and Economic Transportation)
Projected fuel prices	EIA's Annual Energy Outlook 2025, Table 3
Electricity prices	PG&E residential time-of-use service for plug-in electric vehicles
Vehicle maintenance cost	AFLEET (Alternative Fuel Life-Cycle Environmental and Economic Transportation)

Results

Table 20. Measure T-1 Cumulative Costs 2025-2045 (Million Real 2025 dollars)

Category	Net Costs
Vehicle Cost	$2,871
EVSE Cost	$1,612
Fuel Cost	$(1,395)
Maintenance Cost	$(1,619)
Net Costs	**$1,468**

Key Takeaway

On average, approximately 278,000 light-duty vehicles are sold each year in the BARCAP region. Applying the 6% increase target means that the district would need to incentivize about 16,700 new ZEVs annually. If the district provided an incentive of $2,500 per vehicle, the annual cost would be about $40 million. Over a 25-year period, this amounts to approximately $1 billion in spending to achieve the reductions envisioned under the T1 measure by 2050. To put this in perspective, the Clean Cars for All program in the Bay Area has replaced roughly 5,000 vehicles

over about 10 years (through June 30, 2025). By comparison, the T-1 measure would require replacing more than three times that number, 16,700 vehicles, in just a single year. This underscores the significant scale-up in program funding and implementation capacity that would be required to meet the T-1 goals.

T-2: Accelerate Medium- and Heavy-Duty Vehicle and Equipment Decarbonization

Measure description: Accelerate zero-emission medium- and heavy-duty vehicles and equipment adoption through expanded incentives, coordinated deployment of EV chargers and fueling infrastructure to meet expected demand across the BARCAP region, while incorporating the needs of low-income and frontline communities.

Methodology for Estimating GHG Reductions

To quantify emissions reductions from accelerated ZEV adoption in medium- and heavy-duty (MHD) vehicle sector, a scenario-based approach was developed using the EMFAC2021 model. This approach was built upon the baseline assumptions embedded in EMFAC2021. Specifically, a 5% increase in annual electric truck sales for each model year was forecasted, compared to projected sales per that year, and following the same adoption trend. This adjustment was used to estimate the resulting increase in the electric VMT fraction across the MHD fleet and associated reduction in GHG emissions and fuel consumption. Consistent with other measures, changes in scope 2 emissions associated with the increases in electricity use from the implementation on this measure were excluded from this analysis.

Assumptions

- ZEVs exist in the vehicle fleet for the same length of time as ICEVs.
- ZEV activity/use is identical to an ICEV.

Limitations

- As with LDV electrification limitations, ZEV adoption coincides with EV charger adoption and accessibility. If electric vehicle purchases are incentivized but ZEV charging and fueling infrastructure is not enhanced, actual ZEV adoption may be lower than projected. The opposite is also true – if ZEV charging and fueling infrastructure is made more widespread but ZEV purchases are not incentivized, actual ZEV adoption may be lower than projected.
- GHG emissions reduction estimates do not account for the emissions increase resulting from additional electricity consumption and only focus on direct tailpipe GHG emissions reductions from vehicles.

Data Sources

Table 21. Data Sources for Measure T-2 GHG Quantification

Data Source	Application
EMFAC2021 Model	Bay Area AQMD's Medium- and Heavy-duty Vehicles Miles Traveled and Energy Consumption for Years 2025 – 2045

GHG Quantification Results

Table 22. Annual Reduction in Scope I GHG Emissions from Measure T-2 ($MMTCO_2e$)

Source	2025	2030	2035	2040	2045
GHG Emissions Reduction from Fuel Combustion	-	0.10	0.29	0.54	0.73

Measure Cost Approach

- Capital costs associated with MHDV electrification were estimated by multiplying the projected number of new vehicle purchases in each model year by the average purchase price per vehicle. These costs were differentiated by vehicle class (e.g., Single Unit Long-haul Truck) and engine type (e.g., internal combustion engine, battery electric vehicle). The average cost per vehicle reflects the additional upfront cost of electric vehicles compared to conventional vehicles, accounting for technology improvements and cost declines over time.
- Electric vehicle supply equipment (EVSE) cost was estimated assuming one 50 kW charger per electric vehicle in Class 2b-3 and Class 4-8 Vocational. One 150 kW charger was assumed for Class 7-8 Tractor.
- Fuel costs were calculated by multiplying the projected annual fuel consumption for each fuel type (e.g., gasoline, diesel) by the corresponding projected cost per unit of fuel, derived from EIA's Annual Energy Outlook 2025. Electricity prices were calculated using unit prices from PG&E business electric vehicles schedule.
- Fuel consumption is based on EMFAC 2021.
- Vehicle maintenance costs were estimated by multiplying the VMT for each vehicle and engine type by an average maintenance cost per mile ($/mi). These per-mile costs were specific to each powertrain type and reflect differences in maintenance needs between electric and conventional vehicles, such as reduced brake wear and fewer moving parts in electric drivetrains. These per-mile costs were derived from Argonne National Laboratory's AFLEET tool.
- Reported cost estimates represent the net change in total costs between the zero-emission adoption scenario and the reference case scenario.

Cost Data Sources

Table 23. Cost Data Sources for Measure T-2 Cost Quantification

Metric	Data Sources
Vehicle capital costs	ICF's projection of vehicle capital cost by type and fuel using AFLEET (Alternative Fuel Life-Cycle Environmental and Economic Transportation)
Projected fuel prices	EIA's Annual Energy Outlook 2025, Table 3
Electricity prices	PG&E business electric vehicles schedule
Vehicle maintenance cost	AFLEET (Alternative Fuel Life-Cycle Environmental and Economic Transportation)

Results

Table 24. Measure T-2 Cumulative Costs 2025-2045 (Million Real 2025 dollars)

Category	Net Costs
Vehicle Cost	$387
EVSE Cost	$688
Fuel Cost	$(1,186)
Maintenance Cost	$(133)
Net Costs	**$(244)**

T-3: Accelerate Decarbonization of Goods Movement

Measure description: Pilot and implement policies that accelerate decarbonization of goods movement and deliveries of goods and reduce emissions that result from increased e-commerce.

Methodology for Estimating GHG Reductions

This measure consists of two key components aimed at reducing GHG emissions from medium- and heavy-duty vehicles and off-road equipment:

Electrifying Last-Mile Deliveries: To quantify the potential impact of electrifying last-mile delivery operations, the trip data from the National Renewable Energy Laboratory's (NREL) FleetDNA database were analyzed. The analysis revealed that 34% of total VMT made by medium- and heavy-duty vehicles (classes 3-8) are generated by trips under an average of ten miles in length. Assuming electrifying all these trips and accounting for the potential interaction with T-2, this measure is estimated to reduce fuel consumption of medium- and heavy-duty vehicles by 28% in 2050.

Warehouse Indirect Source Rule: This measure is targeting emissions from associated truck and equipment activity in large warehouses. Since measure T-2 is already accounting for increased electrification of MDH trucks, this measure focuses on transport refrigeration activity, with a 50% electrification of transport refrigeration units (TRUs) assumed by 2050. The Offroad Emissions Inventory database was used to estimate diesel consumption and adjust the existing sales to reflect 50% electrification by 2050.

These two electrification scenarios and their associated reductions in ICE VMT were used to project changes in GHG emissions from MHDV, as well as TRUs.

Assumptions

- All short-distance delivery trips are electrified by 2050. Annual rate of electrification adoption is assumed to follow the same trend as MHD ZEV sales (increasing until 2035 and uniform after 2035 until 2050).
- 50% of TRUs are electrified by 2050. Annual rate of electrification adoption is assumed to be an increasing linear trend from 5% eTRU sale in 2026 to 50% eTRU sale in 2050.

Limitations

- Electrification depends on timely and widespread deployment of charging infrastructure.

- FleetDNA data may not fully capture the diversity of delivery operations across different regions, fleet sizes, and business models.
- GHG emissions reduction estimates do not account for the emissions increase resulting from additional electricity consumption.

Data Sources

Table 25. Data Sources for Measure T-3 GHG Quantification

Data Source	Application
FleetDNA Database	Last-mile Delivery Operations Characteristics
EMFAC2021 Model	Bay Area AQMD's Medium- and Heavy-duty Vehicles Miles Traveled and Energy Consumption for Years 2025 – 2045
Off-Road Emissions Inventory	Bay Area AQMD's Transport Refrigeration Units (TRUs) Activity for Years 2025 – 2045

GHG Quantification Results

Table 26. Annual Reduction in Scope I GHG Emissions from Measure T-3 ($MMTCO_2e$)

Source	2025	2030	2035	2040	2045
GHG Emissions Reduction from T-3	-	0.12	0.44	0.79	1.05

Measure Cost Approach

Electrifying Last-Mile Deliveries: Approach follows the same method as T-2.

Warehouse Indirect Source Rule: The assumptions made to estimate costs associated with electrifying TRUs are based on CARB's cost documentation[9].

- Capital costs associated with TRU electrification were estimated by multiplying the projected number of new purchases in each model year by the average purchase price per TRU.
- Charger hardware and installation cost was estimated assuming one level 2 charger per eTRU.
- Fuel costs were calculated by multiplying the projected annual fuel consumption for diesel by the corresponding projected cost per unit of diesel, derived from EIA's Annual Energy Outlook 2025. Electricity prices were calculated using unit prices from PG&E business electric vehicles schedule.
- Fuel consumption is based on Off-Road Emissions Inventory.
- TRU maintenance costs were estimated by multiplying the operating hours by an average maintenance cost per hour ($/hr). These per-hour costs were specific to each powertrain type and reflect differences in maintenance needs between electric and diesel TRUs.
- Reported cost estimates represent the net change in total costs between the mitigation scenario and the reference case scenario.

Cost Data Sources

Table 27. Cost Data Sources for Measure T-3.2 Cost Quantification

Metric	Data Sources
Vehicle capital costs	CARB's cost documentation
Projected diesel price	EIA's Annual Energy Outlook 2025, Table 3
Electricity price	PG&E business electric vehicles schedule
Vehicle maintenance cost	CARB's cost documentation

Results

Table 28. Measure T-3 Cumulative Costs 2025-2045 (Million Real 2025 dollars)

Category	Net Costs
Vehicle Cost	$590
EVSE Cost	$1,153
Fuel Cost	$(689)
Maintenance Cost	$(137)
Net Costs	**$918**

W-1: Support local food and organics management

Measure description: Support local governments and food recovery organizations to more effectively meet their food recovery and composting goals and overcome implementation hurdles to implement the State of California's Senate Bill 1383 goals to reduce landfilled organic waste by 75% and recover 20% of edible food.

Methodology for Estimating GHG Reductions

Modeling of SB1383 composting targets is not included in the future projections of the BARCAP GHG inventory. The BARCAP GHG inventory also does not include waste landfilled tonnage data, which is a required input to quantify this measure. The EPA's State Inventory Tool (SIT) Projection Tool was leveraged because 1) it is based on the first order decay model which matches the framework for emission estimates from the future projections of the BARCAP GHG Inventory, and 2) it uses tonnage data as an input and has default data for the state. SIT was used to calculate the percent reduction possible (statewide) from implementing SB1383 composting targets, assuming landfill profiles are fairly consistent across the state, and applied that percent reduction to the BARCAP Inventory future projection emissions values.

To determine a potential diversion rate of compostable material, ICF used waste composition data from CalRecycle. The SB1383 organic waste diversion target of 75% was used, but delayed the attainment year to 2035, and applied that diversion rate to the share of landfilled waste that is assumed to be organic based on the composition data. The default SIT projected tonnage data was adjusted to reflect the organic waste diversion and applied the resulting change in landfill emissions to the BARCAP Inventory.

The future projections of the BARCAP inventory for composting was used to calculate an increase in composting emissions based on the amount of additional waste diverted to composting. Because SIT uses the first order decay model to estimate emissions, the waste emission reductions are spread out over decades. Therefore, during the initial years of measure

implementation, the measure creates positive emissions. However, the measure causes emission reductions beginning in 2036 and the net emissions from 2025 to 2045 are negative (see Table 30).

Assumptions

- 30% of landfilled waste is compostable. Based on CalRecycle waste composition data.
- The composting rate for landfilled waste in the measure scenario increases linearly from 0% above the current existing rate in 2025 to 75% above the current existing in 2035. These are increased diversion rates above current levels.
- Assumed no improvements to compost management over time, compost emission factors stay the same.
- Assumed compost factors are the same as the BARCAP Inventory compost factors.

Limitations

- The SIT Projection Tool assumes the waste composition of all landfills is the same. The tool does not allow for variation to the waste composition. This limitation of the tool will result in an underestimation of emission reductions for this measure as organic waste generates more methane when landfilled than non-organic waste.

Data Sources

Table 29. Data Sources for Measure W-1 GHG Quantification

Data Source	Application
CalRecycle Waste Composition	Percent of landfilled waste that is compostable
Nordahl et al., 2023	Composting emission factors

GHG Quantification Results

Table 30. Annual Reduction in GHG Emissions from Measure W-1 ($MMTCO_2e$)

Source	2025	2030	2035	2040	2045
Landfill Methane Emissions	-	(0.02)	(0.02)	0.00	0.01

Table 31. Annual Reduction in Waste (tons) from Measure W-1

Source	2025	2030	2035	2040	2045
Compostable Waste	-	1,700,499	3,154,113	2,923,274	2,707,626

Measure Cost Approach

To calculate the costs of this measure, StopWaste provided cost data from similar food recovery programs. This data was used to estimate the cost of county-level government staffing, food bank participation, food recovery organization stipends, diversion strategy pilots, and food system research and marketing.

Cost Data Sources

Table 32. Cost Data Sources for Measure W-1 Cost Quantification

Data Source	Application
StopWaste	Cost data from similar organic waste diversion programs

Results

2025-2045 cumulative cost: a net cost of $58 million (2025$ real).

Table 33. Measure W-1 Cumulative Net Costs 2025-2045 (Million Real 2025 dollars)

Category	Net Costs
Total Net Cost	**$58**

P-1: Increase development of local clean energy and storage projects, including behind-the-meter and distributed energy resources

Measure description: Develop small- to medium-scale local clean energy and storage projects (<20MW) that contribute to meeting state goals and exceed anticipated behind-the-meter (BTM) deployment, and support an equitable and affordable transition to clean energy in the BARCAP region. Focus projects where it is the best possible use of land given local and regional considerations (e.g., brownfields, rooftops, parking lots, capped landfills, under-utilized plots). Clean energy and storage projects might include but are not limited to BTM (including rooftop solar), community solar, microgrids, agrivoltaics, and feed-in tariffs. These projects might include storage or storage might be deployed as a standalone project.

Methodology for Estimating GHG Reductions

As a first step, sources for current installed capacity of renewable energy and storage resources in the BARCAP region were identified. This was followed by identifying existing planning processes which forecast renewable and storage resources, preferably at the utility or zonal level. For BTM solar and storage the 2024 IEPR forecast for PG&E was used, while for utility-scale resources the California Independent System Operator (CAISO) Transmission Planning Process (TPP) Busbar Mapping was used. TPP Busbar Mapping generally locates different utility-scale renewable energy and storage resources to various zones within CAISO's footprint to identify transmission constraints and support transmission planning needed to meet state goals. For utility-scale resources, CEC data was used to identify the current installed capacity in the BARCAP region. Starting in 2030, incremental capacity by technology type was added based on the values for the PG&E Greater Bay Study Area through 2040 from CAISO TPP Busbar Mapping. For 2045, the average growth rate across the forecast period was used (the study only included capacity projections through 2040). The future emission projections of the GHG inventory are based on the 2022 Scoping Plan Reference Case, which includes SB100 power sector targets through 2030. As such, the measure modeling only includes growth in grid-scale resources after 2030, assuming the near-term capacity is already included in the baseline.

For distributed resources, the measure quantifies the avoided emissions of incremental BTM solar. To develop a BTM solar forecast, the growth rates from the IEPR 2024 Low and High scenarios were applied to the starting capacity to forecast growth in the BARCAP region through 2040. For 2045, the growth rate in 2040 was assumed to be constant (the IEPR forecast only includes capacity projections through 2040). For 2025-2030, the delta in BTM solar capacity from the Low and High IEPR scenarios was used to represent growth above

what's included in the baseline. After 2030, the IEPR High forecast is used and assumed to be fully incremental.

Once incremental capacity additions were established, generation based on CEC historical capacity factors for each resource type was estimated. Avoided GHG emissions using a regional grid emissions factor (ton/MWh) were then estimated from the NREL Cambium Standard Scenarios for CAISO. This reflects the potential emissions reduced both within and outside of the BARCAP region from reduced generation from fossil fuel-fired power plants located across the region that may supply power to the BARCAP region.

Limitations

- GHG emission reduction boundary: The BARCAP region is part of the interconnected CAISO electricity system, allowing for both imports and exports of electricity. As a result, changes in electricity supply and demand within the BARCAP region – such as increased BTM solar generation or demand from EV charging – may not directly reduce natural gas generation within the region. Natural gas power plants in the BARCAP region may also serve broader CAISO demand and may export electricity outside the region. Conversely, power plants outside the region can contribute to electricity consumed within it. Therefore, GHG emission reductions are evaluated using a *consumption-based* approach to estimate avoided GHG emissions from power plants but cannot be directly compared to the Scope I GHG inventory and future emissions for the BARCAP region, since those only cover power plants located within the region.
- Developing regional estimates: The BARCAP region does not directly overlap with geographies used for electricity system operations or planning, nor jurisdictions for which data can be downloaded (i.e., county). This created challenges with allocation of existing and future generation resources in the BARCAP region. The BARCAP region includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, and San Mateo counties, as well as parts of Solano and Sonoma counties. The PG&E Greater Bay Study Area seems to include all of Alameda, Contra Costa, San Francisco, San Joaquin, San Mateo, and Santa Clara counties, while the PG&E North of Greater Bay Study Area includes all PG&E territory north of the counties within the PG&E Greater Bay Study Area. Therefore, the estimated capacity to meet state goals does not perfectly represent what might be assumed for the BARCAP region. Taken together, the planning and data sources in Table 38 estimate a combined total increase of GW of up to one-third in 2030 and five times in 2045 compared to 2025 levels for clean energy and storage in the Bay Area region and some neighboring counties. This approach focuses on total capacity, while the measure focuses on small- to medium-size projects to help meet the capacity needs.
- Solar mix: The modeling does not make assumptions about the types of solar facilities that will be deployed.
    - Different BTM system types (rooftop, carport, etc.) and sizes (e.g., 10 kW residential and up to 1 MW commercial systems) will have very different project costs and impact different customer segments for potential electric bill impacts. The goals and quantification represent generic grid-connected and BTM resources and provide an indicative order or magnitude of potential emission reductions and costs. For example, installing 1,000 10 kW residential rooftop systems in one year would amount to 10 MW of BTM solar capacity and could

cost nearly $29 million for upfront system costs. Annual electric bill savings could total $8,000 per year per household. Commercial system costs and bill impacts may vary greatly depending on any needed site infrastructure upgrades, system size (could range from 100 kW to 1 MW), and utility rate structure.

- Similarly, grid-scale solar facilities face varying costs related to siting and interconnection based on size and location. At the end of 2024, the CAISO interconnection queue contained over 90 GW of active grid-scale solar capacity proposed across 279 projects, the majority of which are hybrid projects (e.g., solar+battery). Only 8 projects are less than 20 MW in size (128 MW total capacity); 29 are 20-80 MW (1.4 GW total capacity), and 242 projects are greater than 80 MW.[10] Based on NREL's capital and fixed O&M cost estimates for 2025, a 20 MW grid-scale facility would cost nearly $30 million to install, with recurring $420,000 annual fixed costs.

Data Sources

Table 34. Data Sources for Measure P-1 GHG Quantification

Data Source	Application
Busbar Mapping for the Proposed Decision 25-26 TPP Base Case	CAISO Busbar Mapping summary of the initial mapping results and data used to conduct the mapping and assess the criteria alignment. Values from the Summary_byCAISO_zone tab used to identify forecasted renewable energy resource capacity in the PG&E Greater Bay Study Area and North of Greater Bay Study Area for 2030, 2035, and 2040.
Behind-the-Meter Distributed Generation Forecast Results: High Case	CEC Behind-the-Meter Distributed Generation Forecast Results. Used the 2024 IEPR PG&E Planning Area PV and Storage Forecasts for 2023, 2025, 2030, 2035, and 2040 across the Base, Low, Medium, and High sensitivities to calculate forecasted growth rates for behind the meter solar and storage.
Utility Renewable Capacity by Type and County: 2023 | California Energy Commission GIS Open Data	CEC Utility Renewable Capacity by Type and County: 2023. Used to quantify the current capacity of utility-scale renewable energy resources in BARCAP counties.
Solar PV Capacity for Systems 1 MW and Smaller: 2023 | California Energy Commission GIS Open Data	CEC Solar PV Capacity for Systems 1 MW and Smaller: 2023. Used to quantify the current capacity of small scale (<1MW) solar PV in BARCAP counties.
California Energy Storage System Survey	CEC California Energy Storage System Survey. Used to quantify the current capacity of residential and commercial energy storage in BARCAP counties.
CaliforniaDGStats	PG&E Distributed Generation (incl. NEM/NBT NEM PV) Interconnection Data Set. Used to validate capacity of behind the meter resources in BARCAP counties.
NREL Cambium 2024 Standard Scenario	CO_2 emissions factor projection for the regional grid.

Data Source	Application
CEC Capacity Factor Data	Used to estimate generation from the new renewable resources.
NREL ATB 2024	Source for capital and operating & maintenance costs for distributed solar and grid-scale solar and wind.

GHG Quantification Results

Table 35. Annual Avoided Emissions from Power Generation ($MMTCO_2e$)

Avoided Emissions	2025	2030	2035	2040	2045
Solar	-	-	0.019	0.111	0.254
Behind-The-Meter Solar	0.004	0.019	0.076	0.087	0.065
Wind	-	-	0.048	0.032	0.016
Total	0.004	0.019	0.143	0.229	0.335

Measure Cost Approach

The costs that would be incurred to build the additional renewable resources in the region were evaluated, focusing on capital and operating and maintenance (O&M) costs. Bill impacts were also estimated based on reductions in electricity purchased from the grid due to behind-the-meter solar.

Data Sources and Assumptions

- NREL's 2024 Annual Technology Baseline was used to provide capital costs and fixed O&M costs for the new utility-scale solar, onshore wind, and behind-the-meter solar. NREL's Moderate scenario projections were used, which include declines in technology costs over time. Costs were multiplied by the new capacity coming online in the region over time.
- All costs are provided in 2025 real dollars.
- Baseline electricity prices were based on the average regional non-CARE residential rate under PG&E's base plan in summer 2024.
- Electricity prices were assumed to escalate at 6.18% annually based on E3's analysis of historical PG&E trends.

Results

2025-2045 cumulative cost: a net savings of $16 billion (2025$ real). This measure results in an overall cost savings due to the large potential for reduced electricity bills, given the region's higher than average electricity retail rates.

Table 36. Measure P-1 Cumulative Net Costs 2025-2045 (Million Real 2025 dollars)

Technology	Net Costs (2025$ Million)
Utility-Scale Solar	$10,389
Wind	$771
Behind-The-Meter Solar	$(27,238)
Total	**$(16,078)**

NWL-2: Prevent Losses of Carbon Held in NWL through Land Conservation, Wildfire Management, and Ecosystem Restoration

Measure description: Prevent losses of carbon held in NWL from development and wildfire, while managing and restoring key carbon-rich lands to maximize carbon sequestration.

This measure addresses the challenge of predicted losses of carbon stocks which are expected statewide through the mid-century. Enhancing carbon sequestration and increasing carbon drawdown must build on a foundation of protecting existing pools of carbon held in regional natural and working lands.

Methodology for Estimating GHG Reductions

The GHG emissions and carbon sequestration associated with the conservation and enhancement of the ecosystems in the BARCAP region was calculated by comparison against the business-as-usual (BAU) land use-land use change (LULUC) scenario. The BAU scenario is based upon the Tier 3 ecosystem carbon stock inventory produced for inventory year 2022 using the methodology and datasets utilized by CARB to produce the statewide ecosystem carbon inventory. Land use change was calculated from 2002 through 2022 using the National Land Cover Database[11] (NLCD) to produce the trend for land use change from 2002-2022. This trend was extrapolated through 2045 to produce the BAU scenario.

Other land cover types from wetlands could be modelled under NWL-2. NWL-2 contains actions to support the achievement of the State of California's 30 x 30 goal[12], but the impact of achieving the 30 x 30 goal was excluded from this analysis due to the varied nature of implementation and wide range of implementers (i.e. MTC cannot achieve 30 x 30 on their own, and there are many implementers working on this landscape not named in the BARCAP).

Measure NWL-2 modelled the following goals and their positive impacts upon the landscapes and ecosystem carbon stocks in the BARCAP region, these targets reflect action NWL 2.4, which contributes to achievement of targets from the 2022 San Francisco Estuary Blueprint Task 10-1,10-2, and 10-3.[13]

1. Conservation of 20,000 acres of San Francisco Bay wetlands by 2045,
2. Restoration of 28,550 acres of wetlands by 2045, and
3. Enhancement of 3,000 acres of wetlands by 2045.

While wildfire mitigation is part of NWL 2 (Action NWL 2.2*: Increase fuel management and reduce wildfire risk on natural and working lands and at the wildland-urban-interface (WUI) through new funding and financing mechanisms, workforce development, and innovation*) and can be quantified using the US Forest Service First Order Fire Effects Model (FOFEM)[14], this analysis omitted this measure quantification as the level of effort required far exceeded the scope of this project.

The land use change projection was adjusted from the BAU to quantify the enhancement of wetland systems, in alignment with NWL 2.4 (*Protect carbon held in the Bay Area's wetlands through protection, restoration, and enhancement of tidal marsh habitat*). Enhanced landscapes were assumed to be implemented on wetlands that were already in the wetland category.

Similarly to conserved lands, implementation was calculated to occur linearly from 2026 – 2045. Ecosystem carbon gains from implementation of enhancement activities were calculated using the IPCC land improvement multiplier.[15]

Assumptions

- Conserved lands were assumed to be the prevented transition of wetlands from developed lands and shrublands.
- The increased ecosystem carbon stock from avoided conversion was assumed to be the difference between the average carbon stock density of the conserved land cover category (i.e. wetlands) and the avoided conversion category (i.e. developed lands and shrublands).
- Land conservation and enhancement activities were assumed to commence in 2026 and conclude in 2045.
- The wetland restoration, enhancement, and conservation targets under this measure (28,500 acres, 3,000 acres, 20,000 acres; respectively) are consistent with Task 10-1,10-2, and 10-3 of the 2022 San Francisco Estuary Blueprint. Despite the Blueprint referencing 2050 as an endpoint, this analysis suggests 2045 instead for continuity with other metrics.

Limitations

- The BAU scenario is based on a historical trend of land use/land use change and does not account for the value of developed lands in the BARCAP region.
- This scenario analysis does not account for the impacts of climate change, wildfires, or other natural disturbances on ecosystem carbon stocks.

Data Sources

Table 37. Data Sources for Measure NWL-2 GHG Quantification

Data Source	Application
LANDFIRE Existing Vegetation Cover, Existing Vegetation Height, and Existing Vegetation Type	Used to map out precise land cover and crosswalk to the CARB database for ecosystem carbon stock by land cover type.
National Land Cover Database | U.S. Geological Survey	Create a historical land cover/land cover change trend from 2002 – 2022 for use in the BAU projection to 2045.
Aboveground live carbon stock changes of California wildland ecosystems, 2001–2010 - ScienceDirect	Ecosystem carbon stock densities of land cover types in the BARCAP region.
IPCC 2019 Refinement to the Guidelines for National GHG Inventories - Volume 4, AFOLU	Improvement multiplier for ecosystem carbon stock on wetlands that receive enhancement or restoration activities.

GHG Quantification Results

The table below shows the annual reduction in GHG emissions. Note that all measures are NA for 2025 because this analysis assumes NWL GHG reduction activities will begin in 2026.

Table 38. Annual Avoided Emissions from NWL-2 Measure ($MMTCO_2e$)

Source	2025	2030	2035	2040	2045
Conserve 20,000 acres of wetland	NA	0.20	0.20	0.20	0.20
Restore 28,500 acres of wetland	NA	0.36	0.36	0.36	0.36
Enhance 3,000 acres of wetland	NA	0.05	0.05	0.05	0.05
Total	**NA**	**0.61**	**0.61**	**0.61**	**0.61**

Measure Cost Approach

Cost Data Sources and Assumptions

The cost of implementation was calculated on a per unit area basis based on the best available data from published literature. Please note that the San Francisco Estuary Partnership has their own cost estimate listed as part of the 2022 Blueprint. This analysis offers a separate, but not conflicting, data point for potential cost of implementation. The 2022 Blueprint estimates an implementation cost of over $100 million each for Tasks 10-1 and 10-3, and up to $100 million for Task 10-2. While the combined cost estimate from the 2022 Blueprint is higher than the estimate from this analysis, the discrepancy in costs may have occurred due to partitioning of activities. For example, both Tasks 10-2 and 10-3 from the 2022 Blueprint seem to both consider the cost of enhancing tidal habitats, rather than breaking them out into separate cost categories. In contrast, this analysis consolidates overlapping activities into single cost categories, yielding a conservative, area-based estimate. The 2022 Blueprint is updated every 5 years; implementers may update these costs or incorporate their own analysis to reflect current research/implementation conditions.

For the purposes of this NWL-2 action, calculation of the annualized cost of implementing NWL wetland restoration and enhancement actions per year over a 20-year time horizon utilized the following multipliers:

- Conservation: $1,600/acre.
    - Cost estimate from Hansen et al. (2015)[16]. Although the suite of practices for conservation is not as well documented as restoration or enhancement, it is assumed to be less invasive and less expensive as it consists of protecting prior-existing wetlands rather than reconstructing or manipulating hydrology, vegetation, and soil to re-establish wetland functions. Hansen et al. (2015) is meant to describe conservation/restoration of new wetland, for this reason, the lower bound from that source was used. A supporting graphic (Hansen 2015)[17] from the same author further corroborates this cost estimate.
- Restoration: $2,300/acre.
    - Cost estimate from Hansen et al. (2015). In the language of the cited paper "conservation" is defined as "restoring or preserving a new wetland"; as made evident in the Hansen 2015 graphic. The upper bound from this estimated range

was used in this analysis to account for inflation since 2015. In a 2024 report on Restored Wetlands in the CA Central Valley[18], USDA NRCS cites Hansen et al. (2015) and quotes "up to $3,000" as the per-acre cost of wetland “restoration” further corroborating this assumption.

- Enhancement: $6,118/acre.
    - Cost estimate from the Delta Working Lands Program report.[19]
    - In Delta Working Lands Program report, this figure is referred to as the average cost of "wetland restoration", but the description of the implementation more accurately reflects wetland enhancement due to the heavy manipulation of soil and hydrology.

Results

Table 39. NWL-2 Measure Cumulative Net Costs from 2025-2045 (Million Real 2025 Dollars)

Action	Net Costs
Conserve 20,000 acres of Wetland	$32
Restore 28,500 acres of Wetland	$66
Enhance 3,000 acres of Wetland	$18
Total	**$116**

NWL-3: Enhance Carbon Sequestration and Reduce Greenhouse Gas Emissions through Management and Restoration of Agricultural and Working Lands

Measure description: Increase carbon draw-down into agricultural lands by scaling up climate beneficial agriculture and reducing implementation challenges, helping to achieve state and local governments’ agricultural targets and goals. Explore areas to increase cross-sector benefits and GHG emission reductions through energy-efficient sustainable water management and integration of renewable energy on agricultural lands.

Action 3.1 (*Scale climate-beneficial agriculture and catalyze widespread adoption of practices that increase or maintain above- and below-ground carbon stocks, and achieve climate resilience on working lands*) calls for implementation of scaled adoption of climate-beneficial agriculture practices including silvopasture, hedgerows, cover crops, conservation cover, windbreaks, compost application, riparian forest buffer, and critical area planting.

Methodology for Estimating GHG Reductions

The quantitative GHG benefits for measure NWL 3.1 were calculated through the following quantifiable implementation actions, all summing to ~36.5% (this figure comes from a proportional scaling of the 2024 California Nature-Based Solutions Climate Targets[20] to BARCAP region crop area, as established in 2022 Inventory):

- Apply compost to 10% of croplands,
- Implement cover cropping on 10% of croplands,
- Plant hedgerows on 5% of croplands,
- Increase riparian buffers by 5% on croplands/grazing lands, and

- Implement no-till on 6.5% of croplands.

The benefits were calculated using the Tier 3, California-specific California Department of Food and Agricultures (CDFA) COMET-Planner tool[21] for the Healthy Soils Program (HSP). This is a CPRG approved tool for both GHG and cost quantification that offers the additional benefits of reflecting the unique ecosystems and implementation measures in California.

Benefits were calculated on a per unit area basis.

Assumptions

- GHG and cost benefits of measure implementation were assumed to be consistent with the outcomes estimated by the CDFA COMET-Planner tool for the Healthy Soils Program.
- Compost was assumed to be applied to 10% of croplands (~17,500 acres) from 2026 through 2045; the annual acres implemented was ~900 acres.
- Cover cropping was assumed to be implemented on 10% of croplands (~17,500 acres) from 2026 through 2045; the annual acres implemented was ~900 acres.
- Hedgerows were assumed to be implemented on 5% of croplands (~8,800 acres) from 2026 through 2045; annual acres implemented was ~400 acres.
- Riparian buffers were assumed to increase by 5% (~4,800 acres) from 2026 through 2045; annual acres implemented was ~240 acres).
- No-till agriculture was assumed to be implemented on 6.5% of croplands (~11,400 acres) from 2026 through 2045; annual acres implemented was ~570 acres.
- Compost application was assumed to be applied compost with a C/N<or=11 and purchased from a certified compost facility.
- Cover crops were assumed to be addition of legume seasonal cover crop to irrigated cropland.
- Hedgerow planting was assumed to replace a strip of cropland with 1 row of woody plants.
- Increasing riparian buffers was assumed to replace a strip of grassland near watercourses or water bodies with woody plants.
- No-till implementation was assumed to replace intensive till on irrigated cropland.
- The implementation of all practices results in a 36.5% increase of adoption on BARCAP region cropland. This figure comes from a proportional scaling of California's statewide annual healthy soils practice adoption target to BARCAP region cropland area (detailed below).
    - The figure of 36.5% was calculated based on proportional scaling from statewide to BARCAP region. Annual and perennial cropland cover ~9% of CA (9.5 million acres), and the 2024 California Nature-Based Solutions Climate Targets calls for between 140K-190K acres/year of implementation of healthy soils practices between now and 2045. Cropland covers 175,244 acres for BARCAP region (70867.52 hectares, from 2022 Inventory), and BARCAP region spans 2,751,350 acres (1,113,384.26 hectares), meaning a proportionally aligned target would be

approximately ~3,045 acres per year or ~1.74% annually (summing to ~36.5% by 2045).
    - This target is in line with the CARB 2022 scoping plan target of implementing climate smart practices for annual and perennial crops on ~80,000 acres annually.
- Percent contributions of individual practices assigned using expert judgement of feasibility and impact in the region, informed by CARB documentation.
    - All practices under this action are listed in CARB 2025 NWL Proposed Inventory for Croplands (*"Practices under this approach include compost application, cover cropping, planting of hedgerows and riparian buffers, and no-till methods, which can improve soil health, increase organic carbon content, and reduce erosion*.")[22] and also called out in CARB 2022 Scoping Plan.[23]

Limitations

- The CDFA COMET-Planner tool cannot account for variation by soil type within a county, which can vary significantly in the BARCAP region; most notably, around the organic soils of the Sacrament-San Joaquin Delta.

Data Sources

Table 40. Data Sources for Measure NWL-3 GHG Quantification

Data Source	Application
COMET-Planner (CDFA)	GHG and cost quantification for measure implementation.

GHG Quantification Results

The table below shows the annual reduction in GHG emissions. Note that all measures are NA for 2025 because this analysis assumes NWL GHG reduction activities will begin in 2026.

Table 41. Annual Avoided Emissions from NWL-3 Measure ($MMTCO_2e$)

Source	2025	2030	2035	2040	2045
Compost to 10% of croplands	NA	0.002	0.002	0.002	0.002
Cover cropping on 10% of croplands	NA	0.0004	0.0004	0.0004	0.0004
Hedgerows on 5% of croplands	NA	0.004	0.004	0.004	0.004
Increase riparian buffers by 5%	NA	0.00004	0.00004	0.00004	0.00004
No-till on 6.5% of croplands	NA	0.0001	0.0001	0.0001	0.0001
Total	**NA**	**0.01**	**0.01**	**0.01**	**0.01**

Measure Cost Approach

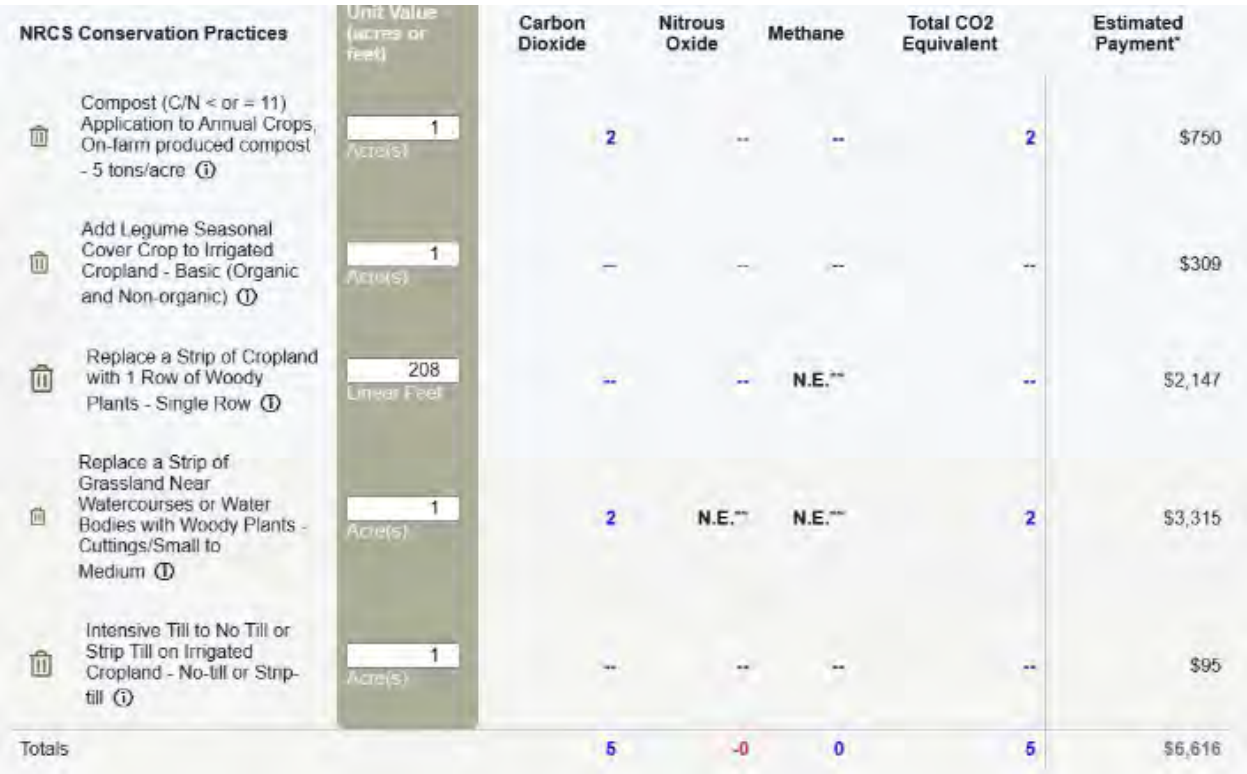
Cost Data Sources and Assumptions

To calculate the annualized cost of implementing each action per year over a 20-year time horizon, this analysis used the following multipliers, also from CDFA COMET-Planner (sub-bullets represent the terms used by COMET-Planner to describe the action):

- Apply compost to croplands: $750/acre.

    - From Compost Application (CDFA): Compost (C/N < or = 11) Application to Annual Crops, Purchased from a certified composting facility - 5 tons/acre
- Implement cover cropping on croplands: $309/acre.
    - From Cover Crop (CPS 340): Add Legume Seasonal Cover Crop to Irrigated Cropland - Basic (Organic and Non-organic)
- Plant hedgerows on croplands: $2,147/acre.
    - From Hedgerow Planting (CPS 433): Replace a Strip of Cropland with 1 Row of Woody Plants - Single Row (208 linear feet converted to 1 acre)
- Increase riparian buffers on croplands and grazing lands: $3,315/acre.
    - From Riparian Forest Buffer (CPS 391): Replace a Strip of Cropland Near Watercourses or Water Bodies with Woody Plants - Cuttings/Small to Medium
- Implement no-till on croplands: $95/acre.
    - From Residue and Tillage Management - No Till (CPS 329): Intensive Till to No Till or Strip Till on Irrigated Cropland - No-till or Strip-till

The screenshot below shows the costs directly from CDFA COMET-Planner for each of the actions.



NRCS Conservation Practices	Unit Value (acres or feet)	Carbon Dioxide	Nitrous Oxide	Methane	Total CO2 Equivalent	Estimated Payment*
Compost (C/N < or = 11) Application to Annual Crops, On-farm produced compost - 5 tons/acre	1 Acre(s)	2	--	--	2	$750
Add Legume Seasonal Cover Crop to Irrigated Cropland - Basic (Organic and Non-organic)	1 Acre(s)	--	--	--	--	$309
Replace a Strip of Cropland with 1 Row of Woody Plants - Single Row	208 Linear Feet	--	--	N.E.**	--	$2,147
Replace a Strip of Grassland Near Watercourses or Water Bodies with Woody Plants - Cuttings/Small to Medium	1 Acre(s)	2	N.E.**	N.E.**	2	$3,315
Intensive Till to No Till or Strip Till on Irrigated Cropland - No-till or Strip-till	1 Acre(s)	--	--	--	--	$95
Totals		5	-0	0	5	$6,616

Figure 4. CDFA COMET-Planner Source Data

Results

Table 46 below shows the total cost of implementing these actions.

Table 42. NWL-3 Measures Cumulative Net Costs from 2025-2045 (Million Real 2025 Dollars)

Action	Net Costs
Apply compost to 10% of croplands	$13
Implement cover cropping on 10% of croplands	$5
Plant hedgerows on 5% of croplands	$19

Action	Net Costs
Increase riparian buffers by 5% on croplands and grazing lands	$16
Implement no-till on 6.5% of croplands	$1
Total	**$54**

NWL-4: Expand and Maintain Urban Green Spaces While Advancing Environmental Justice Outcomes

Measure description: Increase carbon stored in urban plants and soils through expansion and maintenance of green spaces that reduce the effects of flooding and extreme heat, build food sovereignty, and beautify and connect communities. Achieve these outcomes through new regional funding, staffing, and technical assistance resources. Ensure that frontline communities benefit from urban green spaces and avoid unintended consequences by supporting a policy shift towards community-led planning to embed environmental justice and anti-gentrification approaches in urban greening.

Action 4.1 (*Expand urban green spaces and prevent loss through new regional funding and technical support, prioritizing green spaces that benefit frontline communities*) calls for the contribution to and advancement beyond state and local goals for urban forestry investment and drought resistant watering. Green spaces that may garner particular focus because of air quality, environmental justice, or climate resilience benefits include parks and trees in formerly redlined or under-greened communities, community farms and gardens, freight corridor buffers, and green stormwater infrastructure.

Methodology for Estimating GHG Reductions

This methodology calculated expansion of the urban tree canopy using the land cover classifications from the 2022 Carbon Stock Inventory for the BARCAP region conducted by ICF. The implementation of this practice targets the expansion of urban tree canopy by 15% (target set by proportionally scaling the 2024 California Nature-Based Solutions Climate Targets to BARCAP region's urban area, as established in 2022 Inventory). Linear interpolation of target between years 2026 and 2045 was assumed, with high density urban landscapes (carbon density of 0 MT CO_2e/hectare) being afforested to urban forest (carbon density of 66 MT CO_2e/hectare).

Assumptions

- All existing urban tree canopy was assumed to be conserved during the measure implementation period from 2026 – 2045.
- Urban tree canopy expansion was assumed to occur on existing developed lands; land cover change for urban tree canopy expansion was assumed not to occur. This is in alignment with the assumptions of measure NWL 2.1.
- The additional ecosystem carbon stock accrued from expansion of the urban tree canopy is assumed to be the difference between the total ecosystem carbon stock for urban forest and high density urban in the CARB database.
- This methodology assumed that implementation occurred linearly from 2026 – 2045.

- The implementation of this practice targets the expansion of urban tree canopy by 15% (and conserve existing). This figure comes from a proportional scaling of the 2024 California Nature-Based Solutions Climate Targets[24] to BARCAP region's urban area (detailed below).
    - Developed lands cover ~6% of California (6.8 million acres), and the 2024 California Nature-Based Solutions Climate Targets calls for between 52.1K-52.2K acres/year of afforestation, conservation, and urban and community greening/forestry between now and 2045. Developed lands cover 753179.155 acres for BARCAP region (304800.79 hectares, from 2022 Inventory), and BARCAP region spans 2,751,350 acres (1,113,384.26 hectares), meaning a proportionally aligned target would be ~5,779 acres/year or ~0.77% per year (~15% by 2045). This target is in line with the AB 2251 directive (Calderon, Chapter 186, Statutes of 2022)[25] which sets a target to increase urban tree canopy 10% by 2035.

Limitations

- This method does not account for annual tree growth over time.
- This method does not account for differences in urban tree carbon stock based on urban forest type (e.g. Redwood versus eucalyptus groves).
- This methodology assumed that urban tree canopy expansion occurred solely on high-density urban spaces and does not incorporate urban tree canopy densification on lands that were already classified as urban canopy.

Data Sources

Table 43. Data Sources for Measure NWL-4 GHG Quantification

Data Source	Application
Aboveground live carbon stock changes of California wildland ecosystems, 2001–2010 - ScienceDirect	Ecosystem carbon stock densities of urban landscapes in the BARCAP region.

GHG Quantification Results

The table below shows the annual reduction in GHG emissions. Note that this measure is NA for 2025 because this analysis assumes NWL GHG reduction activities will begin in 2026.

Table 44. Annual Avoided Emissions from NWL-4 Measure ($MMTCO_2e$)

Source	2025	2030	2035	2040	2045
Expand & conserve urban tree canopy by 15%	-	0.56	0.56	0.56	0.56

Measure Cost Approach

Cost Data Sources and Assumptions

To calculate the annualized cost of implementing the expansion & conservation of urban tree canopy per year over a 20-year time horizon, this analysis used the following:

- Expand & conserve urban tree canopy: $1,980.20/acre

- This figure comes from the urban greening RFP response submitted by Tree Fresno to San Joaquin Valley proposing the greening of 505 acres with $1M. Tree Fresno went on to win this work and is currently under contract.[26]

Results

Table 45. NWL-4 Measure Cumulative Net Costs from 2025-2045 (Million Real 2025 Dollars)

Action	Net Costs
Expand & conserve urban tree canopy by 15%	$228

Other Measures

Greenhouse gas emissions and potential costs to implement were not assessed for five measures in the BARCAP. Measures T-4, B-3, W-2, P-2, and NWL-1 are considered supporting measures without direct GHG emission reductions themselves. As a regulatory measure, estimates of GHG reductions and costs for *W-3: Reduce Methane Emissions from Waste Management Facilities* require more detailed exploration of the options to minimize emissions of methane, volatile and toxic organic compounds, and odorous substances from organic waste handling facilities, including large composting facilities, which the Air District will conduct at a future date. Costs to implement were not estimated for supporting measures since quantifying costs requires a similar level of detailed assumptions as those used to quantify GHG reductions.

Co-Pollutants Impacts Quantification

In addition to greenhouse gases (GHGs), emissions from criteria air pollutants and their precursors (CAPs) and toxic air contaminants (TACs) can pose serious risks to public health and the environment. Like GHG inventories, tracking these co-pollutants over time helps identify what pollutants are being emitted, in what quantities, and from which key sources.

These two categories of air pollutants impact both human health and the environment:

- **Criteria Air Pollutants and their Precursors (CAPs)** include ozone, particulate matter ($PM_{2.5}$ and PM_{10}), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and lead.
- **Toxic Air Contaminants (TACs)** include over 180 chemicals such as benzene and mercury, many of which are known to cause cancer and other serious health effects.

Two examples of important co-pollutants to assess include:

- Volatile Organic Compounds (VOCs) are gases emitted from sources such as fertilizers, paints, cleaning supplies, fuels, and building materials. VOCs react with NO_x to form ozone (a CAP), and some—like benzene and formaldehyde—are classified as HAPs.
    - The California Air Resources Board (CARB) does not report VOC emissions separately. Instead, it reports Total Organic Gases (TOG), which includes all gaseous organic compounds—both reactive and non-reactive. TOG encompasses compounds like methane and ethane, which are typically excluded from regulatory VOC definitions due to their low reactivity. For ozone-related analyses, CARB uses Reactive Organic Gases (ROG)—a subset of TOG limited to compounds that contribute to ozone formation. While TOG provides a comprehensive estimate of total organic emissions, it may overstate VOC levels compared to federal or regulatory definitions.
- Ammonia (NH_3) contributes to the formation of $PM_{2.5}$ (a CAP) by reacting with NO_x and SO_2 in the atmosphere.

Table 50 provides a summary of co-pollutant emissions in the region by sector and pollutant, with a focus on criteria pollutants. The data is compiled from the Air District's Emissions Lookup Tool[27].

Table 46. Bay Area Regional Co-Pollutant Emissions (Short Tons), 2022

Category	CO	NO_x	PM_{10}	$PM_{2.5}$	SO2	NH3	TOG
AFOLU (Agriculture, Forestry, and Other Land Uses)	4,412	1,039	2,780	649	17	2,576	14,218
IPPU (Industrial Processes and Product Use)	51,613	9,547	6,554	2,024	1,897	8	6,956
Mobile	193,890	40,043	10,443	2,243	961	1,778	16,386

Category	CO	NO_x	PM_{10}	$PM_{2.5}$	SO2	NH3	TOG
Stationary	131,115	8,920	3,176	2,660	313	4,074	64,310
Waste	544	262	1,193	231	232	535	64,421
Total	**381,574**	**59,813**	**24,145**	**7,808**	**3,420**	**8,972**	**164,293**

Methodology for Estimating Co-Pollutant Impacts

This analysis covers the entire geographic area of the BARCAP region and evaluates potential changes in co-pollutant emissions resulting from implementation of mitigation measures for the plan as a whole. The sections below describe the methodologies used to estimate changes in co-pollutant emissions. Cumulative emission reductions by pollutant across the BARCAP region are presented below.

CAPs were quantified because they are common pollutants with widespread public health impacts, causing respiratory and cardiovascular diseases, asthma aggravation, and premature death. Their reductions are directly linked to clear public health benefits and regulatory air quality standards, supported by well-established emissions factors and monitoring methods. TACs which tend to be emitted in smaller quantities with more complex sources lack widely available emissions factors, making their reductions harder to quantify.

Although TAC reductions are not quantitatively represented, the reduction of TACs that will result from the implementation of BARCAP measures will still be beneficial. Reducing energy use in buildings by increasing efficiency and transitioning to cleaner energy sources lowers the need for burning fossil fuels, which in turn can decrease emissions of TACs like formaldehyde, benzene, and other hazardous substances. When more electric vehicles are used and vehicle miles traveled decrease, emissions of hazardous air pollutants from gasoline and diesel engines, such as 1,3-butadiene, acetaldehyde, and benzene, are also reduced. These shifts generally improve air quality, lessen the public's exposure to a variety of air toxics, and support better respiratory and overall health outcomes, particularly in densely populated or heavily trafficked areas.

For PM, the values throughout the report represents the total for $PM_{2.5}$ and PM_{10} because AP-42 emission factors from EPA are not always broken out by $PM_{2.5}$ or PM_{10}. To ensure consistency across sectors, all PM is reported as PM_{10}, since PM_{10} includes all particles with diameters up to 10 micrometers, and therefore encompasses $PM_{2.5}$. However, this approach limits the ability to evaluate potential health impacts specific to fine particulates ($PM_{2.5}$), which differ from those associated with coarse particles. This limitation is acknowledged in interpreting results related to PM exposure and health outcomes.

On-Site Fuel Combustion

The following steps were used to quantify co-pollutant emission reductions from reduced on-site fuel combustion:

- Quantify Fuel Savings: Calculate the amount of each fuel type saved by comparing the baseline scenario to the mitigation scenario.
- Apply Emission Factors: Use standard EPA AP-42[28] emission factors for each fuel type to estimate emissions of NO_x, SO_2, lead (Pb), CO, and particulate matter (PM) that would have occurred without mitigation.
- Calculate Emissions Reductions: Multiply the amount of fuel saved by its corresponding emission factor to estimate the avoided emissions for each pollutant.

Mobile Source Emissions

To estimate reductions from mobile sources:

- Co-pollutant inventory data from CARB was used to determine emissions per vehicle mile traveled (VMT) for each vehicle type in the baseline year (e.g., grams of CO per passenger vehicle mile in 2025).
- Emission rates were calculated by dividing total pollutant emissions by total VMT for each vehicle category.
- These rates were then multiplied by the reduction in VMT (i.e., baseline or "business-as-usual" minus mitigation scenario) to estimate avoided emissions for each vehicle type.
- The current methodology estimates avoided emissions by applying standard EMFAC and EPA AP-42 emission factors to the amount of fuel saved. However, this approach does not account for the additional emission controls already implemented under the Air District's regulatory programs, which often result in lower effective emission rates than the AP-42 "controlled" factors. As a result, the methodology may overstate baseline emissions and the magnitude of co-pollutant reductions relative to local conditions. Unlike the Air District's approach, which applies locally derived control efficiencies and source-specific data to develop representative emission factors, this simplified method prioritizes consistency and transparency but acknowledges reduced accuracy in reflecting the Air District's actual emissions profile.

Waste

To estimate emissions reductions from solid waste measures:

- Quantify Waste Diverted: Determine the amount of waste prevented from entering landfills due to waste reduction initiatives.
- Estimate Avoided Methane Generation: Estimate the methane that would have been generated by the landfilled waste, assuming that 50% of landfill gas is methane. Any additional savings of co-pollutants that are not combusted will depend on the nature of how measure W3 may be implemented, which is not known as this time, adding to the uncertainty of these results.
- Apply Emission Factors: Use standard EPA emission factors to estimate emissions of NO_x, CO, and PM from flaring the methane that would have been produced.

Natural Lands

To assess the co-benefits of natural and working lands, EPA's i-Tree Landscape Module was used to estimate ecosystem services provided by increased tree cover. The assessment was conducted at the county level and looked at annual avoided runoff, rainfall interception, transpiration, and air pollution removal. The results showed that annually there would be 2,118 MG/yr of avoided runoff; 71,111 MG/yr of rainfall interception; and 112,283 MG/yr additional

transpiration, which helps combat urban heat island effects, enhance stormwater management by managing water volume, and improve water quality by reducing stormwater runoff and promoting infiltration. i-Tree was selected for its ability to provide standardized, spatially explicit estimates across large areas. i-Tree is an industry standard tool (employed by the California Air Resources Board NWL inventories for 2018[29] and proposed for use in 2025[30]) and was selected for use in this work to balance statewide consistency with administrative overhead. By relying on one unified data source, the use of i-Tree in this work eliminates the need to merge multiple empirical, remote-sensing, or process-based models across fragmented urban parcels, reducing uncertainty introduced by mixed data resolutions and overlapping estimation methods.

Electricity Demand Changes

Measures such as building and transportation electrification and behind-the-meter solar installations lead to changes in electricity demand. This in turn changes how power plants across the broader regions – within and outside of the BARCAP region – operate. Because the changes in power plants occur across a broader region and not just within the BARCAP region, these co-pollutant emission changes are reported separately, although a portion would likely occur within the region.

On net, electricity demand increases with measure implementation of building and transportation electrification, leading to increased co-pollutant emissions. Consistent with the methodology used for GHG emissions, changes in co-pollutant emission associated with the increases in electricity use from the implementation of this transportation and building measures were excluded from this analysis. This is a potential disbenefit to communities that live around power plants that increase their output to meet this increased electricity demand and emphasizes the importance of measure P-1, which focuses on increasing the amount of clean energy capacity deployed.

- Projected changes in the electricity grid mix from NREL's Cambium Standard Scenarios were used to estimate the net change in co-pollutant emissions across the broader power grid (which extends beyond the BARCAP region) needed to meet the increased demand.
- Emissions results are shown in Table 52 below.

Results

The co-pollutant emissions reductions from energy use reduction shown in the table results below are primarily from using less fossil fuel-intensive fuels, such as natural gas in buildings and gasoline and diesel in vehicles. These fuel shifts reduce overall fossil fuel consumption and associated emissions. In contrast, removals from natural and working lands (NWL) do not directly decrease pollution emissions but instead absorb air pollutants already released, providing complementary environmental benefits.

Table 47. Cumulative Changes in Co-Pollutant Emissions (MT), 2025-2045

Pollutant	Cumulative Reductions from Change in Energy Use	Removals from NWL
CO	245,971	14,827
NO_x	11,463	85,554
PM_{10}	630	143,734

Pollutant	Cumulative Reductions from Change in Energy Use	Removals from NWL
SO_2	123	20,300
Lead	0.01	0

Table 48. Indirect Changes in Power Sector Co-Pollutant Emissions (MT), 2025-2045

Pollutant	Cumulative Increase (MT)
NO_x	1,027
SO_2	130
PM_{10}	234
NH_3	158
VOC	76

Analysis of BARCAP Region's Contributions to State Goals by 2030

The state of California has statewide GHG emission reduction targets of 40% below 1990 levels by 2030 and carbon neutrality by 2045, with most of the goal being achieved by reducing direct GHG emissions by 85% below 1990 levels. The BARCAP aligns with and contributes to achieving the state targets. A series of sector-specific goals and the 2022 Scoping Plan (Scoping Plan) lay out the state's pathway to meet these targets, which relies on state, regional, and local action.

This first analysis examines the GHG emissions impact of meeting key sector-specific state goals in the BARCAP region. These goals were referenced in each sector chapter of the BARCAP. [31] Table 53 shows these key sector-specific state goals downscaled to the region and quantified. While meeting most goals would reduce GHG emissions, realizing the medium- and heavy-duty vehicles and landfill methane goals would result in increased emissions in 2030 as compared to 1990. For medium- and heavy-duty vehicles, this is due to the growth in numbers of medium- and heavy-duty vehicles in 2030 as compared to 1990 and for landfills methane, this is the result of organic materials that already exist in the landfills breaking down. When considered together, the regionally scaled goals listed below in Table 53 nearly achieve a 40% reduction in 2030 as compared to 1990.

Table 53. Statewide Sector-Specific 2030 Goals Scaled to the Region and Quantified

State Goal or Result	Regionally Scaled Goal or Result	Emission Reductions from Achieving Regionally Scaled Goals (MMT CO_2e)
7.1 million Light-Duty (LD) ZEVs by 2030[32]	1.1million LD EVs	12.2
155,000 Medium- and Heavy-Duty (MHD) ZEVs by 2030[33]	23,000 MHD EVs	-1.3
Deploy 6 million heat pumps and 3 million climate-ready homes[34] by 2030	900,000 heat pumps	5.9

State Goal or Result	Regionally Scaled Goal or Result	Emission Reductions from Achieving Regionally Scaled Goals (MMT CO_2e)
60% RPS by 2030[35]	60% RPS	1.8
75% waste diversion by 2025 with 20% food recovery[36]	75% diversion	0.1
40% reduction in statewide methane emissions below 2013 levels by 2030[37]	10% landfill methane control	-0.3
Industrial emissions reductions from Scoping Plan by 2030	47% reduction from 1990	7.9

The BARCAP measures help achieve the regionally scaled goals and support implementation of the Scoping Plan. For example, the state has a goal of deploying 6 million heat pumps statewide by 2030, which is roughly 900,000 heat pumps in the BARCAP region. Modeling of estimated early replacements of fossil fuel-based water and space heaters plus implementation of the Air District's Rules 9-4 and 9-6 and BARCAP measures B1 and B2 aligns with this goal. When modeling implementation of ACCII and T1, the region would adopt nearly 800,000 LD EVs by 2030, well on the path to contributing to state goals. Local actions to increase charging infrastructure are a key enabling factor to successfully achieve this goal.

The BARCAP measures also help to create enabling conditions to achieve specific state and local government climate policies and goals. This is done by focusing on what must happen regionally to support local implementation of state policies and initiatives and ensure that implementation is efficient, effective, and equitable. Though some BARCAP measures will have a direct GHG emission reduction on their own, many will also complement work at the state level or remove potential implementation barriers at the local level.

Since meeting the key sector-specific state goals scaled to the region would not achieve the state target for 2030, as shown in Table 53, a second analysis was done to show the emission reductions by sector for the BARCAP region if state, regional, and local actions are successful in fully implementing the Scoping Plan. The sector-specific emission reduction trends shown in Table 54 include the expected emission reductions for the regionally scaled goals shown in Table 53, as well as additional actions that the state has identified to fully achieve the 2030 goal statewide. When applied to the BARCAP region's GHG inventory, the emission reduction trends from the Scoping Plan demonstrate the level of reductions that might be expected to occur in the region from implementation of state policy and regulations, the BARCAP, and local climate action plans. This analysis shows that when taken together, state, regional, and local action could achieve a 45% reduction in total GHG emission reductions below 1990 levels in 2030, surpassing the state goal. Note that the significant increase in high GWP gases is due to the increase in the use of these gases as refrigerants in 2022 and 2030 as compared to 1990.

Table 54. Scoping Plan Aligned Projections for the BARCAP Region (MMTCO2e)

Sector	1990	2022	2030	% Change in 2030 from 1990
Agriculture	1.72	1.14	0.71	-59%
Power	8.17	7.08	5.92	-28%

Industrial	17.04	16.25	9.10	-47%
Waste	1.86	1.93	1.80	-3%
Buildings	8.56	7.92	6.04	-29%
Transportation	24.23	16.77	8.86	-63%
High GWP	0.19	3.01	1.47	681%
Total	**61.77**	**54.11**	**33.89**	**-45%**

The next update to the Scoping Plan is scheduled for 2027 and will incorporate the latest market trends, technological advancements, and any updates to state policies or emission targets. The state remains firmly committed to achieving its GHG reduction goals, and the BARCAP region will continue to play a critical role in supporting its success. The measures included in the BARCAP report will build upon implementation of state regulations and policies, working towards a more resilient, equitable, and low-carbon future for the region.

Methodology

Regionally Scaled Goals and Results

The sector goals shown in Table 53 were identified as key activity targets or sector results from state goals and state modeling for the Scoping Plan. To downscale these goals and results to the BARCAP region, the following approach was taken for each sector:

- ZEV Goals: Statewide ZEV adoption goals for 2030 were downscaled to the BARCAP region based on the region's population share (~15%). Using the EMFAC2021 model, the ZEV population and electric VMT fraction for 2030 were updated, and the percentage reduction in ICE VMT, along with the corresponding decrease in fuel consumption and associated GHG emissions, were estimated. This percentage reduction was applied to the vehicle emissions inventory to calculate the projected GHG reductions.
- Buildings Goal: Statewide heat pump deployment goals for 2030 were downscaled to the BARCAP region based on the region's population share (~15%). Emission reductions are inclusive of the future projections, which include the impact of Rules 9-4 and 9-6, and the impact of the building sector measures.
- Power Goal: The state's goal for the power sector for 2030 is reflected in the Renewable Portfolio Standard, which looks to source 60% of electricity from renewable energy by 2030. The GHG reductions for 2030 were taken from the Air District's GHG inventory and projections, which are based on the 2022 California Scoping Plan Reference Scenario. The Scoping Plan Reference Scenario incorporates the 2030 Renewables Portfolio Standard (RPS) target.
- Waste Goal: The state's 75% waste diversion goal by 2025 was applied directly to the BARCAP region. EPA's SIT Projection Tool was used to assess the potential GHG emissions benefit by 2030 of the waste division goal applied to the BARCAP region's waste generated tonnage. This is the same method used to quantify the GHG reductions from measure W1, and more detail can be found in that section. The main difference is that measure W1 delayed attainment of the 75% target to 2035, whereas for this 2030 analysis, the 2025 goal date was used.

The statewide methane reduction target was not directly applied to the BARCAP region. Rather, the Scoping Plan assumption of 10% landfill methane control was used to estimate potential GHG reductions by 2030. The GHG reductions for 2030 were taken from the Air District's GHG inventory and projections, which are based on the 2022 California Scoping Plan Reference Scenario. The Scoping Plan Reference Scenario incorporates the 10% landfill methane control assumption.

- Industry: Since the state does not have any GHG goals for the industrial sector by 2030, the Scoping Plan projections were used to define a benchmark GHG reduction for 2030. The Scoping Plan trendline for the state from 2022-2030 was applied directly to the BARCAP 2022 inventory. The Scoping Plan trendline was sourced from the pathways analysis[38] and compared to the state's 1990 GHG inventory data[39] to assess GHG reductions from 1990 to 2030, which showed a 47% reduction in GHG emissions.

Scoping Plan Aligned Projections

To provide a trajectory of BARCAP region GHG emissions by 2030 that align with the Scoping Plan assessment, the Scoping Plan[40] GHG trendline for the state from 2022-2030 by sector was applied directly to the BARCAP GHG inventory to develop projections to 2030 by sector.

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Appendix D
Frontline Communities Impacts Analysis

March 2026

Bay Area Regional Climate Action Plan

BARCAP Frontline Communities Potential Impacts Report

Overview

This Frontline Communities Potential Impacts report examines and describes how greenhouse gas (GHG) reduction measures can result in meaningful environmental, economic, and social benefits to communities historically burdened by environmental inequities, as well as potential unintended consequences, largely depending on how measures and actions are implemented. The report does not provide a comprehensive analysis of potential impacts or outcomes. Instead, it is intended to flag key issues for consideration prior to initiating implementation of the Bay Area Regional Climate Action Plan (BARCAP) and point to established processes and tactics to support the realization of beneficial outcomes for frontline communities.

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Methodology

This report, and all findings and recommendations included, were developed through desktop research of relevant studies, research, and case studies, and incorporates input from the Bay Area Air District and frontline community members to reflect local best practices and priorities. The list of Potential Impacts of GHG Emission Reduction Measures to Frontline Communities in the following section, which includes the main categories and key examples for each measure, served as a foundation for this research and informed the evaluations of potential impacts on frontline communities discussed in the Measure descriptions in the main BARCAP document. Along with identifying potential benefits and unintended consequences of actions, this report describes steps that can be taken to prevent or reduce negative impacts, such as through the use of appropriate technical, policy, and engagement approaches during implementation.

Potential Impacts of GHG Emission Reduction Measures to Frontline Communities

Informed by the information from this report, Air District staff worked with Cascadia to assess BARCAP measures using the impact categories listed below, which were originally identified during the development of the Priority Climate Action Plan (or "PCAP," which was the first phase of the EPA's Climate Pollution Reduction Grant). At that time, the impact categories were reviewed and refined by the PCAP "Roundtable"[1] that was created for that plan.

Generally, BARCAP measures are designed to reduce GHG emissions and maximize the potential for meaningful community benefits across key areas ("impact categories"). However, they can also result in unintended consequences leading to undesirable outcomes, largely depending on how the measures are implemented. The impact categories are used to identify and inform potential benefits and potential unintended consequences for each proposed measure. The intention of this work is to ensure BARCAP measures can support frontline communities while also identifying how potential disbenefits and unintended consequences of these measures can be mitigated.

Potential benefits and potential unintended consequences have been summarized and sorted into seven main impact categories: housing quality and security; public and community health; jobs and workforce development; community engagement, awareness, and capacity; transportation access and costs; climate resilience co-benefits; and energy costs and burden. These categories are aligned with:

- Priorities identified through a review of recently completed community engagement from previously adopted local climate action plans.

[1] See Air District's 2024 Priority Climate Action Plan, page 5 for a description of the Roundtable.

- Priorities voiced by a Roundtable of community-serving organizations with deep familiarity with frontline communities in the eight counties.
- EPA's guidance document.

In the table below, examples are shown of potential benefits and potential unintended consequences of climate actions across each impact category.

Impact Categories	Examples of Potential Community Benefits	Examples of Potential Unintended Consequences
Housing Quality and Security	• Improved housing conditions, increased comfort, protection from extreme heat and cold • Reduced utility bills and maintenance costs	• Potential for increased housing costs, displacement risk, rent increases, and gentrification
Public and Community Health	• Reduced exposure to health-damaging pollution (with public health benefits) • New green spaces and community gardens • Decreased safety risks	• Inequitable distribution of benefits for just the wealthy, those in non-overburdened communities
Jobs and Workforce Development	• Post training employment • Better pay • Benefits • Sustained work • Job security	• Reduced work and lack of training and other supportive resources for those in older, carbon-intensive industries
Community Engagement, Awareness, and Capacity	• Increased community awareness of solutions/projects and results • Community capacity building (including to participate in climate solutions and help bring those solutions to their communities) • Improved or growing trust between communities and the government	• Outreach may only engage people in one area, one language, or those with more time and resources, and omit many individuals with possibly greater vulnerabilities • Non-inclusive implementation planning • Lack of time and opportunity for working families to engage • Reduced trust in government and technologies
Climate Resilience Co-benefits	• Increased resiliency to climate-related impacts	• Only available to those with higher incomes and access to resources

Impact Categories	Examples of Potential Community Benefits	Examples of Potential Unintended Consequences
Cost Burdens	• Decreased energy cost burden • Increased energy security	• Increased energy costs, less money for rent and food

Transportation

Equitable transportation is integral to ensure equal access to places of employment, business, recreation, learning, and residence. Strategies like facilitating the use of micromobility options (e.g. bicycles, electric bikes, scooters), electrifying on-road vehicles, and reducing vehicle miles traveled can decrease local air pollution near major transportation corridors and improve public health in frontline communities. The recommendations described below aim to ensure frontline communities equitably benefit from the shift to decarbonized transportation and an expanded and inclusive transit system, while preventing additional harm.

T-1: Accelerate Light-Duty Electric Vehicle Adoption

T-1.1: Expand incentives for the purchase or lease of electric vehicles (EVs)

T-1.2: Provide monetary and non-monetary incentives to deploy EV charging stations at strategic locations to help fill gaps in the existing charging network

T-1.3: Partner with community organizations to provide community outreach, awareness, and technical support for low-income households and small business/nonprofits in navigating incentives

T-1.4: Expand support for local governments in developing and implementing policies that help accelerate the transition to EVs, such as zoning and building code updates, permit streamlining, and parking and curbside policies

Potential Benefits

PUBLIC HEALTH BENEFITS FROM DECREASED AIR POLLUTION, ENHANCED ENERGY SECURITY, AND DECREASED RELIANCE ON FOSSIL FUELS

Light-duty vehicles, including passenger cars, SUVs, pickup trucks, and motorcycles, are responsible for about half of all U.S. transportation GHG emissions, as reported in the Inventory of U.S. Greenhouse Gas Emissions and Sinks.[1] Enhancing clean and efficient transportation options and optimizing vehicle efficiency can effectively mitigate the adverse impacts of climate change and air pollution. These actions promote a more equitable, accessible, and affordable transportation system, thereby improving all

users' overall quality of life. Additionally, it helps diminish reliance on fossil fuels and enhances energy security.[2]

AFFORDABILITY FOR LOW-INCOME RESIDENTS WHO USE EVs

Incorporating on-site EV car sharing and charging, coupled with suitable discount fare programs, is expected to alleviate energy cost burdens among those who use EVs. This integrated approach ensures affordability for low-income residents, particularly in frontline communities. Beyond the upfront cost barrier associated with acquiring electric vehicles, accessibility of charging stations is recognized as a challenge for EV adoption and usage. Ensuring an equitable deployment of charging infrastructure requires deliberate measures to prioritize underserved communities and align with the expanded provision of EV incentives to various population segments.[3] This shift can reduce the overall cost burdens associated with EV usage in these communities. PG&E offers an Electric Home Rate Plan for homes with EVs, which can save customers money if they shift usage, such as car charging, to lower-priced times of day.[4]

Recommendations to ensure this potential benefit is realized for frontline communities:

- Subsidize purchasing and leasing by expanding rebates, tax credits, or voucher programs, specifically for low-income drivers. This could be modeled after California's Clean Vehicle Rebate Project (CVRP) Low-Income Incentive Program. Implementers must ensure simplified application processes and multilingual support to reduce participation barriers.
- Site EV charging infrastructure in or near multifamily affordable housing. Implementers should partner with utilities and local governments to install charging stations in or adjacent to multifamily dwellings. This could be modeled after the Bay Area Air District's *Charge!* Program which provides grant funding to offset costs associated with purchasing and installing publicly accessible and multi-family housing EV chargers.[5]

T-2: Accelerate Medium-and Heavy-Duty Vehicle and Equipment Decarbonization

T-2.1: Expand incentives and loan assistance for the purchase of medium- and heavy-duty zero-emission (ZE) vehicles and equipment

T-2.2: Encourage large fleets (e.g., municipal, transit, or corporate fleets) to serve as anchor tenants for charging and clean-fuel fueling hubs

T-2.3: Develop and disseminate technical design guidance for fleets on how to right-size charging infrastructure

Potential Benefits

DECREASED AIR POLLUTION NEAR TRANSPORTATION ROUTES

According to the U.S. Department of Energy, nationwide, medium- and heavy-duty vehicles (MHDVs) are the second-largest contributor to transportation GHG emissions, at 21% of all emissions.[6] This diverse category of vehicles includes larger pickup trucks, delivery and work vans, refuse collection vehicles, buses, and heavy trucks. These actions could collectively reduce localized air pollution near roadways and transit routes, deliver public health benefits, and ensure that the communities historically most burdened by transportation emissions are among the first to experience cleaner, healthier environments.

California Air Resources Board (CARB) has set a goal to eliminate emissions from public buses by 2040, which transit authorities across California have already begun to achieve by decarbonizing their fleets.[7] [8] [9] However, decarbonizing other types of MHDVs and equipment such as diesel trucks will be important to realize health benefits in frontline communities residing near major freight routes and facilities, such as ports. For example, the American Lung Association found in 2020 that diesel trucks, while making up just six percent of vehicles in the U.S., were responsible for a disproportionate 31 percent of nitrogen oxides (NO_x) and 55 percent of particulate matter pollution.[10] According to CARB, zero emission (ZE) trucks and equipment can improve high air pollution conditions from freight traffic around ports and docks.[11]

Recommendation to ensure these air quality and health benefits are realized for frontline communities:

- Encourage public and private MHDV fleet owners to deploy ZE vehicles in frontline communities first (e.g., people living in areas designated as Low-Income and Disadvantaged Communities (LIDACs))**.** For example, when creating their Clean Corridors Plan, Alameda Contra Costa Transit District reviewed which Disadvantaged Communities are in the service areas prioritized for ZE bus deployment to inform decision making.[12]

Potential Unintended Consequences

INCREASED AIR POLLUTION NEAR ELECTRICITY GENERATING UNITS

Net increases in electricity demand associated with increased vehicle electrification can result in increased $PM_{2.5}$ emissions in areas near electric generating units (EGUs, i.e. power plants) that use fossil fuels. When modeling electrification measures in Los Angeles County, significant health impacts from increased $PM_{2.5}$ emissions by fossil fuel-based EGUs were likely to be experienced in other areas across the state, up to and including those within the Bay Area.[13] In areas where the public fleet has not fully transitioned to zero emissions, transit hubs, especially in frontline communities, may also experience short-term increases in air pollution burden despite the long-term benefits of improvements in public health, energy consumption, and cost savings that will later result from a full transition. However, an assessment in 2022 by the National Bureau of Economic Research found that the positive environmental benefits of urban bus electrification outweigh the damages associated with increased emissions from fossil fuel-based EGUs across all counties in the United States.[14]

T-3: Accelerate Decarbonization of Goods Movement

T-3.1: Pilot policies that expedite the transition to ZE last-mile delivery for goods to identify feasibility and best practices

T-3.2: Explore regulatory and non-regulatory approaches to incentivize or mandate ZE trucks and off-road mobile operations at truck-attracting businesses, such as warehouses

Potential Benefits

DECREASED AIR POLLUTION

Zero emission (ZE) last-mile delivery trucks reduce diesel and gasoline emissions, which disproportionately affect neighborhoods near major delivery hubs, distribution centers, and high-traffic corridors, are often cited in or nearby frontline communities.[15] [16] [17] Reduced exposure to $PM_{2.5}$, NO_x, and black carbon can lower rates of asthma, cardiovascular disease, and other respiratory conditions.[18]

Recommendation to ensure this potential benefit is realized in frontline communities:

- Transportation agencies and organizations should create and implement inclusive and accessible public input opportunities and participatory processes so residents of frontline communities can provide direct input on where ZE infrastructure is placed, which goods delivery routes are prioritized, and ensure equal distribution of benefits is a key consideration that is community informed.

JOB ACCESS AND WORKFORCE OPPORTUNITIES

Pilot programs could create training and hiring opportunities for local residents to maintain, operate, and manage ZE delivery fleets. Targeted programs could ensure frontline community residents benefit from new employment in logistics and green vehicle operations.

REDUCED TOTAL COST OF OWNERSHIP FOR FLEET OWNERS

Electric vehicles (EVs) have the potential to offer fleets lower total cost of ownership (TCO) compared to diesel vehicles. While EVs require higher upfront costs to procure vehicles and install the necessary electric vehicle supply equipment (EVSE), EVs also provide reduced operating and fuel costs per PG&E's Fleet Savings calculator and resources.[19]

Potential Unintended Consequences

POTENTIAL COST PASS-THROUGHS TO LOW-INCOME HOUSEHOLDS

Zero-emission (ZE) vehicles often have higher upfront costs to purchase or lease.[20] If small businesses who are transitioning to ZE fleets pass these costs on to consumers, low-income households could face indirect price increases for goods delivery.

Recommendation to ensure this potential unintended consequence is minimized:

- Subsidize the transition to ZE fleets in frontline communities. Pilot programs should include subsidies, grants, or low-interest loans to prevent ZE fleet transition costs from being passed on to customers. ZE truck mandates could be paired with programs that provide financial support or phased compliance schedules for businesses operating in or serving frontline communities. Non-regulatory incentives (e.g., grants, rebates, preferential contracts) for ZE fleet transitions could prioritize vendors or operators based in or that particularly serve frontline communities.

T-4: Support Implementation of Plan Bay Area 2050+

T-4.1: Support alternatives to driving along through land use, transit, biking, and walking strategies identified in Plan Bay Area 2050+

Potential Benefits and Unintended Consequences

See Plan Bay Area 2050+ Draft Equity Analysis Report for more information.

Buildings

Equitable implementation of Building sector measures offers significant opportunities to improve outcomes for frontline communities. Potential benefits include improving indoor and outdoor air quality, increasing occupant comfort and resilience to climate change impacts, and enabling long term energy savings. Supporting the implementation of the zero-NO_x building appliance rules through targeted outreach, education and engagement, and technical and financial resources − particularly for frontline communities − will ensure everyone can benefit from the transition to healthy, zero emission homes and cleaner air for all.

B-1: Support Implementation of the Air District's Zero-NO_x Building Appliances Rules by Addressing Key Opportunities and Challenges

B-1.1: Leverage partnerships and coordinate with key supply chain entities to develop a suite of activities to increase zero-NO_x appliance awareness and adoption to support high-levels of compliance and equipment performance

B-1.2: Support policy development efforts and disseminate best practices that streamline permitting for heat pump installations and promote electrification readiness in Bay Area jurisdictions

B-1.3: Promote and increase awareness of low-power appliance options and other panel optimization strategies with multi-language communications that will help people avoid unnecessary electrical service upgrades

B-1.4: Explore new funding and financing opportunities to augment existing sources to further reduce financial burdens, especially for low-income building owners and tenants

B-1.5: Develop and deliver culturally competent and multilingual information, outreach and marketing campaign about the zero-NO_x building appliance rules, focusing on low-income and overburdened homeowners and renters, and multifamily building owners

B-1.6: Expand engagement with affordable multifamily housing owners (deed-restricted and naturally-occurring) to address technical, financial, and community challenges related to zero-NO_x appliance rules, and co-develop solutions to ensure owners get the resources and support they need so residents and owners benefit from the transition to clean appliances

B-1.7: Provide education regarding best practices for those that choose to self-install heat pump water heaters (i.e. Do-It-Yourself'ers, or DIY'ers)

B-1.8: Collaborate with Northwestern Energy Efficiency Alliance (NEEA) and others to support the development and piloting of split-system heat pump water heaters that can address constrained space installation challenges for Rule 9-6

Potential Benefits

REDUCED EXPOSURE TO NATURAL GAS COMBUSTION BYPRODUCTS THAT HARM PUBLIC HEALTH

The health benefits of building electrification (installing electric instead of natural gas appliances) and building envelope improvements accrue from reductions in exposure to natural gas combustion byproducts, such as $PM_{2.5}$.[21] [22]

Recommendation to ensure this potential benefit is realized for frontline communities:

- Combine weatherization and building efficiency programs that typically target low-income and frontline communities with residential building electrification incentives to support multiple health, air quality, and climate co-benefits by mitigating harmful air pollutants and methane emissions in those communities.[23]

EQUITY BENEFITS

As described above, building electrification and efficiency measures can mitigate the potential harms of increased air pollution caused by appliances that combust natural gas; these benefits are particularly important for frontline communities already overburdened by air pollution who are often low-income and communities of color who live in close proximity to significant sources of air pollution like ports, freeways, and indus[24]

Recommendations to ensure these benefits are realized by those who need them the most:

- Establish a community work group that includes community-based organizations (CBOs), community members, and other partners to advise on and participate in implementation planning so that their needs and priorities – technical, financial, and cultural – are heard and considered. This can be done by setting aside time and resources for local governments, implementation partners (such as incentive programs) and CBOs to co-develop implementation solutions together. This recommendation is supported by SAJE's Decarbonizing CA Equitably report, which recommends that policy makers do the following:
  - Seek out perspectives from tenant advocates, legal service providers, and low-income tenants.
  - Solicit insights into the specific hardships encountered by tenants, particularly those involving landlord harassment, displacement due to construction, rent burden, and eviction.
  - Prioritize active listening to hear how tenants are currently affected by the affordable housing crisis, and whether and how they believe decarbonization efforts will compound those effects.
  - Acknowledge their contributions by providing appropriate compensation for their valuable time and input.
  - Develop relationships with CBOs to leverage existing relationships and connect with community members.[25]
- Prioritize and operationalize housing security and anti-displacement best practices in the implementation of electrification and efficiency programs. Local governments, CBOs, and other key stakeholders like rental property owners, tenant groups, and legal service providers should leverage policy and implementation best practices and work together to address implementation barriers as they emerge. These implementation considerations for building decarbonization programs could follow a methodology developed in 2021 by the Building Decarbonization Coalition with UC Berkeley to provide protection against rent increases and prevent potential displacement impacts.[26]
- Guarantee that measure implementation includes health and safety upgrades to address health issues from lead, asbestos, and mold.[27]

REGIONAL AIR QUALITY IMPROVEMENT

The Bay Area Air District found that installing zero-NO_X-emitting appliances could prevent up to 85 premature deaths per year, lower $PM_{2.5}$ exposure, and avoid up to $890 million per year in health impacts due to air pollution exposure.[28] These appliances reduce pollutants that are vented outdoors, including those from natural gas appliances. A statewide study found that, under a 2018 scenario where all residential gas appliances in CA were transitioned to electric, the reduction of secondary nitrate $PM_{2.5}$ (from NO_X) and primary $PM_{2.5}$ would result in 354 fewer deaths, and 596 and 304 fewer cases of acute and chronic bronchitis, respectively. The reduction in associated negative health effects is equivalent to approximately $3.5 billion in monetized health benefits for just one year.[29]

B-2: Advance Decarbonization and Public Health Goals by Integrating Electrification Incentives with Home Repair and Weatherization Services and Other Non-Energy Programs Targeted Toward Low-Income and Frontline Communities

B-2.1: Explore new funding and financing opportunities for home repair, public health, energy efficiency, and decarbonization programs to augment existing sources

B-2.2: Make home decarbonization retrofits more affordable and accessible through coordinated efforts to use all capital and programmatic options

B-2.3: Partner with PG&E to map ideal locations for decommissioning, work with counties to coordinate and conduct outreach

B-2.4: Pilot a mini-BACHI retrofit program that combines home repair, energy efficiency and decarbonization services and incentives

B-2.5: Based on lessons learned from pilot (B-2.4), secure funding to expand the mini-BACHI pilot retrofit program to all Bay Area counties with a focus on partnering with affordable housing programs and owners to identify sites and project opportunities

Potential Benefits

UPFRONT COSTS WILL RESULT IN LONG-TERM SAVINGS AND RETURN-ON-INVESTMENT

Financial incentive programs that support electrification upgrades for low-income households reduce upfront cost barriers and can unlock ongoing, long-term utility cost savings as well. In a study from Richmond, CA, building envelope and electrification upgrades resulted in reduced annual utility bill costs for modeled buildings that resulted in a 100%+ return on investment for upfront costs.[30] PG&E's Electric

Home Rate Plan ("E-Elec" rate) for homes with EVs, electric heat pumps, or battery storage make electric appliances more affordable to operate. Specifically, low-income families who are at 200% to 250% of Federal Poverty Guidelines may opt into qualified electric rate discount programs (CARE and FERA, respectively), which reduce overall electricity bill costs and make operating heat pumps much more affordable.[31] Other plans can save large electricity-using customers money if they shift their usage to lower-priced times of day.[32]

Recommendations to ensure this potential benefit is realized:

- Continue to promote and raise awareness about available cost-saving program opportunities that are specifically targeted to lower-income households, such as those offered by BayREN, community choice aggregators, utilities, and the state (TECH Clean CA, Equitable Building Decarbonization programs).
- Continue to promote the E-Elec rate to households that electrify their appliances, and CARE and FERA low-income electricity discount rate plans to lower income families who qualify for them.

ELECTRIFICATION AND ENERGY EFFICIENCY RETROFITS (LIKE WEATHERIZATION) CAN PROTECT OCCUPANTS FROM CLIMATE-RELATED HAZARDS SUCH AS EXTREME HEAT AND WILDFIRE SMOKE

Because electric heat pumps provide mechanical cooling in addition to space heating, they increase comfort and safety of homes during extreme heat events that will increase with climate change. Other physical upgrades to buildings that can save energy and increase comfort, such as insulating, air sealing, and weatherizing building envelopes also serve to protect occupants from extreme air pollution events such as those caused by wildfires. [33]

Potential Unintended Consequences

INCREASED COST BURDEN AND DISPLACEMENT RISK

Studies have found correlations between certain energy improvements and increased cost burdens.[34] Today, there is some incremental cost increase for homeowners to install electric heat pumps over like-for-like gas appliances, which can be partially or totally offset by financial incentives but their future funding availability is uncertain. For renters, portions of the costs that landlords pay for appliance electrification could be passed on to tenants, which could result in rent burden increases for low-income renters. Furthermore, landlords may be able to use construction projects (noise, dust, and hazards that make tenants feel pressured to leave voluntarily) to displace long-term tenants to see a quicker return on investment or capitalize on the value-add to their properties from modern electric appliances.[35]

Some statewide policy interventions, such as AB 1482, include an exception that allows landlords to evict tenants if they plan to remodel the unit for more than 30 days and it is unsafe for the tenant to stay. Building decarbonization retrofits, which may take months to complete, could lead to evictions under this loophole.[36]

Recommendations to mitigate these potential unintended consequences:

- Establish rent increase and eviction prohibitions and "right-to-return" provisions (for tenants who may be required to relocate for construction purposes) in incentive programs, and set tenant pass-through limits for electrification retrofits.

- Help property owners manage upfront costs by developing and directing programs offering financial incentives, direct installations, and low-cost financing to those with lower incomes residing in frontline communities.

INCREASED ELECTRICITY BILLS

California's electricity prices are among the highest in the nation, reducing the savings that households in frontline communities may attain from electrifying their homes (e.g., by installing electric heat pumps) especially in certain utility territories.[37] However, research from RMI finds there can still be net financial benefits for switching to electric heat pump appliances for households, especially for those that leverage the specialized electric rates ("E-Elec rate") that heat pump customers can choose.[38] Similarly, electricity rate discount programs, such as CARE and FERA, are available for low-income electricity customers meeting certain income levels (i.e. Federal Poverty Guidelines).

Recommendation to mitigate this potential unintended consequence:

- Publicize and conduct outreach and education regarding the E-Elec rate plan (for market rate utility customers) and CARE/FERA electricity plans (for qualifying low-income customers) that will help manage electricity bill costs for households switching to electric zero-NO_X heat pump appliances.

B-3: Support Collaborations and Partnerships to Ensure the Building Decarbonization Workforce is Successful, Skilled, and Diverse Enough to Serve the Entire Region Effectively and in a Culturally Competent Manner

B-3.1: Highlight and promote contractors who hold established certifications and credentials that indicate they are skilled and knowledgeable about heat pumps, and partner with incentive program administrators and other organizations to communicate their value proposition for customers

B-3.2: Explore funding opportunities and partnerships to expand education, training, business growth and other targeted support of Minority/ Women/ Disadvantaged Business Enterprises (MWDBE) contracting companies to become active in building decarbonization program and project opportunities

B-3.3: Explore the creation of a contractor mentorship program that leverages the experiences and knowledge of high-performing heat pump installers ("volume installers") to share information and tips that explain the business opportunity to gas-centric contractors so they get interested in electric heat pump upskilling and training opportunities

B-3.4: Assemble a regional information-sharing network/directory to increase awareness and opportunities for contracting businesses to connect with training providers and new workers who have demonstrated a commitment to pursuing a career in the field. Integrate information about project and funding opportunities, requests for proposals, and incentive program updates as appropriate

Potential Benefits

POTENTIAL FOR NEW JOBS TO BE WELL-PAID AND BENEFITED, ALLOWING FOR IMPROVED QUALITY OF LIFE FOR SOME FRONTLINE COMMUNITIES

The 2023 Equitable Electrification Analysis for Existing Buildings in Richmond, CA showed that 75% of private industry construction workers nation-wide had access to employer-sponsored health care benefits, 81% had access to paid vacation benefits, 69% had access to paid sick leave, and 63% had access to retirement benefits plans.[39]

Through strategic policies, such as establishing minimum workforce standards in funding programs, agencies can raise the bar for the level of skill and training of workers and support good paying workforce development in emerging industries like residential building electrification.[40]

Recommendations to ensure this potential benefit is realized for frontline communities:

- Highlight local workforce training programs for electricians, plumbers, and other decarbonization-related roles, particularly those that target workers from frontline communities, formerly incarcerated people, and people with other barriers to employment.
- Seek to develop and implement regionally consistent workforce standards for retrofit projects to increase the number of family-sustaining and good paying jobs.
- Provide streamlined support for contractors from and that serve frontline communities e.g., increase awareness of and access to incentives, improve communication tools with customers.

These recommendations align with those put forward by UCLA researchers to create conditions that attract skilled workers, pre-qualify contractors, support the up-skilling of workers through stackable credentials, and structure the work to create opportunities for frontline workers.[41]

MORE JOB POTENTIAL IN ELECTRIFICATION AND EFFICIENCY THAN FOSSIL-FUEL BASED COUNTERPARTS

Low-carbon energy technologies can create more jobs per unit of energy than their coal and natural gas counterparts.[42]

An analysis of potential employment impacts of CA building electrification (assuming the state electrified all buildings by 2045) projected the following changes:

- 59k-100k new jobs from construction, annually 2020-2045
- 3k-5k new from manufacturing, annually 2020-2045
- 10k-12k new jobs from electricity generation and distribution by 2045
- 7k-14k fewer jobs from gas distribution by 2045[43]

Three out of five jobs required to meet CA's building electrification goals would be in “high-road” sectors. The right set of policy interventions can reform the competitive dynamics in traditionally “low-road” industries like residential and small commercial construction to improve the quality of jobs and engage more highly skilled workers.[44]

Recommendation to ensure this potential benefit is realized:

- Include labor and workforce development agencies in program design and build workforce transition into program budgets. A Greenlining Institute report recommends the above to ensure that current low-income fossil fuel workers have access to and training for electrification job opportunities.[45]

Power

An equitable and affordable transition to clean energy generation and storage in the Bay Area has the potential to provide a multitude of benefits for frontline communities, including potential bill savings and increased energy resilience. Ensuring access to and direct benefits from programs, technologies, and resources for frontline communities, including low-income and moderate-low-income households and multi-family renters, will require careful implementation and additional funding resources.

P-1: Increase Development of Local Clean Energy and Storage Projects (with a Focus on Projects up to 20MW), Including Behind-the-Meter and Distributed Energy Resources

P-1.1: Support local governments to promote and incentivize development of clean energy projects on preferred sites in their jurisdiction that are well-suited for small- to medium-scale clean energy development and have community and business support

P-1.2: Develop a roadmap for community solar and brownfield-to-brightfield projects, especially projects serving multi-family renters and frontline communities, and identify options to fund and pilot projects at key sites

P-1.3: Identify and disseminate best practices for local governments to simplify permitting of clean energy and storage projects

P-1.4: Monitor - and explore how to address - key funding and financing gaps for behind-the-meter and in front-of-the-meter small clean energy and storage projects that benefit frontline communities, low-income and moderate-low-income households, small businesses, and community organizations

Potential Benefits

LOWER ENERGY BILLS AND REVENUE GENERATION FOR LOW-INCOME HOUSEHOLDS FROM DISTRIBUTED/ON-SITE AND COMMUNITY PROJECTS

Behind-the-meter and small front-of-the-meter clean energy projects, including community solar, can offer bill savings and revenue generation for owners and subscribers. For example, rooftop solar or community-sited solar owners can receive bill credits as compensation for excess electricity generation that is exported to the grid.[46] Similarly, community solar projects provide bill credits to subscribers based on the amount of electricity produced by their share of the project. Community solar subscribers in certain markets save 5-15% on their monthly electricity bill. [47] California's statewide Community Renewable Energy Program, established by AB 2316 in 2024 once approved by the CPUC, is required to

reserve 51% of its capacity for low-income customers.[48] This minimum low-income household participation requirement is higher than any other state besides New Jersey. As federal tax incentives for clean energy projects are withdrawn, funding/financing gaps for behind-the-meter and in small front-of-the meter clean energy projects may widen, making them increasingly unavailable for frontline communities and low-income households, businesses, and community-based organizations (CBOs). Focusing on supporting local clean energy and storage projects can help mitigate this impact and ensure frontline communities receive the benefits of lower energy bills.

Recommendations to ensure this potential benefit is realized:

- Use equity criteria in project siting and design by using equity mapping tools to prioritize sites located in or near frontline communities, aligning with CalEnviroScreen, others identified in the BARCAP Frontline Communities Map, and community-identified priority areas.[49] Project developers could prioritize community solar projects that serve multi-family housing, especially deed-restricted affordable housing.

- Local governments and utilities should engage and co-develop programs with frontline communities and CBOs and fund inclusive community engagement processes—such as multilingual meetings, trusted local facilitators, and stipends for community participation—to ensure siting reflects local preferences.

STRENGTHENED REGIONAL GRID RESILIENCE

Increasing the number of local clean energy and storage projects can prevent power outages that disproportionately impact low-income households and increase the affordability gap in California.[50] Grid reliability (reduction in total duration of interruptions and total number of interruptions for a group of customers) could also improve. Strengthened regional grid resilience is particularly important as low-income households may struggle to afford energy resilience solutions like backup generators and may face higher energy burdens, making them more susceptible to the impacts of outages, like spoiled food or inability to use medical devices/refrigerate medications. Cumulative effects of repeated outages can hinder economic advancement and perpetuate cycles of poverty.

LOCAL JOB CREATION POTENTIAL

Local clean energy and storage projects could benefit low-income and frontline jobseekers, if programs are designed well. According to Clean Jobs California 2024, the state had 544,604 clean energy jobs at the end of 2023, with rapid growth in sectors such as energy efficiency, renewable generation, and storage/grid modernization.[51] The solar + storage industry has shown strong “local job-intensity”, with industry estimating that every megawatt of local solar creates 60 full-time jobs, many local, in installation, maintenance, and related trades.[52]

Recommendations to ensure this potential benefit is realized:

- Create or promote targeted workforce development programs and apprenticeships. Project officials should partner with unions, community colleges, Tribes, and workforce boards to develop training/apprenticeship programs in solar, storage, microgrids, and grid modernization with a specific focus on low-income, BIPOC, and displaced fossil-fuel workers.

- Include stipends, wrap-around support (e.g., childcare, transportation), and direct placement pipelines. For instance, in 2021 during solar installation on Santa Rosa Tribal lands, residents participated in paid job training, gaining hands-on experience in solar energy systems as part of CSD's Community Solar Pilot.[53] The Clean Power Alliance offers a number of green workforce training programs, such as a solar and storage microgrid maintenance training for residents of underserved communities in Los Angeles County.[54] In 2022, the first training cohort enrolled 35 students, with 26 graduating and 15 placed in internships.

- Promote small business and contractor inclusion by exploring set-aside funding or technical assistance for minority- and women-owned contractors to compete for clean energy project bids, building capacity for long-term participation in the sector.

- Include or develop models of Community Benefits Agreements (CBAs) for large energy projects. Model CBAs are developed for larger utility-owned projects to guarantee frontline communities receive tangible outcomes (e.g., access to discounted energy, job training, community investment funds). The WINDExchange database includes examples of wind projects in California that offered CBAs.[55] The Great Plains Institute has compiled resources on CBAs for solar projects.[56]

IMPROVED LOCAL AIR QUALITY AND PUBLIC HEALTH FROM GREENING THE GRID

Retiring fossil fuel power generation (e.g., coal, oil, gas), especially near Bay Area and other California communities disproportionately burdened by air pollution, could improve local air pollution and reduce negative health impacts, such as reduction of pre-term births. A study in the American Journal of Epidemiology by Casey et al. analyzed birth data from 2001 to 2011 and found that the closure of eight coal and oil power plants in California was associated with a significant decrease in preterm birth rates among nearby residents. The proportion of preterm births within 5 km of the plants was reduced from 7.0% to 5.1%, and within 5–10 km, it decreased from 6.6% to 5.5%. The reduction was more pronounced among non-Hispanic Black and Asian mothers.[57]

P-2: Equitably Expand Customer Programs and Deploy Power System and Grid Technologies More Widely

P-2.1: Increase the number of critical public facilities with reliable clean backup power and key community facilities with clean resilient energy resources (e.g., solar+storage, microgrids), such as resilience hubs, in coordination with local government emergency response managers and plans. In some cases, solar+storage hybrid may be necessary depending on the end use

P-2.2: Accelerate scaling up of different load flexibility solutions across the region in an equitable manner to improve grid reliability, help control costs, and align with state load shift goals to shift electricity usage

P-2.3: Explore mechanisms to minimize or eliminate health risks from fossil fuel-based backup generation (BUG) for large commercial facilities in ways that maximize the GHG co-benefits

P-2.4: Modernize transmission and distribution lines to increase efficiency and improve reliability (e.g., grid-enhancing technologies, reconductoring)

Potential Benefits

ENERGY RESILIENCE DURING CRISES

Microgrids with renewable energy resources (like the Calistoga Resiliency Center in Napa, which has solar + battery + hydrogen fuel cells) can power connected facilities during grid outages or Public Safety Power Shutoff (PSPS) events, replacing diesel-based back-up generators and bolstering emergency response.[58] While PSPS may reduce the risk of wildfires and associated hazards of flames/heat, smoke, and water contamination, there are also risks associated with the loss of electricity, such as disruptions of school or work activities and the inability to power critical medical equipment. CalMatters' reporting in 2019 revealed that low-income households can face hunger and financial crisis when blackouts/PSPS events cause refrigerated food to spoil.[59] Microgrids that can work independently of the grid ensure resilience during crisis and mitigate the impacts of blackouts/PSPS events, particularly in frontline communities.

REDUCED EMISSIONS AND MITIGATED HEALTH IMPACTS OF POWER OUTAGES AND SHUT-OFFS

Without electricity, households lose access to air conditioning or heating, which is critical during heat waves or cold snaps. Frontline community households are more likely to live in poorly insulated or densely packed housing, which exacerbates temperature extremes. Clean back-up power can help prevent heat stress, medication spoilage, and service interruptions. Clean back-up power sources also reduce reliance on diesel generators and peaker plants, which is especially beneficial in communities historically overburdened by air pollution.

Recommendation to ensure the potential benefit is realized:

- Prioritize siting of resilience hubs in frontline communities by building on work by state agencies and local advocates like the Greenbelt Alliance's Bay Area Resilience Hotspots initiative.[60] It is important to locate resilience hubs in frontline communities, ensuring access to essential services in climate-driven outages.

ENERGY COST SAVINGS FOR CUSTOMERS

Time-of-Use (TOU) rates and demand response (DR) can lower costs if households are able to shift their electricity usage to designated lower rate periods. However, some DR programs cater only to specific devices, installers, or manufacturers. This may exclude households with older and/or more affordable

technologies even if they would otherwise be able to participate from a technical standpoint. Furthermore, while TOU rates may be beneficial for low-income households that can modify their energy use, they can create financial burdens for others: A 2017 Statewide Opt-In TOU Pricing Pilot evaluation highlighted the risks of TOU rates on California Alternate Rates for Energy and/or the federal Family Electric Rate Assistance (CARE/FERA) households and the need for safeguards for participants.[61] Other groups identified in the pilot as not achieving cost savings from DR programs include households in hot climates where air conditioning is critical or those with inflexible work/life schedules.

Recommendations to ensure this potential benefit is realized for frontline communities:

- Utilities should continue to provide and expand measures such as baseline allowances, bill protection, smart thermostat rebates, and other accommodations to help customers who are low-income or medical baseline (those who depend on power for their medical needs) adjust their behavior and manage costs related TOU rates or when they opt to participate in DR programs. Minimizing potential negative rate impacts on medical baseline customers and others who cannot readily shift their usage is critical. Programs should ensure some level of flexibility so that customers in these situations are still able to prioritize their own resilience needs, e.g., by opting out of a particular event or adjusting the minimum reserve level of their battery without unreasonable penalties.

- Continue to incentivize solar and storage with rebates for low-income households but encourage, rather than mandate, their participation in DR programs to be eligible for these rebates. Utilities and CCAs offer a range of solar and storage rebates for income-qualified customers. For example, CPUC's Self-Generation Incentive Program (SGIP) provides significant incentives which can fully cover solar and battery systems for eligible low-income customers. SGIP and Residential Solar and Storage Equity (RSSE) programs have required participation in DR programs from low-income customers as a prerequisite for receiving rebate funds.[62] However, Center for Sustainable Energy, the program administrator in the San Diego region, notes in a 2025 CPUC filing that there are no CPUC-approved programs available to low-income households who are customers of Community Choice Aggregators, which affected their participation in SGIP. This and other challenges are noted in the filing.[63] Educating households about the benefits of participation and encouraging enrollment when appropriate rather than mandating participation preserves energy choice.

Waste

Equitable implementation of Waste section measures and actions offers major opportunities to reduce greenhouse gas (GHG) emissions, divert waste and compost contamination, and protect communities impacted by industrial scale composting facilities as California works toward its organic waste diversion and food recovery goals. Strategies like asset sharing, participatory planning, and education around food and building life cycles reduce pollution, create economic dividends, and improve environmental safety. The recommendations provided aim to find equitable solutions to reduce or divert waste while preventing additional environmental harm to frontline communities.

W-1: Enable Food Access and Clean Compost

W-1.1: Develop funding and asset-sharing mechanisms to support edible food recovery operations

W-1.2: Coordinate regional efforts to improve sorting of organics discards, including reducing common contaminants of the organics stream

W-1.3: Increase the region's understanding of lifecycle and health impacts of food and goods consumption and the opportunity for community-scale solutions

Potential Benefits

FOOD SECURITY AND HEALTHIER FOOD SYSTEMS

There is an opportunity to advance food security and create healthier food systems in the Bay Area while reducing GHG emissions by expanding the capacity of food banks, mutual aid networks, and community-based organizations, particularly those serving frontline communities, to redistribute surplus nutritious food from recovery operations. Senate Bill 1383 mandates that local jurisdictions recover 20% of edible food otherwise headed to landfills to feed food insecure individuals and aims to reduce organic waste by 75%.[64]

Bay Area residents are spending almost $100 more a month on groceries than they were pre-pandemic.[65] Those higher costs strain monthly budgets and force families to choose cheap foods over healthy ones. These problems are disproportionately affecting people in frontline communities such as East Oakland, a neighborhood that is primarily composed of low-income families of color. According to the 2024 California Health Interview Survey, about 1 in 10 adults in East Oakland neighborhoods experience food insecurity, twice as many people than in most other parts of the city.[66] Coordinated regional efforts to improve organics sorting and reduce contamination can also improve working conditions in waste and compost operations and increase the availability of high-quality compost for urban agriculture and community gardens, supporting local food production and access to fresh produce in neighborhoods with limited healthy food options.

Recommendation to ensure this potential benefit is realized:

- Create dedicated funding streams for grants and low-cost shared assets for community-based food recovery organizations and food hubs specifically serving frontline communities.

REDUCTION IN COMPOST CONTAMINATION

Compost created from urban waste inputs have a higher concentration of contaminants compared to those from rural areas. This can increase PFAS, lead, pesticides, and herbicides to compost. Hall et al. conclude there is a resultant need for more testing to ensure compost quality.[67] Municipal contracts in places like Seattle and San Francisco include strict guidelines on compost feedstock (acceptable inputs), and require testing for contaminants such as metals, pathogens, and PFAS to ensure safety. These contracts help define what materials can go into compost and ensure traceability.

Recommendations to ensure this potential benefit is realized:

- Create mechanisms to avoid urban compost contamination, including mandating testing compost for metals, pathogens, and PFAS, and specify allowable contaminant levels. Compost performance is highly sensitive to contamination; the presence of plastics and other non-compostable materials can degrade compost quality and increase processing costs. In regions without strong source-separation programs or effective enforcement, poor feedstock quality can threaten the viability of composting facilities.[68] Washington State has implemented policies banning PFAS in food packaging to protect the integrity of compost feedstock. Composting systems that include preventative measures can significantly minimize contamination.

- Ensure equitable education and communication around composting. This includes creating accessibility in education around waste by including multilingual, multimedia communication to educate diverse urban populations on waste sorting, food sovereignty, and health impacts. [69] Radio and health centers can help spread messaging and education.

PARTICIPATORY PLANNING AND COMMUNITY WELL-BEING

Community composters often offer co-benefits such as education, green space, and embeddedness, aligning with public health and social well-being goals. Participatory planning can support both climate change mitigation and local environmental health.[70]

Recommendation to ensure this potential benefit is realized:

- Broaden success metrics for program evaluation. Lifecycle models often exclude social equity and community health outcomes, suggesting a need for broader metrics to evaluate success in community-scale composting systems.[71]

INCREASED EFFICIENCY AND LOW GHG EMISSIONS THROUGH LANDFILL DIVERSION AND FOOD RESCUE

Food rescue has the lowest GHG emissions of all analyzed organic waste strategies, including composting and anaerobic digestion. Improvement of food recovery efforts and infrastructure reduces the need for compost processing facilities and maximizes resource efficiency, especially for edible food still fit for consumption.[72]

DIVERSIFICATION OF COMPOST MECHANISMS

The diversification of composting facility types (small and industrial facilities) and feedstocks supports the needs of communities and provides more opportunities to reduce costs and reduce emissions. Smaller scale community composters, often operated by nonprofits, offer social co-benefits such as food security, education, and local employment.[73]

Potential Unintended Consequences

COMPOSTING FACILITY SITING TRADE-OFFS

Urban areas like the Bay Area have the most access to organic waste sources, but very few suitable sites for compost facilities. Composting is most useful when hauled to agricultural and pastoral areas (e.g., San Joaquin Valley), however these areas are often identified as frontline communities and the most impacted by poor air quality. An increase in composting facilities poses a public health risk as facilities can contribute to an increase in air pollution in frontline communities. Already, over 35% of composting facilities are currently located in disadvantaged communities within California.[74] This highlights a significant tradeoff: prioritizing environmental justice can reduce negative air quality impacts but may limit access to agricultural compost markets (Harrison et al., 2024).

Recommendations to ensure this potential unintended consequence is minimized:

- Utilize or create smaller composting facilities, like neighborhood-scale composting sites[75]
- Decentralize and diversify composting infrastructure and focus on reducing the number of large, commercial-scale facilities near frontline communities.

W-2: Support Low-Carbon Building Materials and Reuse

W-2.1: Collaborate with the state and other local governments to implement the California Green Building (CALGreen) and CARB embodied carbon code requirements

W-2.2: Work with construction project teams and suppliers to increase availability and adoption of low-carbon building materials and practices

W-2.3: Conduct local assessments to identify opportunities for the region's existing buildings

Potential Benefits

GREENER, HEALTHIER BUILDINGS (INCLUDING AFFORDABLE HOUSING)

California's adoption of the first state-mandated green building code in the U.S., CALGreen Code, will require all new construction or significant renovations to meet environmental and public health standards.[76] Many low-carbon materials are less toxic (e.g., low-VOC), which can reduce respiratory issues and other health problems. According to EPA, households with poor housing quality had 50 percent higher odds of an asthma-related ED visit in the prior year.[77] Green homes result in 47% fewer sick building syndrome symptoms.[78]

Frontline community populations, often exposed to higher environmental health burdens, stand to benefit from these changes, but may not be able to afford to live in new housing units built to code. However, Low-Income Housing Tax Credit (LIHTC) policy modifications are integrating green standards into new affordable housing.[79]

Recommendation to ensure this potential benefit is realized:

- Improve buildings chemical testing standards. 70% of chemicals from building material are not currently covered in indoor air quality testing standards. Chemicals that are covered in testing are not considered in the threshold to be protective from asthma onset. Oregon's Department of Environmental Quality recommends improving testing considerations for additional chemicals related to indoor building materials.[80] [81]

REDUCED EXPOSURE TO DEMOLITION IMPACTS

Material reuse encourages deconstruction rather than demolition, which generates less dustfall and noise. This improves local air quality and livability, especially important in dense or already overburdened.[82]

Recommendations to ensure this potential benefit is realized:

- Municipalities should create safe building demolition ordinances. Portland, OR was the first city to pass a residential deconstruction ordinance in 2016 to promote safer demolition of homes (built pre-1916), reducing lead/asbestos exposure and salvaging materials for reuse. These kinds of ordinances support circular economies and minimize waste from buildings. Deconstruction ordinances also help support safer demolition and minimize poor air quality for workers and the surrounding community.

- Protect the construction workforce from harmful exposure through strengthened labor standards, education, and awareness. Construction workers experience higher exposure to harmful chemicals from building materials, which they could be exposed to when reusing building materials. These include asbestos, silica, and mold.

Potential Unintended Consequences

HIGHER UPFRONT COSTS OF LOW-CARBON SUSTAINABLE MATERIALS

Some low-carbon materials or deconstruction practices may have higher upfront costs. Without subsidies or incentives, this could increase construction costs and be passed on to renters or buyers, worsening housing affordability.

W-3: Reduce Methane Emissions from Waste Management Facilities

W-3.1: Explore rulemaking to minimize emissions of methane, volatile and toxic organic compounds, and odorous substances from organic waste handling facilities, including large composting facilities

Potential Benefits

LANDFILL DIVERSION

Smaller industrial facilities (20,000 t/year) are recommended in urban centers to lower transport costs and emissions, and they can be more feasibly co-located with food recovery or processing operations. Incorporating additional community-scale composting like those in Los Angeles County is cited as capable of processing the equivalent of 25 full-scale facilities—these decentralized systems can share assets like land, equipment, and labor across multiple small sites.[83]

Recommendation to ensure this potential benefit is realized:

- Minimize air pollution and avoid siting composting facilities in/near the residential portion of frontline communities. Transportation emissions can increase significantly if regional systems are not well-optimized, especially for low-density areas where compost or food must travel far.[84] Composting facilities increase VOC and NH3 air contaminants posing a greater risk to individuals in disadvantaged communities.[85]

Natural and Working Lands (NWL)

Equitable conservation and management of natural habitats, farms and ranchlands, wetlands, recreation areas, and urban green spaces, collectively referred to as Natural and Working Lands (NWL), can offer significant opportunities to reduce climate vulnerability and deliver co-benefits to frontline communities. Strategies like wildfire fuel reduction, urban greening, and habitat restoration can reduce air pollution, improve mental and physical health, enhance community safety, and provide workforce opportunities. When led by or in partnership with frontline communities, these actions can also restore cultural connection to land and further environmental justice efforts.

NWL-1: Accelerate Implementation of Nature-Based Solutions through Regional Funding and Data Analysis

NWL-1.1: Provide technical assistance for NWL data analysis to support project implementation, results tracking, and incorporation of emerging science

NWL-1.2: Increase long-term funding for nature-based solutions through dedicated support for regional-scale grant writing and exploration of emergent sources of long-term funding

Potential Benefits:

IMPROVED EQUITY AND TRANSPARENCY IN PLANNING

The City of Oakland's Urban Forest Plan uses CalEnviroScreen and localized tree canopy data to identify priority investment areas in frontline neighborhoods like East and West Oakland.[86] Riley and Gardiner et al. (2020) highlight how spatial tools can link canopy and ecosystem service access with race, renter status, and other social vulnerability factors.[87]

Recommendations to ensure this potential benefit is realized:

- Ensure tool accessibility and equity by translating and localizing planning tools, e.g., California Protected Areas Database (e.g., multilingual, mobile-friendly, visual).[88]
- Support community-led data collection by providing stipends, training, and funding to support CBO-led data collection and frameworks.[89]

DATA INTEGRATION FOR INFORMED IMPLEMENTATION

Southern California Association of Governments (SCAG) combined heat exposure and social vulnerability data to identify neighborhoods in need of immediate cooling and resilience interventions in their *Extreme Heat & Public Health Report*.[90]

Recommendation to ensure the potential benefit is realized:

- Integrate different local and regional data sets, such as health, housing burden, and EJ metrics and others, into planning process and for decision making.

IMPROVED ACCESS TO NATURED-BASED FUNDING AND TOOLS

The San Francisco Estuary Partnership and Thompson et al. (2023) stress that complex grant applications often exclude frontline CBOs.[91] [92] They highlight the need for long-term, flexible grant models to enable CBOs to participate in nature-based solutions without being overwhelmed by administrative barriers. Providing grant writing, funding exploration, and technical assistance support can improve access to nature-based funding and tools in the BARCAP region.

Recommendation to ensure this potential benefit is realized:

- Undertake grantmaking reform and fund capacity-building grants that support frontline-led planning and participation in programs such as the Metropolitan Transportation Commission's Priority Conservation Area Grants.[93] While such programs have advanced equity-centered project design, federal support for efforts explicitly framed around equity or environmental justice may be increasingly constrained, highlighting the importance of diversified and state-level funding strategies.

Potential Unintended Consequences:

DATA GAPS IN FRONTLINE COMMUNITIES

Indicators like urban tree canopy coverage may oversimplify frontline needs. For example, a report by the Los Angeles Urban Forest Equity Collective noted that two neighborhoods may each report 20% canopy coverage, but the lived experience can differ dramatically depending on how that canopy is distributed.[94] In a well-resourced neighborhood, trees may be evenly spaced to provide widespread shade along streets, bus stops, and homes. In contrast, a frontline neighborhood may have that same 20% canopy concentrated in a single park or private space—offering little relief to most residents. These contextual differences are critical but often missed in aggregated data. Additionally, community engagement processes may oversample higher-income or more digitally connected residents, skewing priorities and outcomes.[95]

IMPLEMENTATION RISKS IN BUILDING REGIONAL CAPACITY

While regional capacity-building offers long-term benefits, smaller cities, land trusts, Tribes, and CBOs in frontline areas may face structural limitations that hinder participation. These may include the absence of a dedicated data/GIS analyst, a staff grant writer, or personnel with climate science expertise—posing a barrier to accessing and applying regional tools and funding (California Strategic Growth Council, 2023; CLEE, 2023).[96]

Recommendation to ensure this potential unintended consequence is minimized:

- Make funding flexible by offering sustained, low-barrier grant options for frontline groups. Additionally, funders can provide free technical assistance with grant-writing.[97]

NWL-2: Prevent Losses of Carbon Held in NWL through Land Conservation, Wildfire Management, and Ecosystem Restoration

NWL-2.1: Support conservation of lands at the regional scale through the Priority Conservation Area (PCA) Program

NWL-2.2: Increase fuel management and reduce wildfire risk on natural and working lands and at the wildland-urban-interface (WUI) through new funding and financing mechanisms, workforce development, and innovation

NWL-2.3: Incentivize private landowners managing large land areas to manage fuel at scale through innovations in cost sharing and financing

NWL-2.4: Protect carbon held in the Bay Area's wetlands through protection, restoration, and enhancement of tidal marsh habitat

NWL-2.5: Contribute to emergent science on blue carbon through research on blue carbon fluxes and beneficial sediment reuse

NWL-2.6: Support efforts to protect riparian forests, advancing land and water management strategies that maintain and increase carbon storage

Potential Benefits:

CLIMATE RESILIENCE THROUGH ECOSYSTEM CONSERVATION AND RESTORATION

Herrera (2022) and Dybala et al. (2018) show that wetland and riparian restoration buffer sea level rise, reduce flood risk, and improve water quality in low-income communities.[98] [99] These projects also offer biodiversity and recreational co-benefits that promote mental health and ecosystem access.

Recommendation to ensure this potential benefit is realized:

- Promote risk-responsive restoration by targeting wetland and riparian investments to communities facing sea level rise, flooding, drought, or water contamination risks. Specifically, municipalities/subareas seeking to comply with the Bay Area's Regional Shoreline Adaptation Plan sea level rise planning requirement should look to green infrastructure and coastal wetland restoration strategies.

HEALTH PROTECTION FROM FIRE AND SMOKE

D'Evelyn et al. (2022) highlight how prescribed fire and Indigenous fire stewardship reduce wildfire smoke exposure for frontline communities.[100] Proactive fire management can lessen health burdens in

high-risk zones, but it must be accompanied by smoke-ready infrastructure and equitable communication to ensure benefits are realized.

TRIBAL STEWARDSHIP AND CO-MANAGEMENT

Centering Tribal-led practices builds long-term ecological and cultural resilience. Herrera (2022) emphasizes the role of Indigenous leadership in restoring wetlands and shared land governance.[101]

Recommendation to ensure this potential benefit is realized:

- Invite frontline and tribal groups to co-lead solutions development and implementation, ensuring co-governance of fire and restoration projects by Native Nations and local CBOs.[100][102][103] Furthermore, land managers can engage and compensate Tribal Elders to integrate cultural burning and Traditional Ecological Knowledge into programs, and Tribal youth to preserve/promote continuity of cultural heritage.

Potential Unintended Consequences:

HEALTH RISKS FOR FIRE SAFETY WORKERS

Wildfire fuel management, particularly at the wildland–urban interface (WUI), is a multi-agency effort involving CAL FIRE, the U.S. Forest Service, local fire departments, and private landowners. Managing fuel at WUI can reduce property damage, improve fire suppression efficiency, and lower long-term suppression costs—primarily benefiting landowners.[104] However, the physical risks fall on fire safety workers, many of whom are underpaid, overexposed, or part of marginalized labor groups, including incarcerated individuals and migrant crews. Historically, wildfires have disproportionately impacted low-income communities in California, while the benefits of fuel management often accrue to better-resourced homeowners and landowners.[105]

Recommendation to ensure this potential unintended consequence is minimized:

- Develop workforce and stewardship programs. Restoration projects create jobs in wildfire mitigation, ecological restoration, and riparian enhancement. However, these jobs vary greatly in quality. The Putting California on the High Road report flags that vegetation management and fire prevention work often suffer from “low-road” labor conditions—low pay, dangerous conditions, and limited upward mobility—particularly for migrant workers, H-2B visa holders, and formerly incarcerated individuals.[106]

AFFORDABLE HOUSING AND DISPLACEMENT RISKS

Conservation efforts may raise property values and restrict housing supply.[107]

Recommendation to ensure this potential unintended consequence is minimized:

- Institute anti-displacement safeguards by pairing land conservation with tenant protections, land trusts, and housing equity strategies.

IMPACTS ON LOCAL AIR QUALITY

Prescribed burns nearby low-income or Tribal communities impact local air quality and may escape containment. This could harm residents if proper notice is not given or a burn plan with appropriate safety procedures and smoke management is not created (e.g. via official Air District procedures).

Recommendation to ensure this potential unintended consequence is minimized:

- Create smoke preparedness infrastructure such as clean air shelters, distribute resources like portable air filters, and issue accessible multilingual alerts.[108]

NWL-3: Enhance Carbon Sequestration and Reduce Greenhouse Gas Emissions through Management and Restoration of Agricultural and Working Lands

NWL-3.1: Scale climate-beneficial agriculture and catalyze widespread adoption of practices that increase or maintain above- and below-ground carbon stocks, and achieve climate resilience on working lands

NWL-3.2: Increase local implementer capacity by conducting a regional needs assessment and 'shovel-worthy' project portfolio

NWL-3.3: Support integration of climate-beneficial agriculture into climate-related plans and policies through a planning toolkit and training

NWL-3.4: Explore establishment of more renewable energy on agricultural lands

NWL-3.5: Reduce energy-related emissions and increase groundwater recharge through adoption of sustainable water management practices

Potential Benefits:

ENVIRONMENTAL HEALTH AND SOIL RESILIENCE

Fernandez-Bou et al. (2023) finds that repurposing cropland near frontline areas can reduce pesticide drift, nitrate runoff, and groundwater overdraft.[109] Healthy soils and buffers also enhance carbon sequestration and flood resilience.

WORKFORCE AND ECONOMIC TRANSITION

Lewis and Rudnick (2019) emphasize that regenerative agricultural practices can create higher-wage, lower-pollution jobs.[110] These include composting, food processing, and carbon farming—co-benefits that support immigrant and rural workforce development. Additionally, climate-beneficial farming practices can reduce ground-level temperatures by improving soil moisture and adding vegetative cover.

These benefits may lessen heat exposure for farmworkers, but risks remain without access to shade, water, and rest—especially in hotter inland regions.[111] [112]

Recommendation to ensure these potential benefits are realized:

- Train and transition the workforce by using regenerative agriculture and nature-based solution projects as sites for workforce transitions particularly for rural, BIPOC, and frontline workers moving from hazardous industries to restoration and clean industry roles.[113] [114]

WATER AND FOOD SECURITY

State Water Efficiency and Enhancement Program (SWEEP)-supported irrigation practices and community gardens strengthen resilience to drought and increase fresh food access.

Recommendation to ensure this potential benefit is realized:

- Prioritize access-first program design by simplifying SWEEP/Healthy Soils applications by removing matching fund barriers for small and socially disadvantaged farmers.[115]

Potential Unintended Consequences:

URBAN AGRICULTURE AND GENTRIFICATION

While urban agriculture can increase food access and build social ties, it can also contribute to gentrification when framed through a "green lifestyle" lens (e.g., boutique urban farms). Projects must be carefully designed to prevent displacement and include frontline participation (Alkon and Cadji, 2018).

Recommendation to ensure this potential unintended consequence is minimized:

- Support culturally-rooted farms. Fernandez-Bou et al. (2023) emphasizes the need to protect Southeast Asian and Indigenous farms during land transitions through technical and financial support.[116]

URBAN AGRICULTURE AND FOOD SOVEREIGNTY

Urban agriculture supports cultural identity, traditional foodways, and food access in BIPOC communities. It also contributes to climate resilience and local food systems.[117] However, most urban growers lack secure land tenure, making them vulnerable to displacement when land is redeveloped or leases expire.

Recommendation to ensure this potential unintended consequence is minimized:

- Secure land tenure and protect growers. This can be done by supporting policies like long-term leases, land trusts, and public land allocation to ensure BIPOC-led urban agriculture projects can thrive without risk of displacement.[118]

CAPACITY AND EQUITY RISKS FOR SMALL AND FRONTLINE FARMERS

Application barriers, match funding requirements, and administrative complexity continue to limit access for small and socially disadvantaged farmers.[119] Repurposing farmland may displace culturally significant small farms without equity safeguards.[120]

GROUNDWATER RECHARGE IMPACTS

Drip irrigation can reduce groundwater recharge, exacerbating inequities in regions with poor water access.

Recommendation to ensure this potential unintended consequence is minimized:

- Pair irrigation with recharge, ensuring that drip irrigation upgrades are paired with aquifer recharge to avoid unintended water access inequities.

NWL-4: Expand and Maintain Urban Green Spaces While Advancing Environmental Justice Outcomes

NWL-4.1: Expand urban green spaces and prevent loss through new regional funding and technical support, prioritizing green spaces that benefit frontline communities

NWL-4.2: Advance environmental justice-centered approaches for urban greening through policy innovation, community-led planning, and support for frontline community land stewardship

Potential Benefits:

IMPROVED HEALTH AND COOLING

The City of Oakland (2024) and SCAG (2020) link urban greening to reduced asthma, urban heat island mitigation, and improved mental health, especially in redlined neighborhoods with limited access to parks and trees.[121] [122] Semeraro et al. (2021) note green spaces support stress relief and social cohesion, particularly in redlined areas.[123]

Recommendation to ensure this potential benefit is realized:

- Prioritize urban green space maintenance in frontline communities. This can be achieved by funding proactive tree maintenance and sidewalk repair in underinvested neighborhoods. Massachusetts's Greening the Gateway Cities provides one example of how to structure a multi-city program focused Environmental Justice communities which encourages and compensates residents participating in tree planting and maintenance.[124]

COMMUNITY STEWARDSHIP AND ECONOMIC INCLUSION

The *Environmental Justice 2.0* report highlights how greening projects offer job pathways for youth, formerly incarcerated people, and long-term residents.[125]

Recommendation to ensure this potential benefit is realized:

- Prioritize local jobs and access by supporting green workforce development for youth and residents with barriers to employment.

Additionally, community design ensures that green infrastructure reflects cultural values and needs.[126]

Recommendation to ensure this potential benefit is realized:

- Utilize culturally responsive design for green infrastructure. Renters, seniors, and frontline workers must be involved in site selection, species choice, and programming to ensure projects reflect their interests and traditions.[127]

NEIGHBORHOOD LIVABILITY AND CONNECTIVITY

Well-maintained green spaces support social ties, pedestrian access, and community cohesion.[128] When tied to "right tree/right place" strategies, they can improve transit comfort and walkability.

Potential Unintended Consequences:

UNDER-MAINTENANCE AND DISPLACEMENT RISK

Frontline renters may not benefit equally from greening unless outreach, protection, and access are built into planning.[129] Poor design or under-maintenance of green spaces may lead to allergens, pests, or safety concerns.

Green investments may also drive displacement when not paired with rent protection measures.[130]

Recommendation to ensure this potential unintended consequence is minimized:

- Pair greening and green infrastructure investments with anti-displacement strategies (e.g., land trusts, rent control, affordable housing development).[131] A national study by UCLA and the University of Utah found that early, multi-sector anti-displacement strategies are key to preventing green gentrification alongside major park projects.[132]

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Appendix E

Engagement

March 2026

Bay Area Regional Climate Action Plan

Appendix E- BARCAP Engagement

E.1 Overview of engagement efforts

The Air District led a robust engagement process for the Bay Area Regional Climate Action Plan (BARCAP). Engagement was critical in shaping development of the BARCAP, and design of the engagement efforts reflect the Air District's appreciation for the unique challenge of creating the first-ever regional climate action plan for the Bay Area. The project builds on - without duplicating - over a decade of progress on local climate action and reflects the region's best technical and implementation work. The Air District sought to embed environmental justice throughout the engagement process, and elevated voices from frontline communities and honored them as lived-experience experts. Stakeholders were engaged early and often throughout the process by offering multiple avenues for meaningfully shaping BARCAP measures and key project areas, like the Design Principles.

The Air District engaged over **200** local government staff, **144** frontline community members, **79** technical and implementation experts, **304** public workshop participants, and **675** public survey respondents. Chapter 4 presents the high-level engagement approach and key outcomes while this appendix describes in greater detail the BARCAP engagement process, design, and outcomes.

The Air District led local government engagement, technical stakeholder working groups, and public workshops. An engagement consultant team from InterEthnica and Cascadia Consulting Group (consultant project team) were instrumental in co-leading public and frontline community engagement. Engagement was shaped by the BARCAP Outreach and Engagement Plan, which was co-developed by the consultant project team, the Air District, and several Advisory Working Group (AWG) members.

Figure E-1 shows the overall timeline of BARCAP engagement, with key engagement efforts highlighted.

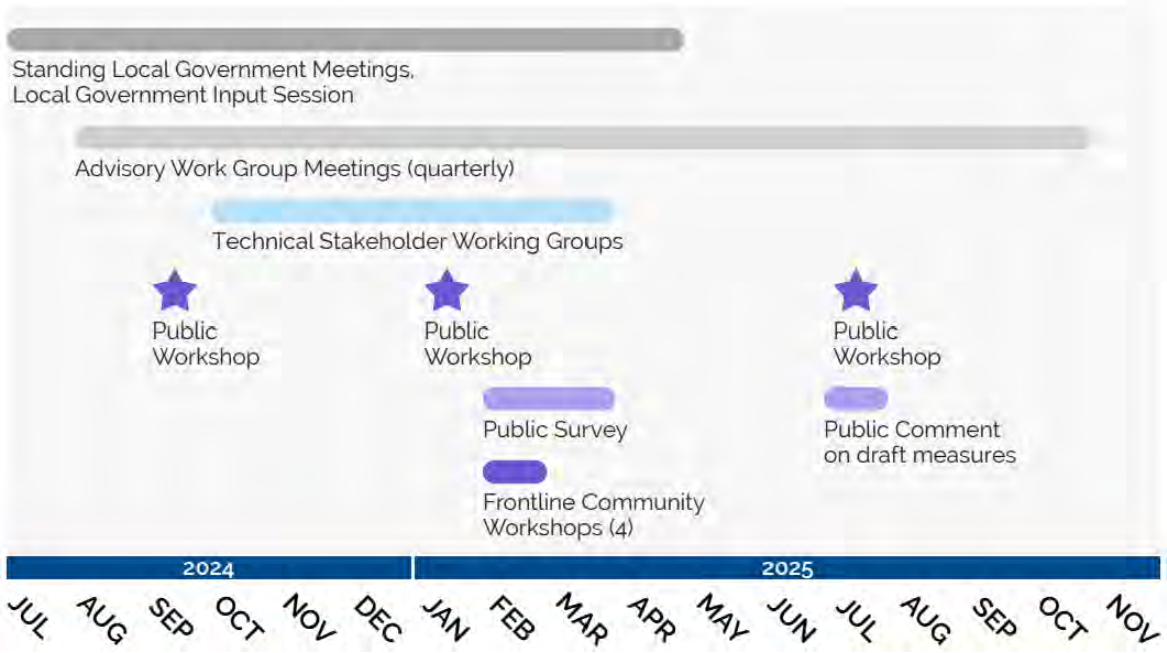


Figure E-1 Timeline of BARCAP Engagement Activities

Figure E-2 highlights the instrumental role engagement played in shaping BARCAP measure development.

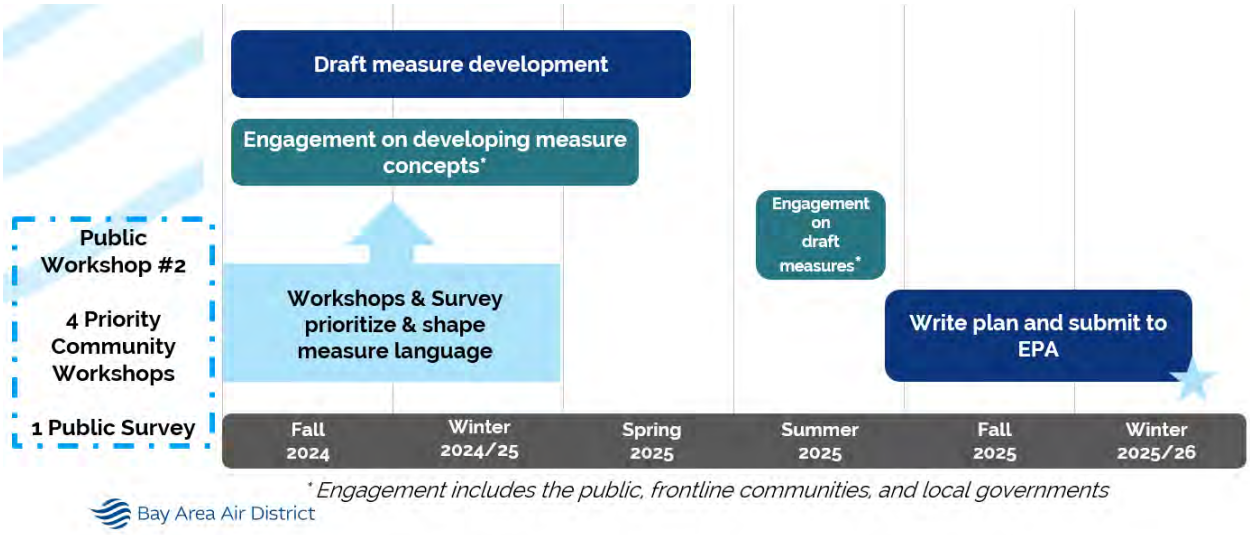


Figure E-2 BARCAP Measure Development & Engagement Timeline

BARCAP Engagement Highlights

- **Advisory Work Group (AWG)**
  - **Role in BARCAP development:** inform decisions on key aspects of the BARCAP, connect the BARCAP to communities and local governments in AWG

members' jurisdictions, discuss key challenges and important gaps to be addressed, review key deliverables
    - **Engagement approach:** quarterly, five total meetings, 25 total members
    - **Member type:** regional agencies, local governments, community-based organizations (CBOs)
    - **Key value add:** BARCAP-region geographic diversity, local government and community connections and representation
    - **Read more:** E.2 Advisory Work Group
- **Local Government Engagement**
    - **Role in BARCAP development:** identify unique regional opportunities for the BARCAP, serve as key implementation partners, provide insights into local climate action to address obstacles, scale solutions, and avoid duplication
    - **Engagement approach:** one Local Government Input session plus 11 county-led meetings, over 200 local government staff engaged
    - **Participant type:** cities and counties from BARCAP region
    - **Key value add:** local government-scale implementation focus and insights
    - **Read more:** E.3 Local Governments
- **Frontline Community Engagement**
    - **Role in BARCAP development:** update Design Principles, identify key frontline community risks and priorities to address in BARCAP measures, embed environmental justice in BARCAP measures, deepen partnerships with CBOs
    - **Engagement approach:** four subregional workshops, 144 total participants, multilingual workshops, and measure review opportunities
    - **Participant type:** frontline community members as recruited by frontline community-serving CBOs
    - **Key value add:** reflecting values and potential risks of climate action at the local scale, deepen relationships with CBOs to implement workshops and pave the way for future implementation, multilingual engagement
    - **Read more:** E.4 Frontline Community
- **Public Engagement**
    - **Role in BARCAP development:** contribute to BARCAP at key stages, reflect regional perspectives and values on climate action, provide input on measure development.
    - **Engagement approach:** three workshops with 304 total public workshop participants, one public survey with 675 respondents, one online public comment period with 409 public comments
    - **Participant type:** general public
    - **Key value add:** reflecting values and potential risks of climate action as heard from members of the public across the BARCAP-region
    - **Read more:** E.5 Public
- **Technical Stakeholder Working Groups**
    - **Role in BARCAP development:** support development of draft measures and actions for each sector based on subject matter expertise and experience and potential role as implementation partner

- **Engagement approach:** 20 total meetings across five sectors, 79 total members with additional organizations consulted on an ad-hoc basis
- **Participant type:** implementers, technical experts, community-based organizations, and local governments
- **Key value add:** implementation focus and insights
- **Read more:** E.6 Technical Stakeholder Working Groups

E.2 Advisory Work Group

The Air District established an Advisory Work Group (AWG) that met quarterly to help:

- inform decisions on key aspects of the BARCAP,
- connect the BARCAP to the communities and local governments in their jurisdictions and networks,
- discuss key challenges and important gaps to be addressed,
- review key deliverables, including the draft measures and draft plan.

In addition, several AWG members contributed to the development of the BARCAP Engagement Plan. Others served as liaisons between the AWG and the technical stakeholder working groups and attended public workshops and the local government input session described in sections E.2 and E.5, respectively. The Air District leveraged ongoing stakeholder engagement efforts led by AWG members, such as attending standing county-led local government meetings listed in Section E.3. AWG members also provided support for targeted engagement, as needed. For example, Rise South City and Climate Resilience Communities helped recruit community members to attend the Frontline Communities Workshops.

The AWG is composed of representatives from regional agencies (Air District, ABAG/BayREN, BARC, and MTC), two cities named in the federally-designated MSA (City of Oakland and City and County of San Francisco), the counties comprising the MSA (Alameda County, Contra Costa County, Marin County, Napa County, San Mateo County, and the portions of Solano County and Sonoma County that are within the Air District's jurisdiction), and several community-based and community-serving organizations (Canal Alliance, Climate Resilient Communities, Emerald Cities Collaborative Northern California, Rise South City, and Transform). Members are listed in Table E-1.

Name	Role and Organization	Regional, County, City, Non-profit, or CBO Representative
Aleka Seville	Regional Coordination Advisor, Association of Bay Area Governments/ Bay Area Regional Energy Network (ABAG/BayREN)	Regional
Allison Brooks	Executive Director, Bay Area Regional Collaborative (BARC)	Regional
Avana Andrade	Senior Sustainability Specialist, San Mateo County Sustainability Department, County of San Mateo	County
Carrie Harvilla	Deputy Director, Transform	Non-profit
Chirag Rabari	Assistant Director, Metropolitan Transportation Commission (MTC)	Regional

Cyndy Comerford	Climate Program Manager, SF Environment	City, County
Dana Armanino	Planning Manager, County of Marin	County
Elizabeth Stampe	Senior Climate Action Coordinator, San Francisco Environment Department	City, County
Jamesine Rogers Gibson	Senior Advanced Program Advisor, Bay Area Air District	Regional
Jane Elias	Program Administrator, Bay Area Regional Energy Network (BayREN)	Regional
Jody London	Sustainability Coordinator, Contra Costa County	County
Josh Bradt	Program Coordinator, Bay Area Regional Collaborative (BARC)	Regional
Julio Garcia	Executive Director, Rise South City	CBO
Kim Springer	Transportation Systems Coordinator (retired), City/County Association of Governments of San Mateo County	County
Krute Singa	Principal Regional Planner, Metropolitan Transportation Commission (MTC)	Regional
Megan Leary	Community Engagement and Policy Manager, Emerald Cities Collaborative Northern California	Non-profit
Miya Kitahara	Program Manager, Alameda County Waste Management Authority (StopWaste)	County
Omar Carrera	CEO, Canal Alliance	CBO
Ryan Melendez	Sustainability Planner, Napa County	County
Shayna Hirshfield-Gold	Sustainability Planner and Acting Sustainability Director, City of Oakland	City
Tanya Nareth	Chief Deputy Executive Officer, Sonoma County Transportation Authority/Regional Climate Protection Authority	County
Violet Saena	Founder and Executive Director, Climate Resilient Communities (CRC) and liaison to the Air District's Community Advisory Council	CBO

Table E-1 Advisory Working Group Members

The AWG met five times between August 2024 and January 2026 and discussed the following topics.

AWG Meeting Date	Summary of Discussion
August 24, 2024	• Members discussed draft priority measure focus areas, defined measure selection criteria, and identified key opportunities to include in the BARCAP: inclusive engagement including multigenerational and frontline community partnership, accelerators for building and transportation electrification, and addressing gaps in

	regional action. Other feedback included: the BARCAP should not duplicate existing local climate action planning or community engagement efforts but instead focus on being additive and complementary.
November 22, 2024	• Members discussed and provided feedback on priority measure areas and brainstormed funding and financing opportunities for priority measure areas. • Other feedback included: the need for neighborhood/community level solutions and regional coordination and examples of successful initiatives that could be effective if scaled up.
March 10, 2025	• Members discussed and provided feedback on the preliminary measures.
August 26, 2025	• Members reflected on public comments on draft measures and provided additional feedback, in addition to discussing what success means for implementation. on progress since last meeting
January 2026	• Members continued the implementation discussion and contributed to the overall implementation framework.

Table E-2 Advisory Working Group Meeting Dates & Topics Covered

E.3 Local Governments

The Air District conducted extensive engagement with local governments, recognizing them as climate leaders in the region. Local government agencies are also key stakeholders that may both benefit from implementation of the BARCAP and serve as key implementation partners.

E.3.1 Local Government Engagement Overview

The Air District met with local governments to understand their specific local needs and challenges that could be addressed at the regional level. Local government staff also helped identify opportunities for the BARCAP to advance local greenhouse gas (GHG) emission reductions. The Air District leveraged existing county-based meetings of cities and provided targeted opportunities to provide input. Local government staff also attended public workshops, participated in the Technical Working Groups, and commented on the draft measures online.

Through these engagement opportunities, local governments provided unique insights into how the BARCAP could support and accelerate local climate action by addressing obstacles and scaling solutions regionally while avoiding duplication of efforts. They also shared important equity and implementation considerations for inclusion in the plan, identified key local government roles for implementation of the BARCAP, and identified potential other implementers. In total, 65 cities and counties provided input to help shape the BARCAP.

The jurisdictions listed below participated in at least one engagement effort related to the BARCAP.

Alameda County	City of Hayward	City of Rohnert Park
City of Alameda	City of Lafayette	City of San Bruno

City of Albany	City of Larkspur	City of San Carlos
City of Antioch	City of Livermore	City and County of San Francisco
Town of Atherton	Marin County	City of San Leandro
City of Belmont	City of Martinez	City of San Jose
City of Berkeley	City of Menlo Park	San Mateo County
City of Brisbane	City of Millbrae	City of San Mateo
City of Burlingame	City of Mill Valley	City of San Pablo
City of Cloverdale	Napa County	City of San Rafael
City of Concord	City of Napa	Santa Clara County
Contra Costa County	City of Newark	City of Santa Rosa
Town of Corte Madera	City of Novato	City of Sausalito
City of Cotati	City of Oakland	City of Sebastopol
City of Dublin	City of Pacifica	Solano County
City of East Palo Alto	City of Palo Alto	Sonoma County
City of El Cerrito	City of Petaluma	City of Sonoma
City of Emeryville	City of Piedmont	City of South San Francisco
Towns of Fairfax & San Anselmo	City of Pinole	City of Union City
City of Foster City	City of Pleasanton	City of Walnut Creek
City of Fremont	City of Redwood City	Town of Windsor
City of Half Moon Bay	City of Richmond	

Table E-3 Local Governments Engaged During BARCAP Development

E.3.1.1 Standing County-Led Local Government Meetings

From July 2024 to July 2025, Air District staff attended regularly occurring local government meetings. Air District staff also met with numerous city and county staff individually for input on BARCAP measures.

Date	Meeting
7/23/24	Regionally Integrated Climate Action Planning Support Program (RICAPS)
8/27/24	RICAPS
9/17/24	StopWaste (Alameda County) Technical Advisory Group (TAG)
9/23/24	Sonoma Regional Climate Protection Authority
10/3/24	Marin Climate and Energy Partnership (MCEP)
10/22/24	RICAPS
11/19/24	StopWaste (Alameda County) TAG
12/5/24	Contra Costa Sustainability Exchange
7/15/25	StopWaste (Alameda County) TAG

Table E-4 Standing County-Led Local Government Meetings Attended by Air District Staff

Through these meetings, local government staff shared specific challenges or obstacles to implementing their local climate action plans, priority policies, programs, and other key new

ideas that might be suitable for regional, rather than local, implementation. They also identified potential opportunities for the BARCAP to help advance local action through a regional approach.

E.3.1.2 Local Government Input Session

The Air District held a virtual local government input session on April 21, 2025, to gather feedback from local government staff on the preliminary draft measures. The discussion focused on measure alignment with city and county efforts, potential local government roles in implementation, and identification of potential implementation challenges. Fifty local government staff attended, representing 27 cities and counties.

The opportunities for regional action and challenges identified by local government staff are summarized below in Table E-5. This table is a representative but not exhaustive list.

Sector	Opportunities	Challenges
Buildings	• Learn from and expand existing efforts • Partnering with distributors and manufacturers, schools, and unions • Holistic electrification programs incorporating resilience and building repair • Permit streamlining • Education for low/moderate income communities on financing opportunities and other resources for home electrification • Neighborhood/zonal electrification • Providing examples of electric equipment (e.g. HVAC, water heaters) installations in difficult or space-constrained locations • Renter protections	• Need for workforce training, growth, and support, especially for small and disadvantaged contractors • Difficulties navigating permits, permit timeliness, permit evasion • Concerns about grid reliability and backup power needs • Lack of funding • Difficulties incentivizing landlords to electrify • Affordability concerns when electrifying homes, including the purchase and installation costs of large equipment and electricity rates • Deferred maintenance and health and safety concerns making electrification difficult or expensive
Transportation	• Learn from and expand existing efforts • Partnering with other agencies, businesses, CBOs, and CCAs for charging infrastructure • Multi-agency partnership for grant applications	• Operation and maintenance difficulties regarding electric vehicle (EV) chargers • Copper theft from EV chargers • Need for greater electrical capacity and upgrades for EV charging infrastructure

	• Permit streamlining • Supporting regional electric vehicle (EV) charging infrastructure • Incentivizing public transportation • Municipal fleet electrification • Safe and protected bike and pedestrian paths • EV education • Creating a program for retiring old internal combustion engine vehicles	• Lack of data on the demand for different vehicles and types of transit • Lack of funding • Noncontiguous bike and pedestrian networks between communities • Limited staff capacity • EV affordability • Complicated logistics when siting EV charging stations on-street and on public and private property • Public skepticism surrounding EVs
Natural and Working Lands	• Learn from and expand existing efforts • Current funding for wildfire resilience • Partnering with local organizations for land conservation and urban greening • Urban forest management plans • Utilizing brownfields for solar energy generation	• Lack of urban canopy data • Concerns around gentrification and urban greening • Need for long term funding
Power	• Learn from and expand existing efforts • CPUC advocacy • Assisting local governments with technical analysis • Small renewable energy projects (20-30MW) • Long-storage and resilience projects • Community solar • Solar energy generation on brownfields • Identifying optimal sites for renewable energy projects	• Deferred maintenance delaying or inhibiting the addition of solar panels • Land restrictions • Need for emergency backup generation (which can be fossil fuel based) and concerns about related costs • Costs of batteries • Grid reliability concerns • Lack of funding/financing • Affordability concerns • Lack of political will • Equity concerns

Waste	• Learn from and expand existing efforts • Using small fees or taxes to fund food recovery and compost operations • Installing green infrastructure to clean waters entering the bay • Require compostable to-go containers and utensils • Including construction and material GHG emissions in mitigation plans • Outreach and education with restaurants regarding appliance electrification and SB1383 implementation	• Lack of CALGreen training and low enforcement • SB1383 compost contamination concerns • Need for long term funding • Need for public education on waste sorting • Storage and use of deconstructed materials concerns • Low compliance for affordable food ware ordinances

Table E-5 Ideas for Regional Action Identified by Local Governments

E.4 Frontline Community Engagement

The consultant project team, with guidance from the Air District, formed partnerships with community-based organizations to facilitate meaningful engagement with frontline communities. Frontline communities are those that bear the brunt of impacts from fossil fuel dependence and often experience the impacts of climate change “first and worst.” It was critical that the BARCAP engaged with and highlighted these important community voices.

E.4.1 Frontline Community Engagement Overview

Frontline community workshops were strategically hosted within priority areas to ensure that the lived experiences of those most impacted by climate change and fossil fuel pollution informed the development of BARCAP measures in a way that was culturally relevant and equitable. An important goal for this engagement process was to bring new voices into climate action planning in the region, particularly those who have been historically excluded and underrepresented in climate planning conversations.

The Air District and the consultant project team divided up the region into four sub-regions to reflect the local nature of frontline community concerns, while ensuring that engagement was conducted at an early enough stage for community input to shape the drafting of measures. This reflects best practices to engage early in the process, giving participants avenues to provide meaningful input into the drafting of the BARCAP. The four sub-regions were based on the presence of frontline communities, based on the map below in Figure E-3.[1] The sub-regions are further visualized in Figure E-4.

[1] https://experience.arcgis.com/experience/57bdb412b26e4f2eaf8fa762b735652f/page/Map/, for more information on how frontline communities were mapped, please click on the ‘About’ tab in the map. As described in Chapter 4-

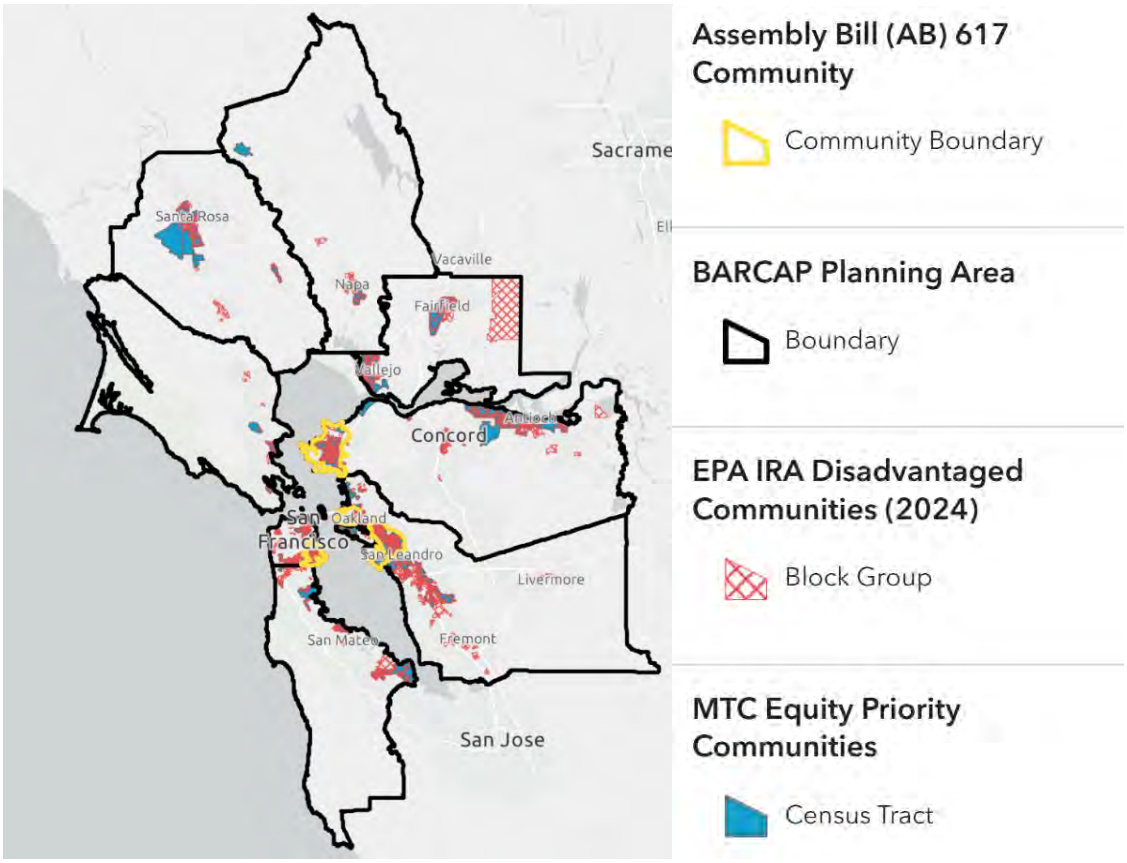


Figure E-3 BARCAP Frontline Communities

Successfully engaging frontline community members requires strong community trust and local knowledge. Community-based organizations are often 'trusted messengers' to community members. The consultant project team offered mini grants to CBOs that served as partners on frontline community engagement to compensate them for time spent inviting community members to attend workshops, reviewing workshop materials, and co-hosting workshops.

Criteria for selecting partner CBOs included:

- geography served (match to BARCAP frontline community map),
- connection to frontline community members (e.g. multilingual communities, day labor organizers),
- prior work on environmental justice issues,
- opportunity to deepen existing Air District connections, and build new relationships,
- interest and bandwidth in engaging with the BARCAP project.

Engagement- frontline communities were identified by layering AB 617 Communities, MTC Equity Priority communities, and the EPA Inflation Reduction Act Disadvantaged Communities Tool.

Frontline Community Workshops Subregions	Community-Based Organization Partners
Napa, Marin, Sonoma	North Marin Community Services Graton Day Labor Center
Alameda County	Higher Ground Neighborhood Development Corporation Hayward Community Coalition (HayCoCoa)
Contra Costa and Solano Counties	Citizen Air Monitoring Network Sustainable Solano Sustainable Contra Costa
San Mateo & San Francisco	El Concilio of San Mateo

Table E-6 Community Based Organizations and Frontline Community Workshops

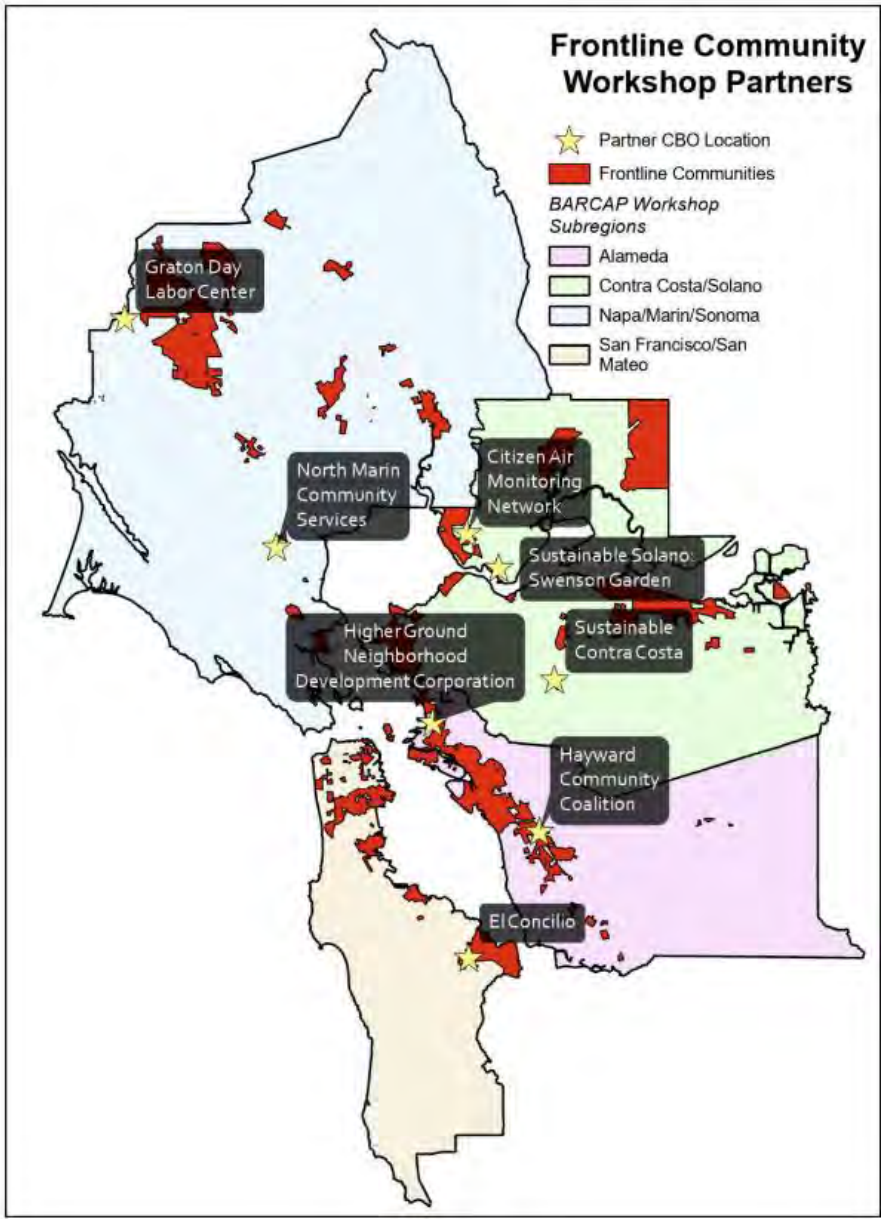


Figure E-4 Locations of Frontline Community Workshop Partner CBOs

E.4.2 Frontline Community Workshop Design

The consultant project team, with guidance from the Air District, partnered with CBOs to co-host the workshops. This approach provided localized expertise and engagement through trusted community leaders. This partnership ensured that facilitation materials were provided in participants' native languages, that materials were culturally and locally relevant (e.g. including location specific environmental justice slides), and small-group breakout discussions could be held in native languages to create comfortable spaces for deeper dialogue.

Best practices for equitable workshop design and participant engagement included:

- workshops held in evenings after workday hours, with options for hybrid or in-person as advocated for by CBOs;
- compensation provided to CBO partners and incentives provided to workshop participants, respectively, for time spent workshopping BARCAP project;
- fully multi-lingual workshops, including participant recruitment, pre-workshop communication;
- connection to community members via trusted messengers (CBOs);
- locally tailored workshop materials to reflect local concerns and conditions, CBO involvement in editing workshop materials;
- communication of climate action areas without jargon or other exclusionary language;
- clear explanation of how feedback would be used to meaningfully shape the BARCAP.

Each workshop began with an overview of the BARCAP and how community input would shape the plan's outcomes, followed by time for participants to ask questions and provide comments on draft design principles. The majority of each workshop was spent in small breakout discussions, where participants received an overview of four key sectors: buildings, transportation, waste, and urban green spaces. Breakout room facilitators then invited participants to discuss the issues that were most relevant to their community, with a focus on how community members perceive potential benefits (e.g. cleaner air) and risks (e.g. higher costs) of key areas for climate action.

Questions posed to workshop participants:

- Do the BARCAP Design Principles resonate with your lived experience and community values?
- How might preliminary areas for climate action affect your daily life (benefits and risks)?
- Are any big ideas missing?

Participants focused on the sectors and subject areas that mattered most to their community. The subregional workshops covered both the opportunities and challenges of proposed climate actions as they relate to the daily lives of frontline communities. Participants shared their communities' biggest needs to improve quality of life, including stories that emphasized **affordability, accessibility, and health.** Examples of small breakout room discussions from the Cantonese and Spanish-language breakout rooms are highlighted in Figure E-5 below.



Figure E-5 Frontline Community Waste and Green Space Brainstorm Examples

Workshop participants provided insights that directly shaped the development of BARCAP measures. These workshops created trusted spaces where lived experiences were centered and valued, and where participants were able to openly discuss the many challenges their communities face. The process not only informed the regional climate action planning effort with grounded, community-driven input but also strengthened relationships and elevated voices that are too often left out; these efforts help lay the foundation for more equitable, resilient, and inclusive climate action planning.

A high-level description of each workshop, including participation by Limited English Proficient (LEP) community members, is summarized in the workshop summary table below.

Subregional Workshop	**Logistics**	**CBO Partners**	**Number of Participants** **LEP Participants includes Spanish and Cantonese**
Alameda County	Fully Virtual Tue, February 4, 2025 6:30 – 8:00pm	HayCoCoa Higher Ground	29 Participants 45% LEP Workshop Languages: Spanish, English
Solano and Contra Costa Counties	Fully Virtual- Wed, February 12, 2025 6:00 – 7:30pm	Citizens Air Monitoring Network Sustainable Solano Sustainable Contra Costa	35 Participants 9% LEP Workshop Languages: Spanish, English
San Francisco and San Mateo Counties	Hybrid Wed, February 19, 2025 6:30 – 8:00pm	El Concilio of San Mateo	36 Participants 92% LEP Workshop Languages: Spanish, Cantonese, English
Napa, Marin and Sonoma Counties	Hybrid Thu, February 27, 2025 6:00 – 7:30pm	North Marin Community Services Graton Day Labor Center	44 Participants 93% LEP Workshop Languages: Spanish, English

Table E-7 Frontline Community Workshop Summary

E.4.2 Frontline Community Workshop Highlights & Local Insights

E.4.2.1 Alameda County

The first workshop was hosted in **Alameda County** in partnership with Higher Ground and Hayward Community Coalition (HayCoCoa). This workshop included attendees from communities in San Leandro, Hayward, Oakland, and unincorporated Alameda County, all areas that are often underrepresented in climate action planning.

In the discussions, participants emphasized the need for more green space and trees, highlighting the scarcity of parks in many neighborhoods and the direct link between green spaces and public health. They believed that by expanding green spaces they would be able to address some of the pollution in their neighborhoods, particularly in Oakland and Hayward, where community members noted that this was a significant issue. In the Spanish-speaking breakout group, they described it as “un grandísimo problema de contaminación” (a huge pollution problem). They emphasized that through community education and engagement, the green spaces can be revived, upkept, and expanded.

When discussing transportation, participants voiced that bike lanes and transit infrastructure must be designed inclusively, ensuring that older adults and people with disabilities can safely navigate streets. They expressed deep concerns about the lack of safety when riding transit, stating that it is not a safe alternative for kids, elders, and families. Participants also raised affordability issues, pointing out the high cost of public transit and financial barriers that prevent families from accessing sustainable transportation options.

Buildings were also a point of discussion; participants raised concerns of affordability if their landlords made the switch to electric appliances in their units. They noted that for this switch to take place, there needs to be tenant protections in place to prevent a surge in rental prices or unexpected fees that they cannot afford. Participants mentioned illegal dumping as a persistent issue in their neighborhoods.

E.4.2.1 Contra Costa and Solano Counties

The second workshop focused on **Contra Costa and Solano Counties**. Sustainable Solano, Citizen Air Monitoring Network, and Sustainable Contra Costa supported this workshop.

Participants emphasized the importance of making required building upgrades affordable and accessible for low-income households and renters, especially given concerns about high utility bills and unhealthy housing conditions. They suggested financial assistance programs to offer support for paying utility bills or stipends to make the required updates, particularly for renters and families who already struggle to make ends meet.

On transportation, community members shared their experiences with long commute times, high fares, especially when traveling as a family with multiple children, and health risks from exposure to refinery pollution while traveling on public transit. Participants expressed interest in introducing reliable electric buses, instead of pushing for electric vehicles that may be unaffordable for their community.

Green spaces were seen as an opportunity to improve health and increase community engagement. Participants requested more trees and parks and suggested involving youth in programs to maintain green spaces and educate their peers on the importance of these areas. Similarly, participants emphasized the importance of community education when it comes to waste. They shared that there are existing food recovery programs that would be great to partner with to avoid reinventing the wheel.

E.4.2.1 San Francisco and San Mateo Counties

The third workshop was hosted for **San Francisco and San Mateo Counties**. El Concilio partnered to engage San Mateo County residents, and InterEthnica recruited Cantonese speakers from the community. The workshop hosted frontline community participants over Zoom and in person at the North Fair Oaks Community Center.

Across building and transportation sectors, participants emphasized the importance of community engagement and education in implementing climate actions. They asked for education on electric vehicles, their environmental impact, and available programs. On buildings, they stressed the need to engage homeowners and landlords to ensure that the costs of upgrades are not passed on to tenants. They expressed the need for tenant protections during retrofits and building upgrades related to climate action to ensure housing remains affordable.

For the waste sector, participants spoke about gaps in recycling and composting systems, particularly in multifamily housing. They noted a lack of understanding and awareness about proper waste separation, with programs being inconsistently implemented across different neighborhoods. They recommended more education and outreach, in multiple languages, as well as stronger enforcement to reduce illegal dumping.

Participants emphasized the importance of increasing the number of trees and park access, particularly in dense urban neighborhoods where green spaces are limited. They asked for more shaded areas, clean and maintained green spaces (e.g. clean sidewalks), and safe green spaces where the community can gather. Participants suggested planting more trees along corridors such as Middlefield Road and ensuring that the green spaces that are developed prioritize frontline neighborhoods. They strongly recommend that community members have a voice in how green space is designed and maintained to avoid investments that do not reflect local needs or contribute to gentrification.

E.4.2.1 Napa, Marin, and Sonoma Counties

The final workshop covered **Napa, Marin, and Sonoma** Counties in partnership with the Graton Day Labor Center and North Marin Community Services. This workshop offered both in-person and virtual participation options.

This workshop brought a unique perspective to the building sector conversation. While more housing continues to be built, there is not enough water or resources in the area to support

existing and new households, according to participants. This was identified as a key risk to long-term sustainability. Across all counties, residents shared that the existing housing infrastructure needs a lot of repairs to be sustainable; this is where resources should be invested.

One key benefit highlighted was the creation of jobs through the transition to electric alternatives. Participants highlighted that there are very skilled workers who can support this work, but this opportunity needs to be open to those who are limited English proficient.

Transportation was lightly touched, participants shared that they are very reliant on their vehicles as transportation options are scarce. They shared that within their community, it is already common practice to bike, walk, or share a car to get to work.

Green space was a significant topic of discussion in this workshop, seen as critical for both environmental health and community safety. Participants suggested planting more trees and more community gardens, while prioritizing fire-resistant landscaping. Fire prevention was a recurring theme. Communities want regular pruning, removal of brush and debris, and safe disposal of plant waste to reduce fires that affect every sector. Participants saw substantial benefits with reforestation, maintenance, and community trainings to build sustainable green spaces.

On the topic of waste, they recommended stronger recycling and illegal dumping regulations, more waste containers, and education to prevent cigarette butts from being thrown out, which can spark fires. Some also suggested monitoring using cameras in remote areas to avoid illegal dumping in their green spaces and neighborhoods.

E.4.4 Frontline Community Workshop Outcomes

The frontline community workshop series resulted in several key updates to the BARCAP. Workshop participants updated draft design principles, shown in Chapter 5. A tracked changes version is shown below in Table A-8 to highlight the changes resulting from workshop participants' input.

As described in Chapter 5, the draft design principles were initially developed in 2023 in partnership with a roundtable of climate justice and equity organizations: Emerald Cities Collaborative Northern California, The Greenlining Institute, PODER, and Transform. The principles were also informed by input from local governments and regional agencies based on what they have heard directly from their communities. Updating these draft principles directly with feedback from frontline communities was an important step in ensuring that BARCAP measures reflect and elevate values from frontline communities across the BARCAP region.

Design Principle and Description + Post-Frontline Community Workshop Updates
Climate equity: Provide direct, meaningful, desired, and assured benefits to frontline communities.
Cooperative: Build upon and integrate existing efforts to expand impact, rather than introduce duplication.
Coordinated: Build cooperation and peer working relationships among local government and community-based organizations, that builds community capacity and empowers community leadership with and across counties, in consultation with community members through culturally relevant, multi-lingual, trusted-messenger-delivered outreach to reach frontline communities, and other vulnerable groups including recent immigrants, Indigenous communities, and youth.
Funding & financing: Increases access to critical financing and funding mechanisms for frontline communities and other key stakeholders (including operations and maintenance) and; identifies alternative financing mechanisms that provide sustained benefits for frontline communities.
Genuine affordability & access: Increase access to housing and, transportation, and other community benefits like green spaces, reduces or doesn't increase housing/transportation/energy costs (e.g. housing, transportation, energy) and considers options to expand , and improve access and affordability.
Health & safety: Improve living and/or working conditions (e.g. indoor and outdoor air quality, safety in green spaces, traffic safety, and pedestrian safety), especially in frontline communities.
Housing & community stability: Support people to be housed, especially renters and low-income homeowners, and remain in their homes. Consider how communities use and connect to spaces.
High-quality jobs & local entrepreneurship: Create lasting, high-quality, family-sustaining high-road jobs and other pathways to economic sovereignty in frontline communities.
Resilience: Build resilience especially for frontline communities to withstand changing climate conditions in the near and long term, increasing preparedness to respond to climate-related emergencies.

Table E-8 Design Principles with Track Changes from Workshops

Once updated to reflect feedback obtained through the workshops, the Air District assessed each potential BARCAP measure against the revised design principles to ensure alignment with the underlying concepts. The resulting list of final BARCAP measures in chapters 6-10 describes which design principles are advanced by each measure.

The Air District incorporated findings from the frontline community workshops into preliminary BARCAP measures. The result is measures interwoven with language to center and advance equity, minimize unintended consequences, and amplify values and priorities identified by communities.

Workshop participants provided feedback on key benefits and perceived risks for proposed areas for climate action. This feedback was summarized for each workshop and then combined into a list of recommended edits for each sector's proposed areas for climate action prior to formal drafting of the measures. This approach ensured that measures reflected viewpoints of frontline community members, guarded against key risks as feasible, and uplifted key quality of life improvements associated with climate action identified by community members, as summarized by the table and figure below.

Feedback Summary & Origin	Measure/ Action Update
Interest in urban green spaces being food hubs/connected to **food systems, urban agriculture**. Of particular interest to participants who are recent immigrants, acknowledging past ties to land, expertise as growers/land stewards. *(Public Workshop, Alameda Priority Community Workshop)*	Specific recognition of food systems as a type of urban green space desired by community members, recognition of food systems as a co-benefit for urban green space climate action.



Figure E-6 Example of Post-Workshop Measure Updates

Some community feedback areas were already included in the preliminary measures (e.g. a focus on the building decarbonization workforce). These measure areas are indicated in the table below with a "*", which emphasizes that frontline community workshop feedback supports these areas for climate action. Other community feedback points were best suited for updating the overall sector framing (e.g. a new co-benefit), rather than the BARCAP measures themselves. While the priority community workshops did not explicitly focus on power, participants raised important power-related benefits and risks while discussing other sectors.

Sector	Key Measure & Action Updates Reflecting Frontline Community Workshop Feedback
Buildings	• Inclusion of affordable housing protections and multifamily building owner outreach and education • Emphasis on workforce diversity and contractor availability/training*
Transportation[2]	• Inclusion of e-commerce driven vehicle miles traveled

[2] Note that most measures related to land-use changes and active transportation are reflected in Plan Bay Area 2050+ instead of the BARCAP, as articulated in the Transportation Sector Chapter.

	• Inclusion of consideration for lowering upfront costs for EV purchase based on affordability concerns • Emphasis on prioritizing public funds to address gaps in EV charging network and address reliability concerns • Inclusion of trusted institutions (e.g. churches, CBOs) for charging sites • Inclusion of outreach and education around range anxiety, EV parts theft, and concerns about perceptions of EV safety • Inclusion of trusted messengers to expand reach of EV rebates*
Natural and Working Lands	• Inclusion of explicit mentions of indigenous land stewardship and land management practices • Inclusion of food sovereignty values and opportunities to grow food • Emphasized connections to schools for urban greening efforts • Inclusion of community planning measures to avoid space conflicts, empower communities, avoid unintended gentrification • Inclusion of opportunities for community-lead urban greening and stewardship • Emphasis on benefits for agricultural and land workers, with an emphasis on worker safety
Power	• Addition of special consideration for affordability for low-income households (in addition to current frontline communities focus) • Emphasis on crosscutting issues that can include grid reliability* • Emphasis on rate stability and affordability as key regional priorities and highlighting how actions support these goals* • Inclusion of better coordinated outreach and education about demand flexibility programs that can compensate participants* • Inclusion of opportunity presented by resilient energy resources at schools to educate youth about clean power resources and clean energy jobs
Waste	• Emphasis on community enthusiasm for food recovery and community-based food systems in general* • Inclusion of multifamily, small- and minority-owned- businesses for outreach and education on food recovery and composting efforts • Emphasis on community concern for lifecycle impacts of construction and building materials* • Inclusion of concern about waste sorting, and support for upstream solutions to reduce plastic waste like reusable foodware • Emphasis that further effective outreach is needed to achieve waste diversion goals, enthusiasm for school outreach

Table E-9 Measure Updates from Frontline Community Workshop Feedback

E.5 Public Engagement

The Air District and the consultant project team offered several avenues of engagement to the general public to learn about and contribute to the development of the BARCAP, including public workshops, a survey, and a public review and comment period. The team sought public

input before, during, and after measures were drafted. Intentions shaping public engagement were to provide a forum for meaningful engagement that was conducted early and often, with multiple avenues for members of the public to influence BARCAP measure development.

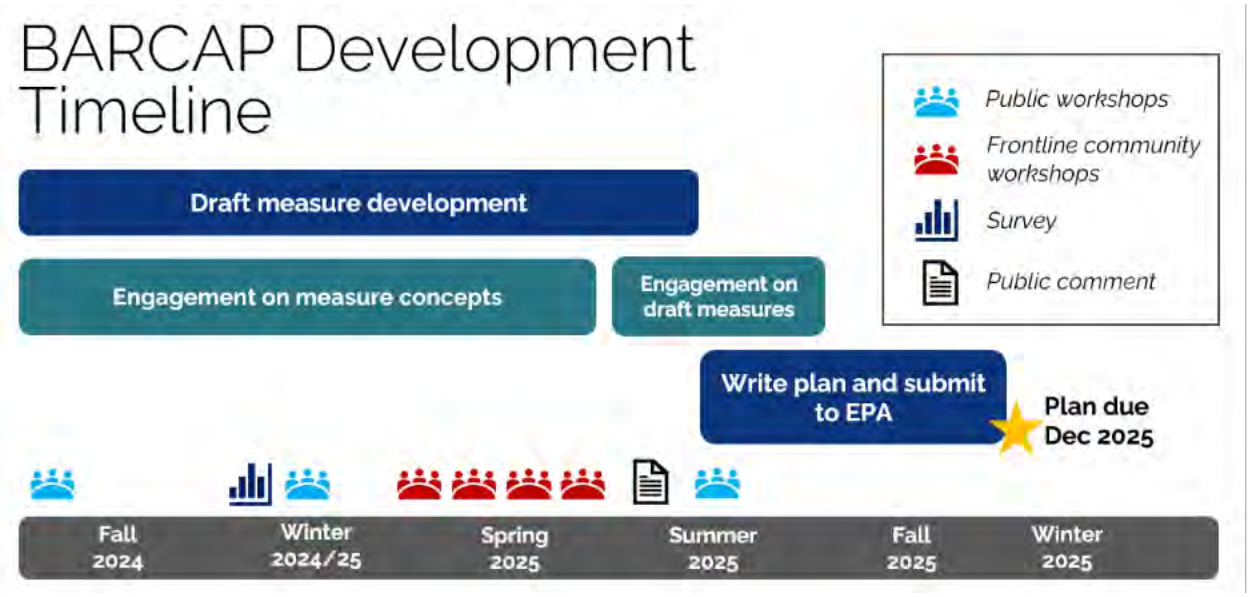


Figure E-7 Public Engagement Timeline Highlight

E.5.1 Public Engagement Overview

Summaries from public engagement, with highlights for multilingual engagement are described below.

Engagement Strategy	# of Participants	Languages Included
Public Workshops (three)	304	English with simultaneous interpretation available upon request In-language facilitation for Spanish and Cantonese were provided for the third public workshop.
Survey	675	English, Spanish
Online Commenting Platform	65 (total 409 comments)	Chinese (Traditional), English, Spanish Comments were received on English and Spanish document versions

Emailed Comments	13	English

Table E-10 Public Engagement Strategy Highlight

Public Workshop Series – 304 total workshop participants, three workshops

The Air District convened three virtual public workshops throughout the BARCAP project. Public workshops included project updates and interactive brainstorm and engagement opportunities. All workshops were held virtually and after work hours.

Interpretation was offered for all public workshops in Spanish and Cantonese. Additional multilingual facilitation was offered for the third public workshop to allow for deeper engagement during the interactive portions of the workshop. Presentation materials were also made available in Spanish and Cantonese. Additional Spanish-language engagement was conducted through AWG members who serve multilingual populations and partner CBOs from the frontline community workshop series to increase workshop attendance from targeted communities.

Public Survey – 675 survey respondents

To offer a more flexible option for input on measures, and to better understand community values and which benefits of climate action are most important, the Air District and the consultant project team launched an online climate action survey in Spanish and in English. The survey received 675 responses, with ten percent of survey respondents speaking Spanish as their first language.

Public Commenting Period – 409 public comments submitted

The BARCAP draft measures were open for public comment July 2 – 29, 2025. Comments were primarily collected via an online reviewing and commenting platform that made it easy for the public to provide comments. Through the platform, one reviewer could leave multiple comments spread across the document. Comments were also accepted via email and during the third public workshop as alternative ways for the public to provide input. The plan received 409 comments from 78 individuals, as well as verbal and chat comments received during the public workshop. For a detailed breakdown of how comments were integrated into the plan, see the “FAQ” document (link).

The BARCAP draft measures were available in Spanish and Cantonese to increase accessibility and ensure continuity and transparency from earlier multilingual engagement during the frontline community workshop series. Nine comments were received on the Spanish language BARCAP draft version.

E.5.2 Public Workshop Series

The Project team held online public workshops as an interactive, hands-on opportunity for participants to learn about the BARCAP process; share their top priorities, concerns, and feedback; and meet and connect with other community members. This was carried out through BARCAP team presentations, online brainstorming and interactive tools (e.g. Zoom Polling, Mural), and breakout groups.

Workshop # and Topic	Agenda	Workshop Highlights
BARCAP Kickoff Workshop – Workshop #1 September 30, 2024 5:30-7:00 PM	• Project Overview (timeline, progress to date, opportunities for public input) • Visioning exercise: In 2050, I want the Bay Area to be… • Polling to identify key areas for climate action • Breakout rooms envisioning the tangible daily impacts of climate action in our communities	• Attendees from across the BARCAP region identified as activists/advocates, climate professionals, or taking climate action in their everyday lives • Key areas for climate action identified included: walkable communities, solar deployment with batteries, EVs, and improved EV charging reliability • Key benefits of climate action identified included: safer active transportation options, desire for more/better electric vehicle ranges, affordability for key climate technologies (e.g. heat pumps), and high-quality jobs
Preliminary Strategies for Regional Climate Action – Workshop #2 February 11, 2024 5:30-7:00 PM	• GHG inventory draft results, key areas for climate action, and identified benefits and potential risks • Sector-specific preliminary strategies for climate action • Interactive sessions to brainstorm sector-specific climate actions,	• Received public feedback into measure and action updates before they were fully “baked,” on the same timeline as the frontline community workshops • Detailed feedback on measures at the sector level • Key takeaways across sectoral groups included: themes on equitably transitioning off gas at the neighborhood scale, concerns about potential electrical rate increases, support for 24/7 renewable energy, pathways to reduce plastic contamination and ways to boost food access, need for public education and stewardship opportunities for urban greening, emphasis on reducing vehicle miles traveled (VMT) and boosting active transportation
Draft Climate Action Strategies Deep-Dive-Public Workshop #3	• Re-introduction of BARCAP project, with highlights on how engagement shaped measure development • Overview of measure development process	• Multilingual promotion and facilitation resulted in the workshop being attended by 17 Spanish and 16 Cantonese speakers • This workshop was designed to provide an alternative to

July 22, 2025 6:00-7:30 PM	• Tutorial on how to use the online commenting platform to submit public comments • Deep-dive introduction for drafted BARCAP measures • Q&A with staff leading each sector	commenting on draft measures online or through email • This workshop served as an alternative way for Cantonese and Spanish speakers to contribute, in addition to written options in in-language online documents • Key input included the urgent need to reach carbon neutrality, concerns around costs of electric appliances and vehicles, and the importance of including young people in climate action

Table E-11 Public Workshop Summary

E.5.3 Public Survey

The Project Team launched an online survey to gather feedback from communities across the eight-county region on priorities and concerns regarding the BARCAP's goals, strategies, and proposed actions. The survey allowed the team to gather input from as many community members as possible across the wide geographic range of the region. Survey results offer additional insights into regional support for BARCAP actions, while illuminating differences in viewpoint across racial/ethnic groups and income. The survey received 675 responses, and offered an additional, multilingual, and asynchronous option for the members of the public to make their voice heard before BARCAP measures were formally drafted.

The Air District promoted the survey via community and local government networks and contacts established during the Priority Climate Action Plan (PCAP) phase. The survey was available in both English and Spanish, with the English survey opening on January 24th, 2025, and the Spanish survey opening on February 14th, 2025. Both surveys closed on April 7th, 2025.

Key results from the survey's responses include the following:

- The most popular action that survey respondents reported taking to support the climate and environment is trying to "**save resources by using less energy, water, or reduce waste when they could**" (85%, 575 respondents).
- The most observed local climate, environment, and weather pattern changes were the "**increased frequency of regional wildfires and days affected by wildfire smoke**" (76%, 504 respondents) and "**more frequent or intense heatwaves and hotter days**" (74%, 495 respondents).
- The most popular strategy that survey respondents thought the BARCAP should focus on was to produce "**all/more energy using clean, carbon-free energy sources (e.g., solar, wind, geothermal) for producing electricity**" (59%, 358 respondents). This was followed by "**expand and protect green spaces, urban trees, and natural**

ecosystems" (49%, 299 respondents) and "**shift from driving an automobile to alternative transportation modes (walking, bicycling, transit)**" (42%, 259 respondents).

- Survey respondents chose "**communities that are better able to withstand climate impacts, such as extreme heat and flooding**" (61%, 369 respondents) as the top improvement that GHG emission reductions would have on their lives.
- Lower and middle-income respondents were more supportive of "**promoting local food production and consumption, reducing food waste, and strengthening food security**" than wealthier respondents, and expressed less interest in **"transitioning to electric vehicles**" than any other strategy.
- "**Shift from driving an automobile to alternative transportation modes**" was the most selected strategy by Asian or Asian American respondents (56% support). "**Transitioning buildings away from using natural gas to all-electric**" was also popular with Asian or Asian American respondents (46% support), especially compared to Hispanic, Latino, Latina, or Latinx respondents (only 14% support). Hispanic/ Latinx respondents much preferred "**expanding and protecting green spaces, urban trees, and natural ecosystems**," as did Black/African American respondents (67% and 48% support, respectively).
- **Climate resilience** and **public health** were the most appealing benefits of climate action for Bay Area residents across a range of socioeconomic classes and races/ethnicities.
- Low-income household respondents expressed more concern about additional **cost burden** created by climate action than wealthier households, especially where that may contribute to **displacement**.

Figure E-8 (below) displays the number of survey respondents who supported each of the 13 actions listed in the survey, with a particular focus on the top five areas for climate action (listed in order of survey respondent preference):

- Produce all/more energy using clean, carbon-free energy sources (e.g. solar, wind, geothermal) for producing electricity (carbon-free energy),
- Expand and protect green spaces, urban trees, and natural ecosystems (urban greening),
- Shift from driving an automobile to alternative transportation modes (walking, bicycling, transit) (active transportation),
- Promote energy resilience, such as through battery storage, clean, carbon-free electricity sources on-site (like solar) for critical facilities, and improvements to the electric grid (energy resilience),
- Transition buildings away from using natural gas to all-electric (building electrification)

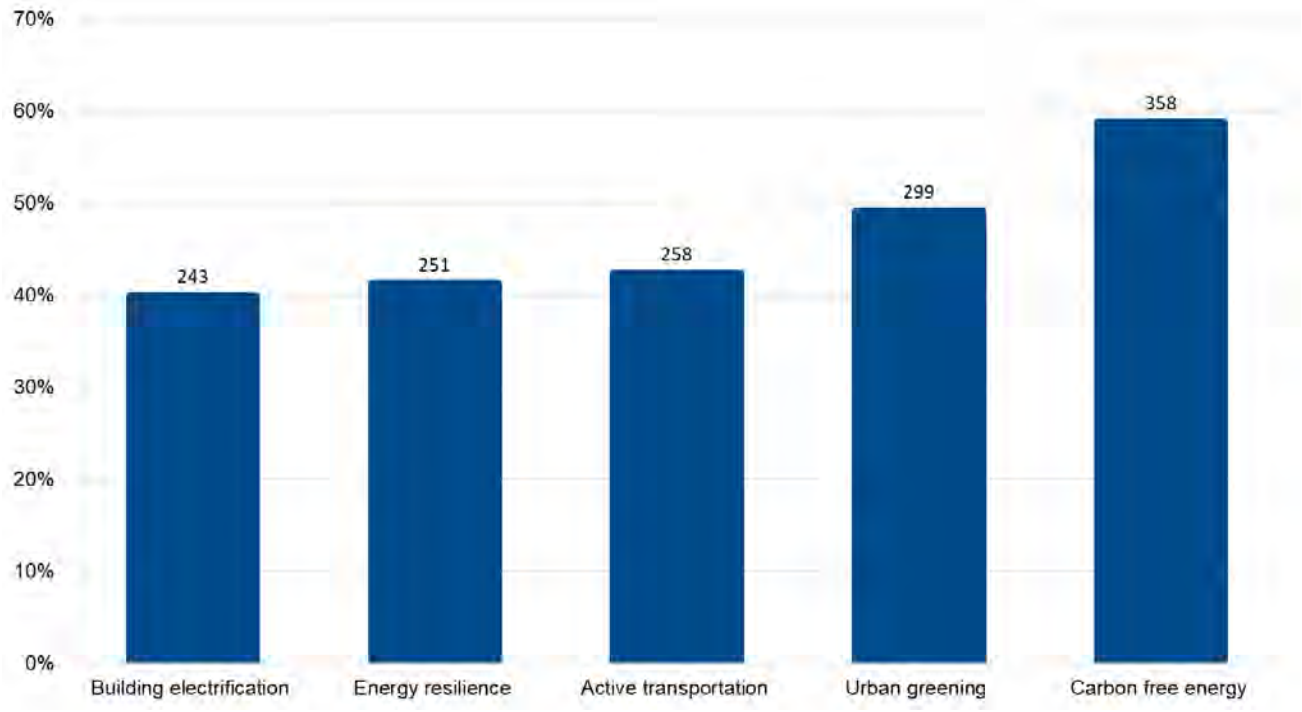


Figure E-8 Top five Strategies for Climate Action (BARCAP Survey)

Figure E-9 shows the ranking of all thirteen areas for climate action by survey respondents. Climate action descriptions are paraphrased, similar to the figure above, to improve graph legibility. It should be noted that there was respondent-wide support for all strategies- even the strategy with the lowest ranking, which promotes climate-beneficial agriculture, still made it into the top five strategies for 21% of respondents.

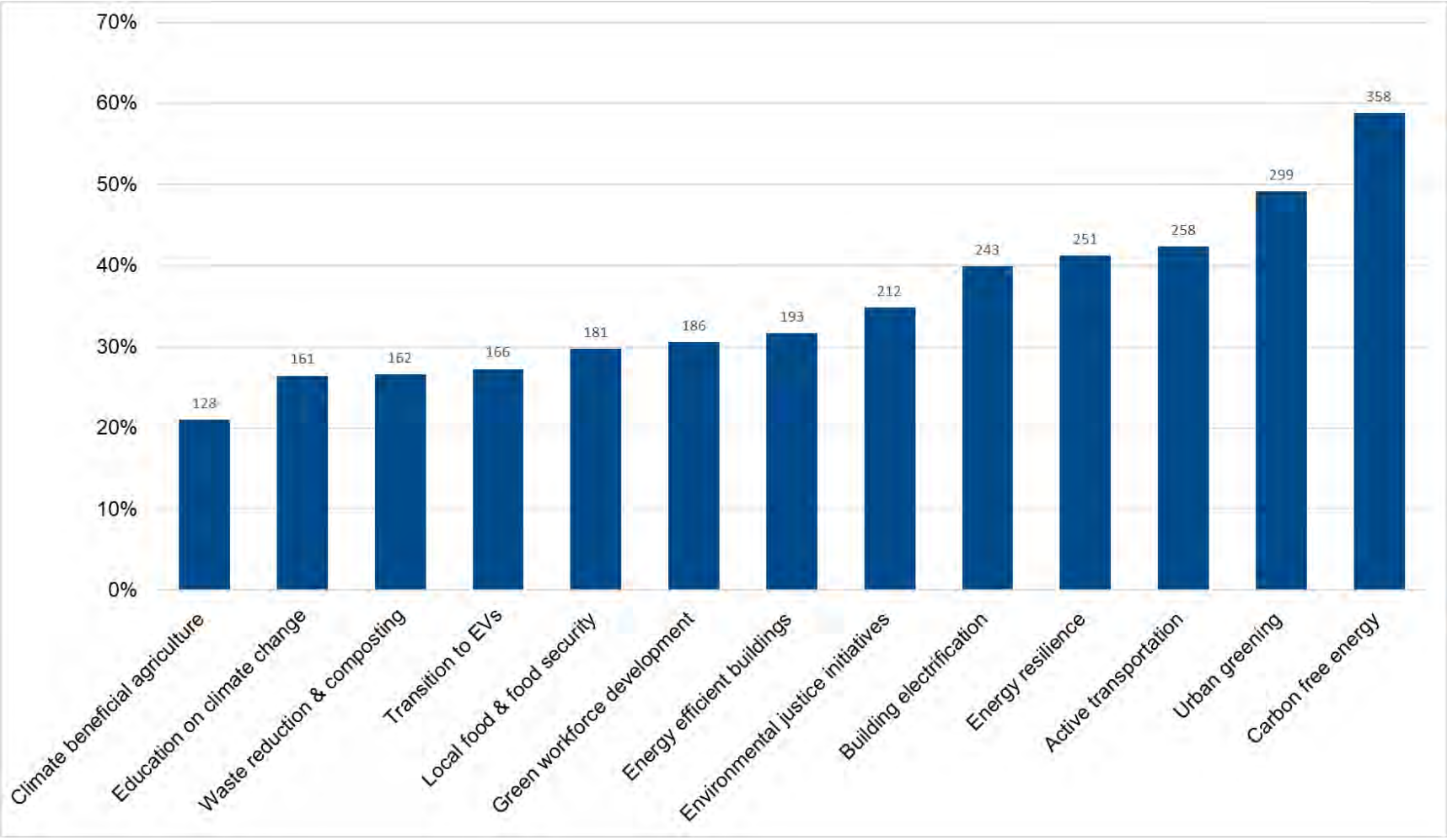


Figure E-9 Complete Ranking of All Survey Strategies for Climate Action

Survey responses to the question *"What strategies do you think the Bay Area Regional Climate Action Plan should focus on? Please choose your top five."* also highlighted differences in support for climate actions across income levels and race/ethnicity groups, as shown below in Figure E-10 and Figure E-11.

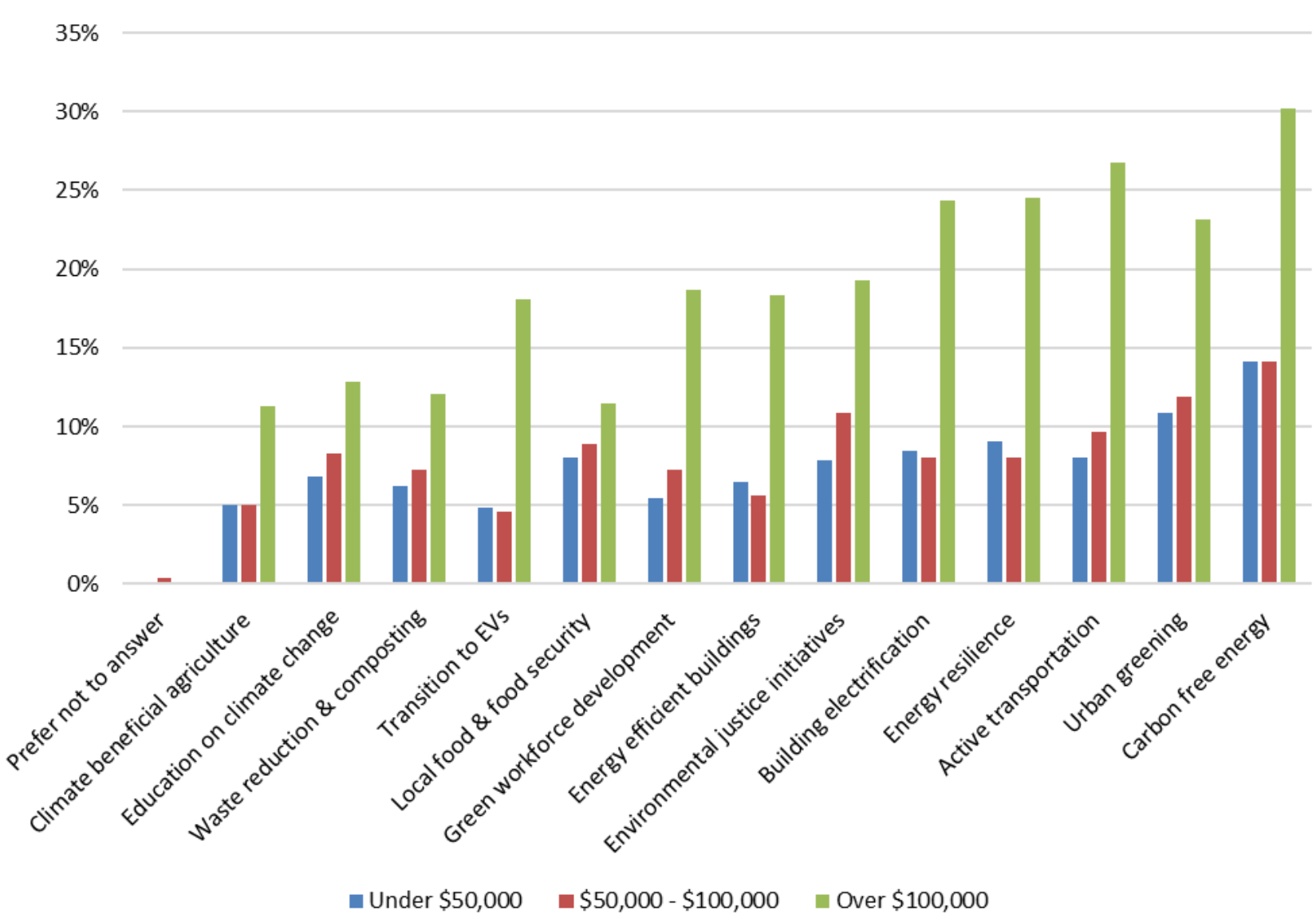


Figure E-10 Top Strategies for Climate Action - Income Results (BARCAP Survey)

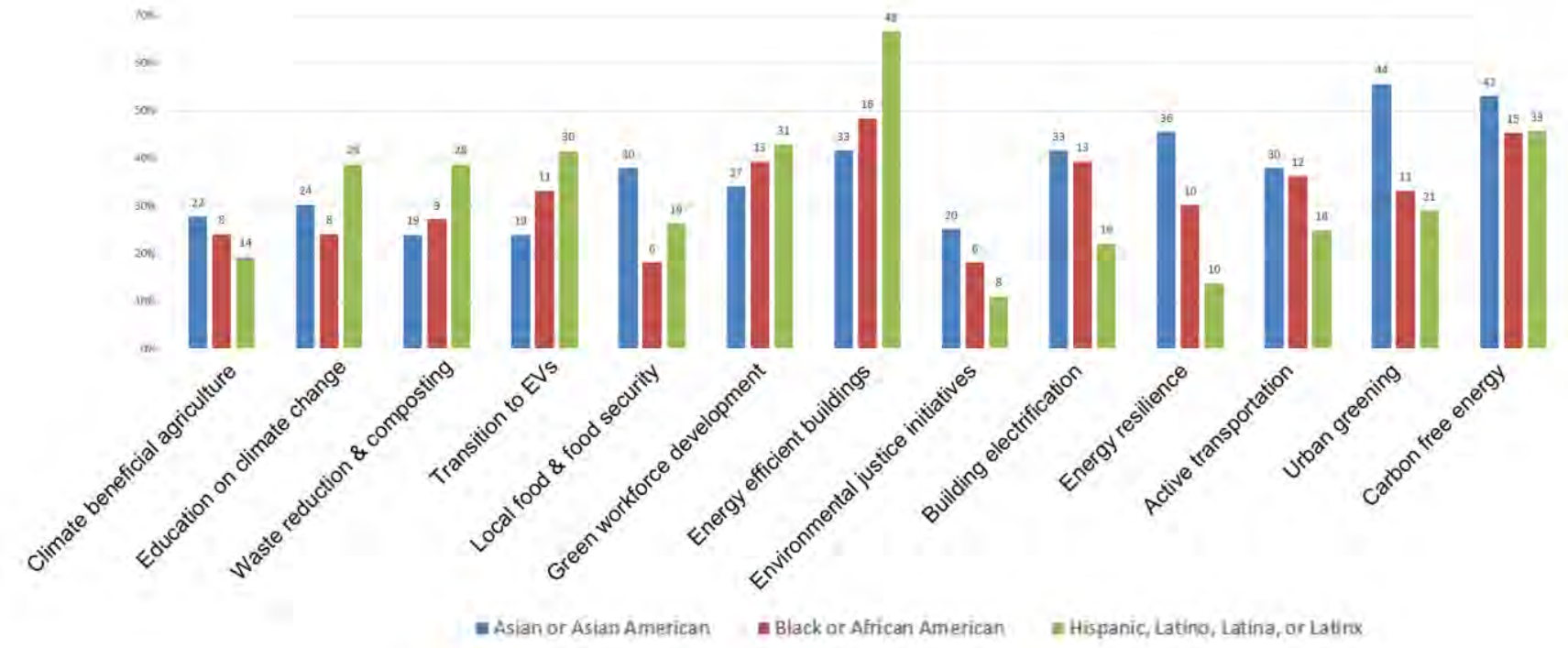


Figure E-11 Top Strategies for Climate Action - Race/ Ethnicity Results

Survey responses organized by race/ethnicity categories showed that support for top five climate actions had not-insignificant differences across Asian or Asian American, Black of African American, and Hispanic, Latino/a/x respondents.[3] The strategies with the most varied support were:

- "Transition buildings away from using natural gas to all-electric" received 46% support from Asian or Asian American respondents compared to 30% support from Black or African American respondents and 14% support from Hispanic, Latino, Latina, or Latinx respondents, and 45% support from white/Caucasian respondents.
- "Shift from driving an automobile to alternative transportation modes (walking, bicycling, transit)" received 56% support from Asian or Asian American respondents compared to 33% support from Black or African American respondents and 29% support from Hispanic, Latino, Latina, or Latinx respondents, and 45% support from white/Caucasian respondents.
- "Expand and protect green spaces, urban trees, and natural ecosystems" received 67% support from Hispanic, Latino, Latina, or Latinx respondents compared to 48% support from Black or African American respondents and 42% support from Asian or Asian American respondents and 47% support from white/Caucasian respondents.

Survey findings were used in addition to public workshop and frontline community feedback to update BARCAP measures before they were formally drafted.

E.5.4 Online Commenting Platform

Once draft measures were developed, the Air District launched a one-month public review and comment process, utilizing an interactive online platform. Through this platform, the general public was able to review all the draft measures and provide comments. The plan was made available in English, Spanish, and Traditional Chinese to increase accessibility and ensure non-English proficient individuals had the opportunity to provide feedback. The comment period was open between July 2nd and July 29th, 2025, and a total of 396 comments (387 in English and 9 in Spanish) from 65 individuals were received through the online platform.

The consultant project team, with assistance from the Air District, conducted outreach to frontline community workshop participants, partner CBOs, and AWG members serving multilingual communities to notify them that in-language options to public comment were available. Conducting this follow-on engagement was important for transparency to show

[3] Over 60% of respondents reported that they are white or Caucasian. The racial/ethnic groups that was chosen most often after White or Caucasian were Asian or Asian American (14%) and Hispanic, Latino, Latina, or Latinx (12%). Around 6% of respondents reported they were Black or African. Very few respondents reported they were Native American, American Indian, or Alaskan Native (3%) or Middle Eastern, North African, or Arab American (3%) or multiracial (3%). Less than 1% of respondents reported they were Native Hawaiian or other Pacific Islander. There was an over-representation of White or Caucasian survey respondents compared to the racial demographics of Bay Area counties. Per 2020 U.S. Census data, White or Caucasian people make up only 36% of the population in the nine-county area, but made up over 60% of survey respondents who identified their race (The San Francisco Foundation, PolicyLink, and USC Equity Research Institute, 2025). Asian or Asian Americans and Hispanic/Latino/Latina/Latinx peoples, who respectively make up an estimated 28% and 24% of the Bay Area's population, were under-represented.

workshop participants how their previous feedback was used, and to provide them additional opportunities to contribute to draft measures.

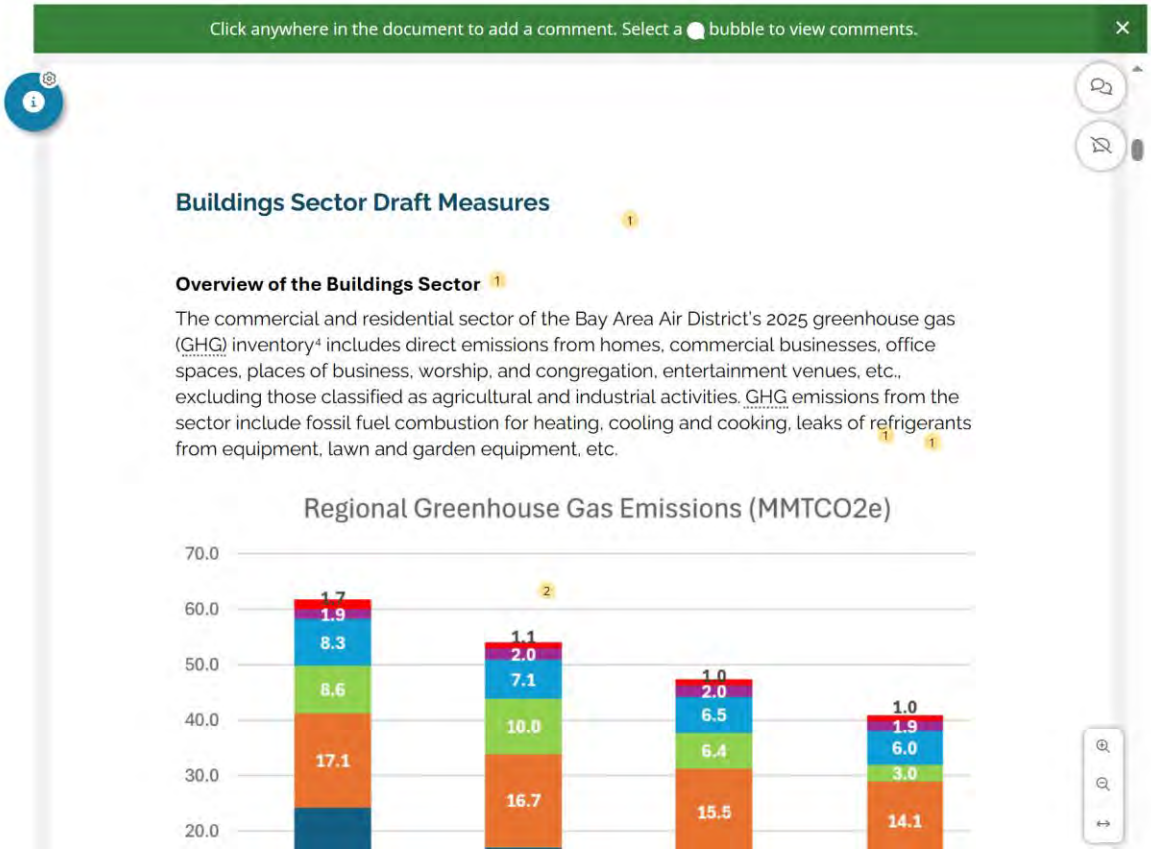


Figure E-12 Online Viewing and Commenting Platform

Respondents were able to add comments, as seen by the yellow comment bubbles in Figure E-12, directly on the plan document. The online viewing and commenting platform allowed the public to leave comments without needing to reference a page number or section of the plan. In addition, the site allowed commenters to leave comments over time. Respondents would often come back to the document multiple times and leave comments over the span of hours or days. Commenters could also view, "like," and respond to other comments, reducing duplication and allowing multiple individuals to engage on a single topic. The online platform made it easy for individuals to provide comments without having to write and submit a formal comment letter.

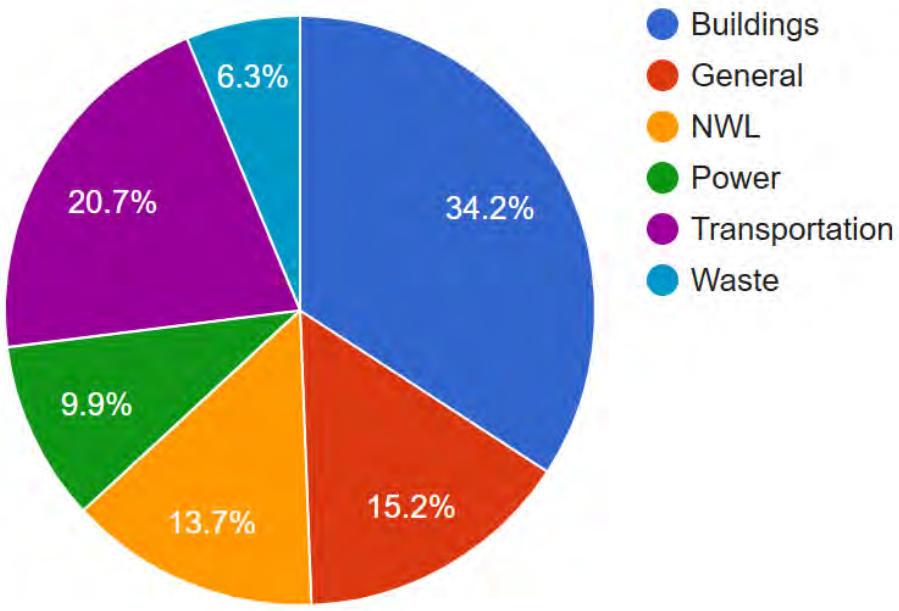


Figure E-13 Pie Chart of Public Comments by Sector

The buildings and transportation sectors received the most comments during the public comment period, accounting for 34% and 21% of the total comments, respectively. For each sector, a few high-level comment themes emerged. In the buildings sector, respondents highlighted affordability and installation challenges of building electrification, suggested additional partners for implementation, and stressed the need for equitable and expansive outreach and education on building electrification for contractors, businesses, homeowners, and renters. In the transportation sector, comments focused on EV charging accessibility challenges for renters and multifamily building residents, EV affordability, alternative fuels, VMT reduction, and concerns regarding airplane travel. Comments in the natural and working lands sector largely focused on centering equity and community engagement in planning green spaces, details for implementation, land use best practices, and the need to strengthen wildfire response. In the power sector, respondents commented on the need to enhance energy resilience and the importance of increasing the amount of local solar and storage. In the waste and materials management sector, comments focused on requiring best practice for sustainable materials in public works projects, creating public awareness and behavioral change around waste and composting, and suggesting implementation partners and resources.

E.5.5 Email Public Comments

The Air District also accepted comments via email. The Air District received 13 emails on the draft BARCAP measures from the public, community-based organizations, and governmental agencies. The organizations and agencies that commented include 350 Bay Area, Communities for a Better Environment, EarthJustice, Rocky Mountain Institute (RMI), Sierra Club, StopOAKExpansion, San Francisco Bay Regional Water Quality Control Board, and White Pony Express.

The Air District considered public comments from the public workshop, online commenting platform, and email when finalizing the BARCAP measures.

E.6 Technical Stakeholder Working Groups

The Air District assembled technical stakeholder working groups for each sector to help develop draft measure concepts. The Air District invited members to the technical stakeholder working groups based on subject matter expertise, their potential role as an implementation partner, and geographic diversity.

These working groups fostered broad-ranging conversations among practitioners that generated key insights and important perspectives to help shape measure development and implementation considerations. They supported the co-development of measures for each sector, basing them in on-the-ground realities and identifying areas to advance regional collaboration and leadership. They identified implementation hurdles and existing projects or programs to consider for scaling across the region, as well as unique opportunities for regional action that can only be achieved at the cross-county level. Follow-up meetings with potential assisting implementers were also scheduled throughout and after the working group meeting series on the recommendation of group members.

The working group process helped ensure that the measures aligned with BARCAP Design Principles, would lead to GHG reductions, achieve equity benefits, build on existing efforts, and were advantageous to implement at the regional scale. The working groups leveraged foundational desktop research conducted by the Air District. This research focused on assessing the existing policy, programmatic, and funding landscape for each sector (e.g., local climate action plans, the 2022 Scoping Plan, relevant state policies and programs), sectoral GHG emission profiles, key equity considerations, and potential sectoral focus areas to help begin identifying gaps and opportunities.

A sector-by-sector description of working group topics, members, and meeting topics is described below.

E.6.1 Buildings

Building Sector Technical Stakeholder Working Group members brought unique and important perspectives gained from direct experience in policy development and implementation, program administration, customer and workforce engagement, and owning and operating deed-restricted affordable housing. Smaller group meetings were also held to further discuss specific actions related to their existing work.

Organization	Organization Type
Association of Bay Area Governments/ Bay Area Regional Energy Network (ABAG/BayREN) (co-lead) (2 members)	Regional Government Agency
San Mateo County	Local Government
City and County of San Francisco	Local Government

Building Electrification Institute	Subject Matter Expert (building decarbonization policy and data)
Rebuilding Together	Community Based Organization
Three CCAs	Community Choice Aggregator
Contra Costa County	Local Government
Energy Solutions (for TECH Clean CA)	Program Administrator
Rebuilding Together	Community Based Organization
Tenderloin Neighborhood Development Corporation	Affordable Housing owner
Tre'Laine	Subject Matter Expert (workforce)
San Francisco Bay Area Planning and Urban Research Association (SPUR)	Community Based Organization
Building Electrification Institute	Subject Matter Expert (building decarbonization policy and data)
Building Electrification Institute	Subject Matter Expert (building decarbonization policy and data)

Table E-12 Building Sector Technical Stakeholder Working Group Members

The Building Sector Technical Stakeholder Working Group identified challenges and opportunities for regional action to address building emissions using policy, incentives, education, outreach and other available tools. Acknowledging the breadth and depth of innovative approaches already taking place in the Bay Area and throughout the state, members coalesced around the importance of the Air District's zero NOx Building Appliance Rules (9-4 and 9-6) as catalytic regulation that could significantly support shared goals to decarbonize the building stock while addressing critical regional air quality challenges. Additionally, the group considered ways to leverage previous work on Phase 1 of the BARCAP ("Priority Climate Action Plan") and proposed new actions which built on those concepts to address holistic retrofits of older homes in overburdened communities by combining home repairs with energy efficiency and electrification programs. Finally, the group emphasized the importance of growing the building decarbonization workforce by helping incumbent workers get the training they need on efficient electric appliances and ensuring disadvantaged and new workers have opportunities in this expanding market. The resulting measures and actions described in Chapter 7 - Buildings reflect these key areas: addressing implementation challenges with the zero NOx building appliance rules, supporting low-Income and frontline communities in achieving decarbonization and public health goals by integrating electrification home repair and non-energy programs, and providing resources and other support to expand, train, and diversity the building decarbonization workforce.

Building Sector Working Group Meeting Date	Topics Covered
October 18, 2024	• Introductions and BARCAP overview • Establish common understanding of sector scope and external input to date • Define success/roles and expectations

	• Group brainstorm on big ideas, priority focus areas, and needs and opportunities
December 9, 2024	• Provide example measure and action • Confirm priority measure areas and discuss prioritization criteria • Apply prioritization criteria and revise draft actions
January 8, 2025	• In depth discussion on key draft measures and actions: zero NO_x Building Appliance Rule implementation, enhancing existing program integration and delivery, and workforce
March 18, 2025	• Share and gather input on revised and updated measures • Discuss possible implementation roles
April 15, 2025	• Share revised and updated measures and gather input on timing, funding estimates and metrics • Clarify timeline for BARCAP development and additional opportunities for review and input from Buildings Sector Technical Stakeholder Working Group

Table E-13 1Building Sector Meetings & Topics Covered

E.6.2 Natural and Working Lands

Natural and Working Lands Technical Stakeholder Working Group members were selected with special attention paid to unique agriculture and land management types found throughout the region (e.g. viticulture and wetlands).

Organization	Organization Type
Metropolitan Transportation Commission (MTC) / San Francico Estuary Partnership	Regional Government Agency
Bay Area Regional Collaborative	Regional Government Agency
Solano Resource Conservation District	Special District
MTC (2 members)	Regional Government Agency
Contra Costa Resource Conservation District	Special District
Bay Area Air District	Regional Government Agency
San Mateo Resource Conservation District	Special District
Marin Resource Conservation District	Special District
City and County of San Francisco	Local Government
Napa Firewise	Community Based Organization
Bay Area Regional Collaborative	Regional Government Agency
StopWaste	Local Government
Sustainable Winegrowing Alliance	Community Based Organization
MTC / San Francisco Estuary Partnership	Regional Government Agency
Friends of the Urban Forest	Community Based Organization
Sonoma County Agricultural Preservation and Open Space District (Sonoma Ag+ Open Space)	Local Government
TOGETHER Bay Area	Nonprofit Organization
Carbon Cycle Institute	Nonprofit Organization

Table E-142 Natural and Working Lands Technical Stakeholder Working Group Members

The following organizations were consulted on an ad-hoc basis on the recommendation of the natural and working lands group.

Organization	Organization Type
San Francisco Estuary Institute	Nonprofit
San Francisco Bay Water Quality Control Board	Regional Government Agency
Gold Ridge Resource Conservation District	Special District
University of California Cooperative Extension	Academic Institution
Marin Water	Publicly Owned Water Utility

Table E-15 Additional NWL Meetings

The Natural and Working Lands (NWL) Technical Stakeholder working Group identified key hurdles faced by implementers and opportunities for regional action, as well as key subject matter areas for NWL that offered the greatest opportunities to protect carbon stocks and/or enhance carbon sequestration. They also provided perspectives on key equity challenges encountered in their work, funding and technical gaps, and an assessment of key assets and strengths in advancing nature-based solutions. The resulting measures and actions described in Chapter 10 - Natural and Working Lands reflect these key areas: regional funding and data support for nature-based solutions, protecting and enhancing carbon stocks with a particular focus on wildfire and wetlands, advancing climate-beneficial agriculture, and implementing urban greening with an equity focus, and investment in urban greening operations and maintenance.

Working group members acknowledged that the climate action category of NWL is extremely broad and combines many different areas of specific climate action that have unique technical and implementation considerations. Smaller group discussions were convened to dive into specific topics, including wetland, blue-carbon, and urban greening measures.

NWL Working Group Meeting Date	Topics Covered
October 31, 2024	• Kickoff meeting – full group • Project overview and working group role • Main areas for natural and working lands climate action
December 8, 2024	• Small-group – land protection and restoration • Key opportunities identified for BARCAP actions: Regional funding approaches, carbon rich nature of Bay Area wetlands, intersection of resilience, recreation and conservation.
December 16, 2024	• Small-group – scale up carbon farming • Key opportunities identified for BARCAP actions: Implementer-lead identification of infrastructure bottlenecks and opportunities to share resources, tools, and staff, opportunities to build on existing soil hub regional coordination
January 8, 2025	• Small-group – wildfire prevention

	• Key opportunities identified for BARCAP actions: Need to overcome hurdles to incentivize private landowners to manage wildfire fuels at scale, opportunity to leverage insurance mechanisms, funding gap to implement fuel management goals
February 20, 2025	• Draft measure review and carbon stock inventory presentation – full group • Brainstorm on draft measures, reflection of key equity issues throughout measures • Feedback on draft carbon stock inventory

Table E-16 Natural and Working Lands Sector Meetings & Topics Covered

E.6.3 Power

Power Sector Technical Stakeholder Working Group members brought unique and important perspectives gained from direct experience in renewable energy and storage procurement and load flexibility initiatives, customer programs and engagement, policy development and implementation, program administration, and efforts to bring affordable clean energy and storage plus load flexibility to low-income customers. Three community choice aggregators (CCAs) helped the Air District design meeting agendas and reviewed early iterations of the specific focus areas, informational documents, and measure concepts. A CCA also co-facilitated several meetings.

Organization	Organization Type
Four CCAs	Community Choice Aggregator (CCA)
GRID Alternatives	Community Based Organization
San Mateo County	Local Government
Two Municipal Utilities	Municipal Utility
GRID Alternatives	Community Based Organization
City of Hayward (2 members)	Local Government
Investor-Owned Utility	Investor-Owned Utility
Contra Costa County	Local Government
Zero Net Energy Alliance	Subject Matter Expert

Table E-17 Power Sector Technical Stakeholder Working Group Members

The Air District also consulted PSE Healthy Energy about clean resilient power for resilience centers and critical facilities, and developers of community solar and small solar photovoltaic and/or storage projects to understand their perspective on what incentivizes project development in the region. They also spoke with staff at the California Energy Commission (CEC) to understand existing demand flexibility approaches and pilots (including virtual power plants) and their potential for scalability.

The Power Sector Technical Stakeholder Working Group identified key needs and challenges for equitably deploying clean energy generation and storage and a more flexible grid in the region and opportunities for regional action and coordination to offer solutions and accelerate progress. Members recommended prioritizing equitable access to clean energy and storage,

affordability, funding/financing, and reliability and resilience. Several considerations raised by the Air District and the working group shaped the focus of measure development for this sector. Per state law, the Air District is prohibited from regulating CO_2 emissions from power plants and cogeneration facilities that are covered by the state's Cap-and-Trade program, which includes almost all CO_2 emissions from this sector. Many local climate action plans include actions to encourage resident and business participation in CCAs and to opt for the 100% renewable power option provided by CCAs. Therefore, measures do not focus on power plants or cogeneration facilities or on increasing participation rates in 100% renewable power options at CCAs. Workgroup members shared that CCAs and utilities tend to purchase most new utility-scale renewable power and storage resources from outside the BARCAP region, considering availability, economics, and local goals on climate and carbon emissions. State clean energy policy is helping drive procurement decisions. They also shared that siting large-scale utility projects in the region (versus small- to medium-scale projects) may raise concerns by local governments and others over land that otherwise could be used to meet housing demand or other pressing concerns. Nevertheless, members highlighted the multiple benefits of local clean energy and storage projects and load flexibility for the region, including strengthened regional grid resilience and reduced reliance on centralized generation, long-distance transmission, and fossil-fuel-based back-up generators, lower energy bills (on-site or community solar projects) and downward pressure on rates, job creation potential, and faster integration of new clean energy power and storage resources.

The resulting measures and actions described in Chapter 8 - Power, reflect the hurdles, opportunities, and considerations in the following areas: increasing deployment of small- to medium-sized local clean energy and storage projects (including distributed energy resources and behind-the-meter projects) and expanding customer programs and deploying power system and grid technologies more widely for a more flexible, efficient, resilient, and affordable grid (including virtual power plants and resilient and clean back-up power).

TSWG Meeting Date	Topics Covered
October 23, 2024	• Introductions and BARCAP overview • Establish common understanding of sector scope and external input to date • Identify big ideas, needs and opportunities, and priority focus areas
December 11, 2024	• Discuss among CCAs and municipal utilities priority focus areas and what they would want to be doing if there was more regional coordination and regional planning • Identify which of these ideas is actionable today
January 8, 2025	• Define and agree on what success for measure development looks like • Discuss key results of interim small group meetings • Review and refine updated measure areas and actions • Discuss possible implementers
March 27, 2025	• Answer key questions on actions, determine direction of necessary edits • General agreement on revised measure language

	• Determine if something key is still missing • Identify potential implementation leads • Prioritize actions for inclusion in BARCAP using criteria

Table E-18 Power Sector Meetings and Topics Covered

E.6.4 Transportation

Transportation Sector Technical Stakeholder Working Group members represented a broad array of backgrounds in the transportation and land use areas, including members that work on both light-duty electrification and/or medium- and heavy-duty electrification.

Organization	Organization Type
Port of Oakland (2 members)	Local Government
Transform	Community Based Organization
MTC (2 members)	Regional Government Agency
Three CCAs	Community Choice Aggregator
Transportation Authority of Marin	Local Government
City of Berkeley	Local Government
Sonoma County Transit Authority	Local Government

Table E-19 Transportation Technical Stakeholder Working Group Members

Note that other organizations were consulted on an ad-hoc or one-on-one basis to better understand overlap of existing work relevant to transportation measures. These organizations advised in measure development and consultation in addition to the working group members listed above.

Organization	Organization Type
California Energy Commission	State Agency
San Francisco Environment	Local/County Government
San Francisco Municipal Transportation Agency	Local/County Government
Two CCAs	Community Choice Aggregator
Contra Costa County Public Works	County Government
Electric Vehicle Coordinating Council	Peer-to-peer forum
GRID Alternatives	Regional Organization

Table E-203 Additional Transportation Meetings

The Transportation Technical Stakeholder Working Group identified key hurdles faced by implementers and opportunities for regional action, as well as key areas for the transportation sector that offered the greatest opportunities to realize GHG emission reductions in the region. They also provided perspectives on equity challenges encountered in their work, funding and technical gaps, and an assessment of assets and strengths in transitioning away from fossil fuels. The resulting measures and actions described in Chapter 6 - Transportation Sector reflect these key areas: accelerating light-duty electric vehicle adoption, accelerating medium- and heavy-duty vehicle and equipment decarbonization, and accelerating decarbonization of goods movement.

The Transportation Sector Working Group members acknowledged that although there is a lot of work already being done to reduce fossil-fuel use in the sector at various levels of government, there ae still opportunities to accelerate this work through regional collaboration. Three main meetings were held to discuss actions for the sector followed by one-on-one meetings with individual members and other stakeholders to discuss specific actions that aligned with the stakeholder's work. Additional follow-up meetings with potential supporting implementers were scheduled after the working group meeting series.

TSWG Meeting Date	Topics Covered
October 31, 2024	• Introductions and BARCAP overview • Establish common understanding of sector scope and external input to date • Define and agree on what success for measure development looks like • Introduce and agree on boundaries/focusing factors for GHG reduction measures • Discuss and select key focus areas
January 9, 2025	• Clarify input and add to ideas • Share and clarify BARCAP criteria and process for measure prioritization • Begin to discuss implementation options (e.g., funding, agencies, infrastructure)
March 28, 2025	• Discuss draft measures and actions • Identify possible implementation partners • Discuss implementation timeframe

Table E-21 Transportation Sector Meetings & Topics Covered

E.6.5 Waste

Waste Sector Technical Stakeholder Working Group members represented county-level local government agencies playing key roles in implementing Senate Bill 1383 for organics waste reduction and key food recovery organization partners identified by those local government implementers.

Organization	Organization Type
San Francisco Environment	Local Government
Zero Waste Marin	Local Government
StopWaste (2 members)	Local Government
Fremont LEAF	Community Based Organization
White Pony Express	Community Based Organization
County of San Mateo (2 members)	Local Government
RecycleSmart (2 members)	Local Government
Zero Waste Sonoma (2 members)	Local Government
Second Harvest of Silicon Valley	Community Based Organization
Joint Ventures Silicon Valley	Nonprofit Organization
ExtraFood	Community Based Organization

Alameda County Community Food Bank	Community Based Organization

Table E-22 Waste Technical Stakeholder Working Group members

In addition to the Waste Technical Stakeholder Working Group focused on food and organics waste reduction, the waste sector measure on building materials leveraged existing networks including the Bay Area Deconstruction Working Group – a cross-sector convening of practitioners advancing building material reuse – and a meeting of local governments focused on embodied carbon policies for building materials across the Bay Area. Participants in the local government meeting are listed below.

Organization	Organization Type
City and County of San Francisco (2 members)	Local Government
City of Palo Alto	Local Government
Alameda County GSA (2 members)	Local Government
County of San Mateo	Local Government
County of Marin	Local Government
City of Union City	Local Government
City of Pleasanton	Local Government
City of Oakland	Local Government
US Green Building Council (USGBC)	Nonprofit Organization

Table E-23 Bay Area Deconstruction Working Group Meeting Participants

The Waste Sector Technical Stakeholder Working Group identified key hurdles to implementing SB 1383 including edible food recovery from large commercial generators, properly sorting organics waste into streams for commercial composting without contamination and creating markets for the use of compost. Input gathering on the food and organics measure began with one-on-one meetings to hear initial perspectives followed by two group meetings. The first meeting presented the common themes heard in the meetings, received additional ideas and feedback for refinement. The second meeting presented revised actions that were further refined by the working group. The primary obstacle identified was a lack of adequate funding infrastructure for food recovery operations. Actions to remove this obstacle are reflected in Chapter 9 - Waste and Materials' measure W-1 Enable Food Access and Clean Compost. This measure also reflects the working group's identified need to coordinate regionally on organics collection best practices and policies implemented at the county scale. Finally, the working group clarified that long-term systemic changes were needed to create a sustainable food system and added an action to continue to explore those bigger picture solutions.

The building materials measure W-2: Advance Low-Carbon Building Materials and Reuse leveraged findings from a four-part series of the Bay Area Deconstruction Working Group held between September – December 2024. The findings from this series included the need for infrastructure for salvaged buildings materials, which includes economic development for reuse market actors, engagement with industry to increase the practice of reuse, and inclusions of building materials in codes and other local and state government policies. These needs are

reflected in measure W-2's actions. The Bay Area Deconstruction Working Group focuses primarily on salvaging and reusing materials from existing buildings, but the strategies are translatable to other low-carbon building materials and practices. To round out the measure to include other materials such as low-carbon concrete and bio-based materials, the draft measure and actions received feedback from a group of local governments that meet to discuss embodied carbon in building materials. Additional meetings with key implementing counties were held to ensure that the actions were aligned with their planned direction.

TSWG Meeting Date	Topics Covered
November 19, 2024	Focus on food and organics • Introductions and BARCAP overview • Establish common understanding of sector scope and external input to date • Discuss where there is the most potential for regional/collective action
January 23, 2025	Focus on food and organics • Discuss draft measures and actions, checking if the measures are comprehensive and if the actions are realistic • Discuss possible implementation partners
February 7, 2025	Ad hoc meeting of local governments on embodied carbon in building materials • Discuss draft building material measure and actions: ask questions, provide suggestions for alternative wording, and identify if anything is missing • Identify potential implementation partners

Table E-24 Waste Sector Meetings & Topics Covered

Appendix F
Workforce Planning Analysis

March 2026

Bay Area Regional Climate Action Plan

[bw] RESEARCH PARTNERSHIP

MEMORANDUM

To **Bay Area Air District**

From **BW Research Partnership**

Date **January 26, 2026**

Re **BARCAP Workforce Analysis**

Introduction

This memorandum summarizes the workforce planning analysis conducted by BW Research Partnership in support of the Bay Area Air District's Comprehensive Climate Action Plan (CCAP): the Bay Area Regional Climate Action Plan (BARCAP). This memo:

- Identifies current employment in the Bay Area within each of five BARCAP sectors;
- Provides estimates of future workforce demand in all five sectors;
- Determines key occupations critical to achieving the goals outlined in the BARCAP measures;
- Presents training and education requirements that are critical to developing a strong workforce within these key occupations;
- Outlines the ecosystem of key stakeholders and initiatives currently happening in the region;
- Analyzes workforce opportunities for low-income and disadvantaged communities.

The workforce projections discussed throughout this memo were developed by identifying relevant research highlighting activities similar to the measures in the BARCAP. While these studies are often imperfect representations of the full range of BARCAP activities, they are inclusive of the respective measures, align with the scope of the activities to be conducted and the types of occupations to be created, and address both the challenges and opportunities involved in building a workforce capable of meeting BARCAP goals. Future analyses geared towards providing policymakers and training providers with detailed anticipated workforce estimates may consider utilizing novel, tailored economic impact models built on programmatic cost data or labor-intensity tools to more accurately forecast the quantitative needs for specific occupations. For more information about how the employment estimates were developed, please review the appendix section of this memo beginning on page 44.

The reports utilized for future workforce estimates also highlight specific occupations which will be vital to the successful deployment of the proposed BARCAP measures. Although these are not the only occupations that will be in-demand through these activities, the occupations listed are among those that appeared most frequently within existing literature and labor market data, and a sustained shortage of

these workers would hinder the success of the BARCAP measures. For the remainder of this memo, these occupations are referred to as "priority occupations."

The measures identified in the BARCAP provide opportunities for "high road" jobs that are well-paying, stable, and provide career pathways in growing climate and clean energy sectors.[1] Meeting the demand for these jobs with a supply of qualified and trained workers will require a commitment to partnership and investment in workforce development activities—including workforce development boards that carry out much of this work—all while providing work opportunities and pathways to individuals from all communities within the region.

As is highlighted in each sector's ecosystem section, there are many climate-related workforce initiatives already in existence throughout the BARCAP region. This means that new programs are unlikely to be needed. Instead, existing programs can be expanded, and best practices can be shared across local governments to meet workforce needs created through these BARCAP measures. Many of these programs reside within or are adjacent to each of the county's workforce development boards, though other parties involved in energy and climate—including utilities and community choice aggregators, climate tech manufacturers, educational institutions, and non-profits—have programs that can be replicated or scaled to support these workforce needs. Convening these stakeholders, sharing best practices, and coordinating funding are just a few ways that existing efforts can be synthesized for maximum impact throughout the region.

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Transportation Sector

Current and Future State of the Workforce

The transportation sector is both the Bay Area's largest source of greenhouse gas (GHG) emissions and one of its greatest opportunities for strategic transformation. Currently, the sector employs nearly 135,000 workers[2] in the BARCAP region and an estimated average of 33,000 additional workers[3] [4] are needed to work full-time from 2020 to 2045 to meet the broader climate goal of decarbonizing the transportation sector. These employment forecasts from the University of California's Institute of Transportation Studies are based on the complete decarbonization of the transportation sector by 2045 to zero-emission vehicles (ZEVs), which includes a rapid conversion to battery-electric vehicles (BEVs), plug-in hybrid vehicles (PHEVs), and hydrogen fuel cell vehicles (FCEVs). This conversion requires additional activities, like the installation of electric charging and hydrogen fueling station infrastructure throughout the state, as well as the generation and procurement of those resources (electricity and hydrogen). The scenario from the study is more aggressive than BARCAP measures T-1 and T-2 but covers similar activities.

Measure T-3, which includes policies to reduce GHG emissions from goods movement and delivery, may have some workforce impacts that are not fully accounted for in transportation fuel switching. Measure T-4, which aims to reduce passenger vehicle miles traveled through land use and greater use of transit, biking, and walking, will require additional buildout of infrastructure. Adjusting one statewide study[5] of a broader package of related transit measures to the BARCAP region suggests that nearly 15,600 workers could be sustained through the construction of additional non-passenger motor vehicle-related transportation infrastructure.[6]

Alongside a significant number of new workers, this transition will also introduce new technical challenges; while electric motors share some similarities with internal combustion engines (ICE), they differ in important ways that require additional training, specifically for safe handling of high-voltage electrical systems. Hybrid vehicles also add another layer of complexity. As the transportation sector evolves, many current workers will need to expand their expertise to include emerging technologies, such as Electricians upskilling their knowledge of vehicle charging infrastructure and battery systems. These new challenges reinforce the need for specialized training programs for technicians as well as first responders who can ensure safety in an increasingly electrified transportation system. The Bay Area California Jobs First Initiative is investing heavily in this space, identifying battery manufacturing as a priority sector for the region. This means job opportunities in battery research and development, design, and manufacturing are likely to increase in the coming years as economic development investments and strategies take effect.

Additionally, the widespread adoption of EVs is expected to reduce demand for routine maintenance services, as these vehicles require fewer oil changes and engine repairs than ICE vehicles,[7] highlighting potential workforce disruptions and the need for proactive planning to support displaced workers and assist them in transferring their skills to new clean transportation jobs. At the same time, changes to this sector will drive potential losses at refineries as demand for fossil fuels declines (see "Power Sector"). A 2023 report on the economic impacts of a refinery closure in the Bay Area found that former refinery workers typically earn lower wages at their new jobs once re-employed.[8] While opportunities for refinery workers may exist in other growing areas of the clean energy economy, these opportunities may be located elsewhere in or outside of the BARCAP region, may require upskilling or additional education on new technologies such as hydrogen, or may not appear in significant numbers immediately while funding and construction of these projects are finalized. An intentional focus on these displaced workers is essential to a just transition.

The Transportation Sector has a mixture of union and non-union employment. Drivers and service providers of municipal fleets are often members of unions and have job protections, though mechanics at private automotive repair shops for passenger vehicles likely do not have these same benefits and protections. This means that these workers—who may also be most exposed to job loss via the transition to electric vehicles—require additional attention from policymakers to pre-empt large shifts in employment.

Occupational Analysis

The sector's workforce spans sales, installation, and maintenance roles—Retail Salespersons who introduce consumers to EVs, Electricians and Electrical Installers and Repairers who install, maintain, and repair vehicle charging stations, and Automotive Service Technicians who maintain fleets. These occupations have a smaller concentration of workers in the region than in the overall nationwide economy, likely due to the presence of many different industries and sectors in the Bay Area's economy, but will be critical to ensuring reliable access to ZEVs and the infrastructure that supports them. Compensation across most of these roles exceeds the regional median,[9] with the Electricians and Electrical and Electronics Installers and Repairers in particular providing stable, living wages for a family of two working adults and two children.[10]

Table 1: BARCAP Region Transportation Sector Occupations

Occupation	Total Employment[11]	Employment Percent Change (2022-2032)[12]	Location Quotient[13]	Median Hourly Wage[14]
Retail Salespersons	51,398	-2.4	0.73	$20.86
Electricians	12,362	18.3	0.85	$45.90

Automotive Service Technicians and Mechanics	10,684	5.2	0.74	$36.06
Electrical and Electronics Installers and Repairers, Commercial and Industrial Equipment	812	0.0	0.76	$46.24

Workforce preparation across these roles varies; sales roles often only require limited formal training, while trades roles often require apprenticeships, licenses, and an associate's degree or certification. Together, these occupations ensure that consumers can purchase EVs, that the vehicles are safely maintained, and that charging infrastructure is accessible and reliable—all of these functions are essential to successfully meeting the region's transportation decarbonization goals. Thus, building a cohesive pipeline that can train all these diverse roles while expanding access to technical training and apprenticeships for trades roles will be essential for making the ZEV transition both practical and equitable.

Table 2: Transportation Sector Occupational Education & Training Analysis[15]

Occupation	Role Within Sector	Minimum Education Requirement	Minimum Training Requirement	State License Requirements	Other Common Credentials
Retail Salespersons	ZEV sales	High school diploma or equivalent	Up to one year OTJ training	N/A	Vehicle Salesperson License[16]
Electricians	ZEV charging installation	Post-secondary certificate	One to two years OTJ training; recognized apprenticeship	State Electrical Contractor License	N/A
Automotive Service Technicians and Mechanics	ZEV repair and maintenance	Post-secondary certificate	One to two years OTJ training; recognized apprenticeship	CA Bureau of Automotive Repair (BAR) approved certification program; Automotive Service Excellence (ASE) certification exam	N/A
Electrical and Electronics Installers and Repairers, Commercial	Repair and maintenance of ZEV charging software /equipment	Associate's degree	One to two years OTJ training; recognized apprenticeship	N/A	American Society for Testing and Materials (ASTM)

and Industrial Equipment					International certifications; Electronic Technicians Association (ETA); National Center for Construction Education and Research (NCCER) certifications

Ecosystem of Key Stakeholders and Programs

Many partners are already mobilizing resources to advance workforce development initiatives and projects aligned with BARCAP measures. In the transportation sector, regional agencies such as the Metropolitan Transportation Commission/Association of Bay Area Governments (MTC/ABAG) and local transportation and transit agencies play a central role in shaping long-term strategies in transportation electrification. Table 12 highlights some key organizations and initiatives providing or supporting workforce training. See the appendices to this document—Appendix B: Ecosystem of Initiatives Across BARCAP Sectors and Appendix D: References —for initiatives and efforts that apply to all five sectors and links to programs, respectively.

Table *3*: Bay Area Key Organizations and Initiatives in the Transportation Sector[17]

Organization / Initiative / Program	Description
High Road Clean Transportation Career Pathways - West Oakland Job Resource Center	Partnership supporting workforce pipelines into EVs, charging infrastructure, and clean transit
Zero Emission Bus University (ZEBU)	AC Transit's program training mechanics and operators in zero-emission bus technologies
CalTrans Workforce Development Branch	Provides pre-apprenticeship training and career pathways in transportation and construction for youth and adults to increase the participation of women, minorities, and other disadvantaged individuals in skilled crafts
Electric Vehicle Infrastructure Training Program (EVITP) - California Energy Commission	Provides certification training for electricians to install electric vehicle charging equipment required for state-funded infrastructure projects
California Transit Works! (CTW)	A statewide consortium uniting transit agencies, unions, and colleges to expand high-road transit workforce partnerships centered on equity, worker voice, and clean-energy transit solutions

Contra Costa Harnessing Change: Refinery Transition Partnership (CCRTP)	Brings together refinery workers and community stakeholders to plan for equitable economic transition as Contra Costa County shifts from oil refining to low-carbon industries
West Oakland Job Resource Center (WOJRC) Regional Transportation, Distribution and Logistics (TDL) Workforce Institute and Expansion	Expands pre-apprenticeship and training programs that prepare Oakland residents for clean, equitable jobs in transportation, distribution, and logistics sectors

Building Sector

Current and Future State of the Workforce

The building sector currently supports around 60,000 workers in the BARCAP region through various energy efficiency activities.[18] The region may require 260 additional workers to support the BARCAP building sector goals to install heat pump upgrades and displace NOx-emitting equipment through early replacement initiatives.[19] This forward-looking employment estimate is based on the projected workforce impacts of 100% electrification of California's existing and new buildings adjusted to the total share of equipment projected to be replaced through BARCAP measure B-1.

While the three building measures in the BARCAP do not align perfectly with the full scope of building retrofits identified in the *UCLA California Building Decarbonization Workforce Needs and Recommendations* report, the BARCAP measures are all necessary to achieve the California Air Resource Board's goal of carbon neutrality in the building sector by 2045 while ensuring that the path to carbon neutrality is equitable and particularly supportive of workers and those who live in frontline communities. The 2019 statewide report is based on 100% decarbonization of buildings and suggests that an additional 12,400 full-time jobs across California in electricity generation and distribution could be created by 2045.[20] This estimate is based on an assumption of full building decarbonization and does not reflect the more limited and specific measures outlined in the BARCAP. While it should be interpreted as an upper-bound estimate much greater in scope than the BARCAP measures, this demand for meeting California's decarbonization goals should be noted by policymakers for future planning purposes.

While the workforce estimates cited above are greater in magnitude than the workforce impacts likely to arise from the BARCAP measures alone, the BARCAP measures represent an important step towards achieving sector goals, and the occupations and skills needed remain the same. Additionally, the transition is expected to be largely additive in terms of workforce; while the natural gas workforce may decline over the long term, this shift to buildings that operate on renewable electricity is projected to occur over time, and new demand from the transition to electrification will outweigh potential losses in the near term. A substantial portion of the natural gas workforce already possesses transferable skills—such as familiarity with technical systems, engineering principles, and health and safety protocols—that position them well for emerging roles in building electrification; however, targeted upskilling will be necessary to align with the evolving demands of energy-efficient technologies. For example, while plumbers are typically trained to size, install, and maintain conventional natural gas water heaters, the growing adoption of heat pump water heaters introduces new technical requirements around proper installation, commissioning, and maintenance.[21] Trades workers will need to upskill in areas such as siting, electrical integration, refrigerant flow management, condensate plumbing, and utility coordination, building on their existing general trades knowledge.

Occupational Analysis

Five skilled trades occupations—Carpenters; Construction Laborers; Electricians; Plumbers, Pipefitters, and Steamfitters; and HVAC Mechanics and Installers—will be critical to this transition. Thousands of workers are already employed in these roles, and expanding this workforce is not only necessary for the BARCAP but also presents significant economic opportunity, as all five occupations offer wages above the regional median of $33.93 per hour,[22] providing a living wage[23] for single earners and sustaining income for families with two working adults and one child.[24]

Table 4: BARCAP Region Building Sector Occupations

Occupation	Total Employment[25]	Employment Percent Change (2022-2032)[26]	Location Quotient[27]	Median Hourly Wage[28]
Carpenters	19,303	10.6	1.19	$40.34
Construction Laborers	18,842	13.0	0.73	$36.07
Electricians	12,362	18.3	0.85	$45.90
Plumbers, Pipefitters, Steamfitters	8,057	11.7	0.91	$36.18
HVAC Mechanics and Installers	6,142	15.5	0.78	$37.65

The successful preparation of this workforce depends on robust pipelines that combine classroom instruction, on-the-job (OTJ) training, and industry-recognized credentials. While these roles do not necessitate a college degree, the technical and safety-sensitive nature of the work requires structured pathways of apprenticeship training and hands-on learning. While roles such as Construction Laborers are suitable for more entry-level workers and require fewer prerequisites, most trades—including Carpenters, Electricians, Plumbers, and HVAC Mechanics and Installers—often require more structured pathways through vocational education, registered apprenticeships, and state licensing.

Appropriate training and certification for workers within the building sector is crucial to ensuring that building retrofits and new construction are completed with high standards, safeguarding worker and occupant safety and comfort. The building retrofit marketplace is generally split between large-scale construction projects (i.e. commercial, multifamily, industrial, etc.) typically conducted by larger and primarily union-signatory employers, and the single-family market which is served by smaller contracting companies staffed by workers who may receive little or no training in safety or the latest energy-efficient technologies. Current pilot programs, such as one pilot program run by the City of Berkeley, focus on the aggregation of single-family home retrofits to make them more cost-efficient to implement and therefore more feasible for larger commercial contractors that may incorporate high road labor

standards and training requirements. The California Workforce Development Board funded a High Road Training Partnership for Building Decarbonization, which aims to improve residential building retrofit labor and training standards throughout the Bay Area.[29]

The ability to implement building sector actions will hinge on sustained investment in hands-on skill development in the trades. Aligning these pathways with emerging building technologies like electric heat pumps and removing barriers to participation will be pivotal to ensuring that the region has enough skilled professionals.

Table 5: Building Sector Occupational Education & Training Analysis[30]

Occupation	Role Within Sector	Minimum Education Requirement	Minimum Training Requirement	State License Requirement	Other Common Credentials
Carpenters	Construct/install wood structures and fixtures within building infrastructure	High school diploma or equivalent	Up to a year OTJ training; recognized apprenticeship	State Carpentry and Cabinet Contract License	N/A
Construction Laborers	Perform a wide range of construction tasks with a variety of materials on building infrastructure	High school diploma or equivalent	Up to one year OTJ training	N/A	Occupational Health and Safety Administration (OSHA)[31] certification typically required; specialized tasks may require additional certification; National Center for Construction Education and Research (NCCER)[32] certifications
Electricians	Install electrical systems within building infrastructure	Post-secondary certificate	One to two years OTJ training; recognized apprenticeship	State Electrical Contractor License	N/A
Plumbers, Pipefitters, Steamfitters[33]	Install water heating and piping systems within building infrastructure	Post-secondary certificate	One to two years OTJ training; recognized apprenticeship	C-36 Plumbing Contractor License (for Plumbers/ Pipefitters); C-4 Steamfitting Contractor License (for Steamfitters)	N/A

HVAC Mechanics and Installers	Install HVAC systems within building infrastructure	Post-secondary certificate	One to two years OTJ training; recognized apprenticeship	State HVAC Contractor License; EPA Section 608 certification[34]	North American Technician Excellence® (NATE) certification[35]

While most building decarbonization activities require knowledge and skills that many contractors already have (e.g. most employers noted that new or additional heat pump-related training was not necessary for their workers),[36] some key building decarbonization technologies still require increased familiarity among contractors. One example is heat pump water heaters, which require knowledge of both plumbing and electrical systems; workers with expertise in just one of these areas may not be comfortable with their installation and maintenance. Addressing these gaps and providing targeted training for these technologies will be critical for ensuring workforce readiness.

Ecosystem of Key Stakeholders and Programs

The Bay Area is home to a dynamic ecosystem of organizations and initiatives that are actively supporting the workforce needed to accelerate the building decarbonization transition. Numerous initiatives are already underway to equip current workers with new skills and create pathways for new entrants into the workforce. However, additional investment and collaboration will be essential to scale these efforts to meet BARCAP goals. Table 3 highlights some key organizations and initiatives. See appendices to this document—Appendix B: Ecosystem of Initiatives Across BARCAP Sectors and Appendix D: References — for initiatives and efforts that apply to all five sectors and links to programs, respectively.

Table 6: Bay Area Key Organizations and Initiatives in the Building Sector[37]

Organization / Initiative / Program	Description
Bay Area Regional Energy Network (BayREN)	Regional network that provides contractor training, education, and workforce forums to support energy efficiency; offer training courses[38] in solar PV and storage systems, heat pumps, HVAC systems, energy code permitting and compliance, zoning codes, and sustainable home real estate
California Heat Pump Partnership	As described in their 2025 Blueprint, the Partnership aims to form a Workforce Advisory Council and launch a comprehensive initiative to support technical training, contractor engagement, and potentially develop a contractor certification program
City of Berkeley's Just Transition Residential Electrification Pilot	Supports workforce training in home electrification with a focus on equity and just transition
California Energy Commission Training for Residential Energy Contractors (CA-TREC)	State-supported training to equip residential contractors with skills in building performance and energy efficiency

Construction Trades Workforce Initiative (CWTI)	Workforce pipeline program expanding access to apprenticeships and careers in the construction trades
Catalyzing Quality Careers in Building Decarbonization - Rising Sun Center for Opportunity	Workforce partnership advancing equitable access to high-quality jobs in building decarbonization fields
East Contra Costa Healthy Homes Collaborative - Richmond Community Foundation	Community-driven effort advancing electrification, housing justice, and high-road job creation for frontline Contra Costa residents
JobTrain	Nonprofit that provides training, life supports, and job placement services to help underserved community members build sustainable careers in high-demand fields
Bay Area E-Contractor Academy - Emerald Cities Collaborative	Multi-week workshop series for small, minority-/women-/veteran-owned contractors to build technical, business, and operational capacity in electrification, energy efficiency, renewable energy, and green retrofit construction
Opportunity Build - Rising Sun Center for Opportunity	Free 10–12 week pre-apprenticeship program offering classroom and hands-on construction training, plus a year of job placement and retention support
Climate Careers - Rising Sun Center for Opportunity	Paid work experience program where youth gain hands-on job skills while contributing to local climate action projects
Catalyzing Quality Careers in Building Decarbonization - Rising Sun Center for Opportunity	Trains low-income job seekers of color for equitable, high-road careers in building electrification and energy efficiency
High School Girls Construction Camp - Trades Women, Inc.	Introduces high school girls to construction careers through hands-on training, mentorship, and leadership development to increase women's participation in the trades
City Build - San Francisco Office of Economic and Workforce Development	Construction pre-apprenticeship offering technical training, certifications, and pathways into union apprenticeships for San Francisco residents
Workforce Development Services - Family & Child Empowerment Services (FACES)	Job readiness and placement program connecting San Franciscans with employment opportunities across diverse industries including construction and trades
SEI's Energize Careers	Helps underrepresented individuals access paid green trade experience and long-term employment in energy efficiency and electrification sectors
Installation Basics Training 200 (IBT 200) - GRID Alternatives	Solar installation and workforce training program preparing participants for immediate employment in the solar industry
NextGen Trades Academy - Lime Foundation	Pre-apprenticeship program helping youth gain construction trade skills and employment pathways without requiring college

Construction Industry Workforce Initiative	Targeted to young urban adults from lower-income households to provide career development opportunities in Construction, Real Estate Development, Architecture and Engineering, Civic Engagement, and Urban Design
Equal Representation in Construction Apprenticeship (ERiCA) Grant - Department of Industrial Relations	A statewide initiative expanding access to construction career pathways for women, nonbinary, and underrepresented individuals in construction
Bay Area High Road Training Partnerships	Prepares workers for careers in electrification and building decarbonization
MCE and SEI's Green Construction Job Seekers Program	MCE, in partnership with SEI,[39] offers individualized career coaching, resume and interview support, and paid placements with local energy contractors to help launch careers in green trades like HVAC, plumbing, and electrical
Silicon Valley Clean Energy Contractor Training	Offers eligible Santa Clara County contractors $500 for completing an online course on all-electric building practices, plus up to $5,000 annually for installing electric appliances and promoting electrification technologies
Career Technical Education Foundation	Connects students, educators, and employers to build career-connected learning programs that prepare youth for life after high school, investing in regional pathways, internships, and education-to-workforce transitions; partners with Sonoma Clean Power

Power Sector

Current and Future State of the Workforce

The power sector currently employs roughly 41,000 workers in the BARCAP region.[40] Statewide employment in the power sector is projected to grow by more than 1.6 million jobs by 2045,[41] driven by the deployment of large-scale renewables, storage, and distributed generation. This employment forecast is based on the estimated investment and workforce needed to fully decarbonize California by 2045, assuming full electrification of the economy and wide integration of optimized and distributed solar and storage, along with utility-scale generation. Within the BARCAP region, this translates to an estimated demand of around 74,500 total full-time equivalent (FTE) workers in the sector by 2045. This scenario, however, may be more aggressive than BARCAP measure P-1 depending on where the new generation and storage referenced in the study is sited. Measure P-2, which expands customer programs equitably, may drive additional employment among electricity providers as they roll out new programs and increase capacity of existing programs. Further new employment opportunities may result from P-2 actions to deploy more power system and grid technologies like clean back up power, demand flexibility solutions, grid enhancing technologies, etc.

Much of this growth will involve equipping existing workers with new skills—such as electricians gaining expertise in grid modernization technologies, the integration of distributed energy resources (including household battery storage) into virtual power plants, and installation of vehicle charging infrastructure and batteries. The ongoing operations and maintenance of these systems will also employ a growing workforce. These emerging areas represent a notable evolution of traditional roles, underscoring the need for continuous upskilling and adaptation, but not necessitating a drastic overhaul of existing training and educational programming.

Currently, the BARCAP region has several refineries that employ around 3,250 direct fossil fuel workers,[42] mostly within the petroleum refinery industry of Contra Costa County, where the petroleum industry has historically been critical to the economy, offering high-paying jobs to local workers. When including other sectors reliant on refineries (e.g., construction, transportation), approximately 18,000 workers support this industry.[43] Workers who are displaced by refinery closures will need comprehensive reskilling and upskilling programs to help them transition into the renewable energy sector.

The power sector tends to be heavily unionized, as trades workers within utilities tend to be union members. However, as distributed energy resources continue to make up a larger share of the sector, union representation may decline. Implementing labor standards within publicly funded projects may help ensure that job quality remains high within this sector.

Occupational Analysis

Critical occupations in this sector include Electrical, Electronic, and Electromechanical Equipment Assemblers, Except Coil Winders, Tapers, and Finishers; Electrical Engineers; Electrical Power-Line Installers and Repairers; Solar Photovoltaic Installers; Power Plant Operators; and Wind Turbine Service Technicians. These occupations together make up a small portion of the overall Bay Area workforce but expanding them will be critical to successful implementation of the BARCAP measures. Some of these occupations are less concentrated in the Bay Area region than the nationwide economy, likely due to the Bay Area's largely urban setting and multifaceted economy. However, specific clean energy roles, such as Solar Photovoltaic Installers and Wind Turbine Service Technicians, are forecasted to grow considerably in the region over the next decade.

Geothermal energy, which might play a role in the BARCAP measures, requires many different occupations across different phases. These include scientific roles (e.g., Geologists, Hydrologists, Environmental Scientists), engineering roles (e.g., Civil Engineers, Electrical Engineers, Environmental Engineers), drilling occupations (e.g., Derrick Operators, Roustabouts), construction occupations (e.g., Construction Laborers, Electricians, Carpenters), as well as Power Plant Operators to operate and monitor the geothermal plant itself. Workers in many of these occupations will be able to transfer their skills from other industries to geothermal projects.[44]

Electrical, Electronic, and Electromechanical Equipment Assemblers represent an important occupation in battery manufacturing in the region—along with Team Assemblers, Inspectors, Testers, Sorters, Samplers, and Weighers, and Laborers and Freight, Stock, and Material Movers, Hand—and will be central to the Jobs First Next-Generation Battery Innovation and Manufacturing Hub Activation Plan, which emphasizes building a skilled, equitable workforce to advance battery production and supply chains.[45] Strengthening training pipelines for these workers will help position the region for success in battery manufacturing.

Many of the priority occupations in the power sector not only pay wages above the regional median but are also considered "living wages" in the Bay Area for single adults with no children. Electrical Engineers, Electrical Power-Line Installers and Repairers, and Power Plant Operators also offer family-sustaining wages for households with one working adult and two children.[46] As with other sectors throughout this memo, wages and the broader quality of jobs are contingent upon several factors, including geography, seniority, and unionization. While unionization tends to be higher in some industries within the power sector—such as utilities—unionization is much lower in other industries, such as the installation of solar PV panels. While some projects—especially those subject to prevailing wages or project labor agreement stipulations—may have unionized workers installing panels, other projects like rooftop installations often rely on a mobile workforce that receives relatively lower pay and fewer benefits and often does not live in the regions where they build projects.[47]

Table 7: BARCAP Region Power Sector Occupations

Occupation	Total Employment[48]	Employment Percent Change (2022-2032)[49]	Location Quotient[50]	Median Hourly Wage[51]
Electrical, Electronic, and Electromechanical Equipment Assemblers, Except Coil Winders, Tapers, and Finishers	4,977	1.5	1.09	$27.16
Electrical Engineers	3,908	9.1	1.12	$79.63
Electrical Power-Line Installers and Repairers	1,091	6.4	0.47	$59.54
Solar Photovoltaic Installers	1,023	45.7	1.77	$34.60
Power Plant Operators	196	-13.0	0.35	$58.09
Wind Turbine Service Technicians	88	9.4	0.35	$42.83

The transition to renewable energy sources requires both an expanded and highly skilled workforce. Building out training pipelines in battery storage, solar, wind, geothermal, and grid technologies, expanding apprenticeships, and ensuring equitable access to these opportunities will be essential. Occupations including Electrical Equipment Assemblers, Electrical Power-Line Installers and Repairers, and Power Plant Operators offer feasible career entry points, requiring a high school diploma and on-the-job (OTJ) training or an apprenticeship.

Table 8: Power Sector Occupational Education & Training Analysis[52]

Occupation	Role Within Sector	Minimum Education Requirement	Minimum Training Requirement	State License Requirement	Other Common Credentials
Electrical, Electronic, and Electromechanical Equipment Assemblers, Except Coil Winders, Tapers, and Finishers	Assemble or modify battery storage system equipment	High school diploma or equivalent	Up to one year OTJ training	Depends on type of electrical work being performed	Electronic Technicians Association (ETA) International

Electrical Engineers	Develop electrical systems and infrastructure for power generation, transmission, distribution, and battery storage	Bachelor's degree	Several years OTJ training	N/A	National Council of Examiners for Engineering and Surveying (NCEES) electrical exam
Electrical Power-Line Installers and Repairers	Install and maintain power lines that transmit electricity	High school diploma or equivalent	Up to one year OTJ training; recognized apprenticeship	N/A	Electronic Technicians Association (ETA) International
Solar Photovoltaic Installers	Install solar panel systems	Post-secondary certificate	Up to one year OTJ training; recognized apprenticeship	State Solar Contractor License	ETA International; North American Board of Certified Energy Practitioners
Power Plant Operators	Operate and monitor equipment that generates electricity in power plants	High school diploma or equivalent	Up to one year OTJ training	N/A	American Public Power Association certifications; North American Electric Reliability Corporation certifications
Wind Turbine Service Technicians	Maintain and repair wind turbines for wind power	Post-secondary certificate	One to two years OTJ training; potential apprenticeship	N/A	ETA International; North American Board of Certified Energy Practitioners

Ecosystem of Key Stakeholders and Programs

There are a range of stakeholders in the region that can lead and play a role in workforce development within the power sector. These include retail electricity providers (such as PG&E, public utilities, and Community Choice Aggregators) and BayREN, the region's Renewable Energy Network. Table 9 highlights some key organizations and initiatives. See the appendices to this document—Appendix B: Ecosystem of Initiatives Across BARCAP Sectors and Appendix D: References —for initiatives and efforts that apply to all five sectors and links to programs, respectively.

Table 9: Bay Area Key Organizations and Initiatives in the Power Sector[53]

Organization / Initiative / Program	Description

PG&E PowerPathway	Utility-led pre-apprenticeship program preparing workers for skilled utility careers
Bay Area High-Road Manufacturing Initiative - Working Partnerships USA	Regional effort to build a sustainable, equitable manufacturing ecosystem focused on battery storage and renewable energy technologies; includes pilot projects to improve job quality, support high-road employer practices, and develop a green industrial campus in Contra Costa County
GRID Alternatives	Nonprofit offering hands-on solar installation training and workforce entry programs in renewable energy
California Community Choice Association (CalCCA)	Advances workforce opportunities in renewable energy procurement and local energy projects
San Francisco Public Utilities Commission (SFPUC) Apprenticeships and Work Experience Programs	Provides career opportunities and training to residents from local communities to earn a salary while learning the skills necessary for high demand careers
The Energy Skills Collaborative (TESC)	Increases participation in the advanced energy economy and workforce in communities where health and financial well-being are most impacted by environmental distress
Bay Area E-Contractor Academy - Emerald Cities Collaborative	Multi-week workshop series for small, minority-/women-/veteran-owned contractors to build technical, business, and operational capacity in electrification, energy efficiency, renewable energy, and green retrofit construction
Bay Area Regional Energy Network (BayREN)	Regional network that provides contractor training, education, and workforce forums to support energy efficiency; offer training courses[54] in solar PV and storage systems, heat pumps, HVAC systems, energy code permitting and compliance, zoning codes, and sustainable home real estate
SunWork Volunteer Training Program	Trains individuals in solar basics and safety, then engages them in hands-on solar installations with professional staff; provides first step towards career in this field
College of San Mateo Electrical Power Systems Certificate	Three-semester certificate training program developed with PG&E and other utilities to prepare students for high-wage technical careers in industries like energy, transportation, and manufacturing, with training in electronics and instrumentation calibration
Contra Costa Harnessing Change: Refinery Transition Partnership (CCRTP)	Brings together refinery workers and community stakeholders to plan for equitable economic transition as Contra Costa shifts from oil refining to low-carbon industries

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Waste and Materials Sector

Current and Future State of the Workforce

The waste and materials workforce is fundamental to meeting California's waste diversion goals. Roughly 9,000 workers[55] are currently employed in the region's recycling, composting, and waste management fields. An additional 1,415 workers are employed in manufacturing jobs that are part of the supply chains relevant to materials management (glass, paper, metal, wood, etc.), such as consumer products and building materials manufacturing, and an additional 24,448 workers are employed in food processing jobs, which involves transforming agricultural products and surplus food into new products for intermediate or final consumption.[56] These workers will be essential in advancing the state's goals of waste diversion, recycling, and the circular materials economy, including actions like those detailed in Senate Bill (SB) 54 (2022).[57]

To achieve California's waste reduction goals, Bay Area employment is projected to add over 16,000 direct recycling-related jobs that are sustained on an annual basis.[58] [59] These forward-looking employment estimates are drawn from the "Putting California on the High Road: A Jobs and Climate Action Plan for 2030" report chapter on waste, highlighting the anticipated workforce impacts of food diversion and composting (BARCAP measures W-1), while the job impacts of methane reduction from waste management facilities (W-3) may be more diffuse. Much of the research around embodied carbon and low-carbon building materials (Measure W-2) does not capture workforce impacts, though some reports mention the need to upskill existing workers on new technologies and materials.[60] [61] This remains an area where more quantitative research could be conducted.

These projected job figures are rooted in California's expansion of recycling, composting, and related services, which create not only more jobs in the traditional waste removal field but also more science and data-driven work, such as tracking waste streams and managing records,[62] improving material recovery facility operations, and advancing innovative circular economy practices.[63] Importantly, this growth represents a new addition of jobs—expanding waste collection, recycling, and circular economies—primarily building on existing activities without displacing workers.

Occupational Analysis

Multiple core occupations will play a central role in anchoring green initiatives involved in discarding food, goods, and building materials in the region. Many of these occupations—including Operating Engineers; Heavy and Tractor-Trailer Truck Drivers; Shipping, Receiving, and Inventory Clerks, and Mobile Heavy Equipment Mechanics—have a smaller concentration of workers in the region than in the overall nationwide economy. Multiple priority occupations within the sector offer wages above the regional median and provide accessible entry points, often without requiring college degrees.

Table *10*: BARCAP Region Waste & Materials Sector Occupations

Occupation	Total Employment[64]	Employment Percent Change (2022-2032)[65]	Location Quotient[66]	Median Hourly Wage[67]
Heavy-Duty and Tractor-Trailer Truck Drivers	26,746	9.6	0.67	$31.48
Light-Duty Truck Drivers	20,310	10.8	1.05	$24.60
Shipping, Receiving, and Inventory Clerks	12.893	-7.5	0.83	$24.19
Operating Engineers and Other Construction Equipment Operators	6,321	8.0	0.72	$54.98
Mobile Heavy Equipment Mechanics, Except Engines	2,786	8.5	0.8	$44.21
Refuse and Recyclable Material Collectors	2,737	9.9	1.02	$34.89
Hazardous Materials Removal Workers	1,425	7.6	1.55	$30.13

Scaling this workforce will require sustained investment in training and credentialing, including commercial driver's licenses (CDL), OSHA certifications, and industry-recognized safety credentials. By equipping workers with the necessary skills to successfully perform these jobs, the region can expand waste diversion services, improve community health, and advance climate goals.

Table *11*: Waste & Materials Sector Occupational Education & Training Analysis[68]

Occupation	Role Within Sector	Minimum Education Requirement	Minimum Training Requirement	State License Requirements	Other Common Credentials
Heavy-Duty and Tractor-Trailer Truck Drivers	Drive waste/garbage trucks	High school diploma or equivalent	Up to one year OTJ training; potential apprenticeship	Class A or B Commercial driver's license (CDL)	N/A
Light-Duty Truck Drivers	Transportation of recovered food locally	High school diploma or equivalent	Up to one year OTJ training	Class C driver's license, Potentially Class A or B commercial	N/A

				driver's license (CDL)	
Shipping, Receiving, and Inventory Clerks	Track food recovery inventory and manage intake/ distribution	High school diploma or equivalent	Up to one year OTJ training	N/A	N/A
Operating Engineers and Other Construction Equipment Operators	Operate machinery on landfill sites and operate machinery essential in the deconstruction and dismantlement of buildings	High school diploma or equivalent	Up to one year OTJ training; recognized apprenticeship	N/A	Forklift Operator certification; Certified Equipment Manager
Mobile Heavy Equipment Mechanics, Except Engines	Maintenance of landfill machinery	Post-secondary certificate	One to two years OTJ training; recognized apprenticeship	N/A	National Center for Construction Education and Research (NCCER)[69] certifications; International Union of Operating Engineers (IUOE) Heavy Construction Equipment Mechanic
Refuse and Recyclable Material Collectors	Collect organic waste and recyclables, frontline landfill diversion, and support diverting construction waste from landfills by collecting recyclable and reusable building materials	High school diploma or equivalent	Up to one year OTJ training	N/A	Solid Waste Association of America certifications
Hazardous Materials Removal Workers	Handle and dispose of materials that pose environmental risks and safely remove and dispose of toxic materials during	High school diploma or equivalent	One to two years OTJ training; potential apprenticeship	OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER)	N/A

	building deconstruction, enabling reuse of materials				

Ecosystem of Key Stakeholders and Programs

Many organizations and initiatives already exist in the Bay Area that relate to waste and materials management, including workforce training programs in recycling and composting. However, there is opportunity for the creation of more intentional occupation-specific training programs and sector partnerships to build out the most robust workforce possible. Table 15 highlights key initiatives within the sector. See the appendices to this document—Appendix B: Ecosystem of Initiatives Across BARCAP Sectors and Appendix D: References —for initiatives and efforts that apply to all five sectors and links to programs, respectively.

Table *12*: Bay Area Key Organizations and Initiatives in the Waste Sector[70]

Organization / Initiative / Program	Description
Regenerative Jobs Program - Greenbelt Alliance	Workforce program linking diversion, composting, and regenerative agriculture with green job training
Civicorps	Offers training and employment in recycling and zero-waste services alongside educational support
Conservation Corps North Bay	Engages members in recycling, composting, and land restoration work while providing workforce development
Local and Regional Agencies Leading Recycling and Resource Efficiency	Includes organizations like StopWaste,[71] which is Alameda County's agency that serves as the Bay Area's lead organization on recycling and resource/water efficiency
California Climate Action Corps (CCAC) Fellowship	Deploys fellows statewide to lead community climate-action projects in urban greening, waste recovery, and wildfire resilience while gaining professional skills and certifications
Community Composting for Green Spaces – California Alliance for Community Composting	Supports the creation and expansion of community-scale composting sites statewide, providing job training, local food access, and green-space improvements in underserved communities
Gardening and Composting Educator Training Program (Get Up!)	Training course in the Bay Area that teaches sustainable gardening, regenerative composting practices, and ecological justice

Natural and Working Lands Sector

Current and Future State of the Workforce

The natural and working lands (NWL) sector currently employs about 49,000 people[72] in the BARCAP region, supporting nature-based carbon sequestration, wildfire mitigation, and ecological and agricultural restoration efforts. An estimated 2,200 more workers[73] [74] will be required in 2045 to meet the region's goals, based on the regional portion of the projected statewide NWL employment to implement California Air Resources Board's (CARB) 2022 Scoping Plan.[75] The four NWL measures within the BARCAP generally reflect actions within CARB's 2022 Scoping Plan, including improvement, management, and restoration of agricultural and working lands, expanding urban green spaces, wildfire management, and improved data analytics for nature-based solutions. The workforce in this sector will be key to implementing nature- and land-based climate solutions, including wildfire management, climate-beneficial agriculture, and urban greening.

While there are few "novel" occupational roles in this space, a growing emphasis on measuring and quantifying carbon capture in soils and landscapes represents an important scientific frontier for the sector that will require workers to continually grow their knowledge base. In addition, policies such as California's Sustainable Groundwater Management Act (SGMA) create new opportunities to transform farmland into hubs of climate resilience and ecological restoration. This transition does not represent a wholesale loss of existing activities but rather an evolution of practices that modify some existing tasks for workers. Agricultural work will increasingly shift toward lower-carbon, climate beneficial farming methods, prioritizing soil health and reducing excess nitrogen and phosphate inputs, highlighting the need for a workforce capable of managing land in ways that align with changing policies, priorities, and technologies. Fire and fuel management will include prescribed burning, targeted grazing, and other emergent sustainable practices. Urban greening—which includes planning and maintaining new foliage and greenery in urban areas to provide shade, mitigate heat island effects, and improve air quality—also plays an important role within the BARCAP through NWL Measure 4.

Occupational Analysis

Key occupations in this sector include Tree Trimmers and Pruners (Arborists), Firefighters,[76] Conservation Scientists, Foresters, and Agricultural Engineers, among others. Workers in the NWL sector are integral to protecting ecosystems, managing land sustainably, and preparing the region for climate resilience, yet some of these occupations—Farmers, Ranchers, and Other Agricultural Managers; Foresters; and Forest Fire Inspectors and Prevention Specialists—remain somewhat scarce in the region, with lower-than-average concentrations of workers compared to nationally. While several factors may contribute to these lower concentrations, the Bay Area's predominantly urban landscape likely explains much of the disparity, as these professions tend to be more prevalent in rural regions across the country.

Arborists will remain a crucial resource in urban greening and tree maintenance; however, as local budgets tighten and consolidate, cities and counties may lack the staff to maintain existing green spaces. Contracting arborist and urban greening work across multiple cities and counties may induce cost savings efficiencies while distributing costs across multiple jurisdictions.[77]

Another critical part of the NWL workforce is workers involved in climate beneficial agriculture. Occupations that support this industry in California include Farmworkers and Laborers, Crop, Nursery, and Greenhouse; Farmworkers, Farm, Ranch, and Aquacultural Animals; Agricultural Equipment Operators; First-line Supervisors of Farming, Fishing, and Forestry Workers; Graders and Sorters, Agricultural Products; and Farm Equipment Mechanics and Service Technicians. These workers will all play a vital role in whole-farm Climate Smart Agriculture projects.[78]

Professional services industry workers that provide supportive services to the NWL efforts will also play an important role in BARCAP measures, such as Business Operations Specialists[79] and Urban and Regional Planners. These workers offer expert planning, design, analysis, research, and implementation for conservation and restoration projects, ensuring the success of such projects through science-based solutions and collaborative efforts.

Many occupations within the NWL sector provide wages above the regional median of $33.93/hour. Many of these occupations also offer "living wages" in the Bay Area for single adults with no children as well as family-sustaining for households with two working adults and two children,[80] reinforcing their potential to provide meaningful livelihood while advancing public good.

Table *13*: BARCAP Region Natural & Working Lands Sector Occupations

Occupation	Total Employment[81]	Employment Percent Change (2022-2032)[82]	Location Quotient[83]	Median Hourly Wage[84]
Farmworkers and Laborers Crop, Nursery, and Greenhouse	11,042	1.7	1.13	$21.84
Firefighters[85]	4,158	6.8	0.72	$56.68
Farmers, Ranchers, and Other Agricultural Managers	3,923	0.4	0.29	$57.91
Environmental Scientists and Specialists	2,079	9.7	1.37	$53.93
Tree Trimmers and Pruners	1,215	11.9	1.05	$36.98
Urban and Regional Planners[86]	1,135	8.1	1.46	$63.38

Forest and Conservation Technicians	889	2.9	1.47	$34.17
Conservation Scientists[87]	436	15.0	0.92	$47.12
Foresters	142	0.0	0.67	$56.61
Agricultural Engineers[88]	43	10.2	1.4	$54.25
Forest Fire Inspectors and Prevention Specialists	39	6.8	0.65	$58.02

Developing a prepared and capable NWL workforce requires targeted investment in education and applied training. Technical roles such as Farmers, Ranchers, and Other Agricultural Managers, Environmental Scientists and Specialists, Urban and Regional Planners, Conservation Scientists, Foresters, and Agricultural Engineers typically require a bachelor's degree and several years of field experience. Meanwhile, other roles, such as Farmworkers and Laborers Crop, Nursery, and Greenhouse and Tree Trimmers and Pruners, offer viable entry-level career pathways with on-the-job (OTJ) training and less education requirements. Integrating climate resilience into higher education, strengthening applied training opportunities that bridge classroom learning with real-world application, and building clear career ladders will help ensure the region has the expertise to restore ecosystems and safeguard communities.

Table *14*: Natural & Working Lands Sector Occupational Education & Training Analysis[89]

Occupation	Role Within Sector	Minimum Education Requirement	Minimum Training Requiremen	State License Requirements	Other Common Credentials
Farmworkers and Laborers Crop, Nursery, and Greenhouse	Cultivate crops, maintain green spaces, and implement conservation practices on working lands	Less than high school diploma	Few months OTJ training	N/A	N/A
Firefighters[90]	Protect natural lands from wildfire threats	High school diploma or equivalent	One to two years OTJ training	EMT Certification; Candidate Physical Ability Test (CPAT); specific requirements vary by department	N/A

Farmers, Ranchers, and Other Agricultural Managers	Manage regenerative farming, soil conservation, and agricultural practices	Bachelor's degree	Several years OTJ training	Farm Labor Contractor (FLC) license (depending on job circumstances)	Certified Rangeland Manager (CRM)[91]
Environmental Scientists and Specialists	Analyze environmental impacts and develop strategies to enhance ecosystem health across rural and urban landscapes	Bachelor's degree	Several years OTJ training	Registered Environmental Health Specialist (REHS)[92]	National Registry of Environmental Professionals certifications
Tree Trimmers and Pruners	Maintain green infrastructure and treat urban green spaces	Less than high school diploma	Up to a year OTJ training	N/A	International Society of Arboriculture (ISA)[93]
Urban and Regional Planners	Design land use strategies that integrate green spaces	Master's degree	Some potential OTJ training, but assumed workers already have the training	N/A	Certified Urban Planner[94] or Certified Planner[95]
Forest and Conservation Technicians	Assist in monitoring and maintaining natural resources and compile data on forest characteristics	High school diploma or equivalent or associate's degree	One to two years OTJ training	Certified Rangeland Manager (CRM)[96]	N/A
Conservation Scientists	Develop and oversee land management plans that protect natural resources	Bachelor's degree	Several years OTJ training	N/A	N/A
Foresters	Manage forested lands for conservation and wildfire prevention	Bachelor's degree	Several years OTJ training	Registered Professional Forester license[97]	N/A
Agricultural Engineers	Develop technical systems for sustainable farming and land use	Bachelor's degree	Several years OTJ training	Professional Engineer (PE) license[98]	N/A

Forest Fire Inspectors and Prevention Specialists	Assess fire hazards, reduce severity of fires, and maintain forest health and stability	High school diploma or equivalent	One to two years OTJ training	CA State Fire Training (SFT) certification program	N/A

Ecosystem of Key Stakeholders and Programs

Different counties and municipalities throughout the region may have different priorities within the NWL sector. Cities may prioritize urban greening, while counties with substantial rural and fire-prone terrain may prioritize fire risk mitigation activities. Both independent and collaborative efforts are important and will require different mechanisms. One example of local action is Sonoma County's designation as a "Climate Resiliency District," or CRD—the only county in the state to have such a designation.[99] The Sonoma CRD demonstrates how coordinated, cross-jurisdictional strategies can generate meaningful impacts, and the frameworks developed in one jurisdiction can be adapted and replicated elsewhere to extend the impact of these efforts across numerous communities. This model also reflects how the region can address funding gaps and identify steady revenue streams for climate-related projects that are specific to their particular needs.

Other initiatives involved in the NWL sector include training efforts for carbon farm planners and carbon farmers with increased agroecological knowledge. Resource Conservation Districts' (RCD) "Regional Carbon Farming Hubs" are working with university partners, state agencies, and other conservation organizations to expand carbon farming education and training; they have set a minimum target of 42 RCD-related staff trained annually. Other efforts occurring across the Bay Area are outlined below.

Table 6 highlights some key organizations and initiatives. See the appendices to this document—Appendix B: Ecosystem of Initiatives Across BARCAP Sectors and Appendix D: References —for initiatives and efforts that apply to all five sectors and links to programs, respectively.

Table *15*: Bay Area Key Organizations and Initiatives in the Natural & Working Lands Sector[100]

Organization / Initiative / Program	Description
Indigenous and Immigrant Farm Workers Building a Climate Resilience Workforce - North Bay Jobs with Justice	Trains farm workers in climate-smart agricultural practices and resilience strategies
Regenerative Jobs Program	Creates workforce opportunities in regenerative agriculture and sustainable land management
Civicorps	Provides training and paid work experience in land management for young adults
Friends of the Urban Forest	San Francisco nonprofit offering hands-on training in tree planting, urban forestry, and nursery management

Conservation Corps North Bay	Provides young adults with paid work in habitat restoration, wildfire fuel reduction, and environmental stewardship
Providing High-Road Jobs to Latin Women Serving Their Community - UpValley Family Centers of Napa County	Develops a worker cooperative for Latina *promotoras* in Napa County, who serve disadvantaged populations, including farmworkers, and act as frontline emergency and disaster response workers in climate-impacted communities
Agricultural Worker Training and Advancement with High Road Employers (Ag HiRE)	Creates a bilingual training pipeline for Spanish-speaking farmworkers to advance into higher-paying jobs
Bay Area Farmer-to-Farmer Training (BAFFT) - Agroecology Commons	A nine-month agroecology program offering hands-on small-farm production, food sovereignty, and environmental justice training across the Bay Area
Farmer Mobilization Apprenticeships and Mentorship – Agroecology Commons	Provides paid apprenticeships connecting BAFFT graduates with experienced agroecological farmers to deepen skills and foster food-sovereignty projects
California Conservation Corps Training and Workforce Development Program	Enrolls young adults in year-long service projects that deliver forest fuel reduction, habitat restoration, and energy-efficiency work while preparing them for green careers
Environmental Management Social Enterprise - Civicorps	Engages Bay Area individuals in paid critical conservation work that builds environmental stewardship and job readiness
California Climate Action Corps (CCAC) Fellowship	Deploys fellows statewide to lead community climate-action projects in urban greening, waste recovery, and wildfire resilience while gaining professional skills and certifications
California Water, Wastewater, and Energy Workforce Development Program - Municipal Utilities Association	Builds a diverse, equitable workforce pipeline for underrepresented populations to secure stable careers in California's water, wastewater, and public energy utilities sectors
CAL FIRE Training Centers	Four training centers across California with core learning spaces providing realistic operational environments
Las Positas College East Bay Regional Fire Academy	Training and education provider for careers as certified firefighters by a professional fire service agency
Chabot College Fire Technology Program	One of the longest running fire programs in the Bay Area; offers coursework leading to industry certifications
City College of San Francisco Fire Academy	Course eligible to CCSF students, taught under the certification of the California State Fire Marshal Office of State Fire Training
South Bay Fire Fighter 1 & 2 Academy	Operated by the South Bay Regional Public Safety Training Consortium, an accredited regional training program (ARTP) with state fire training (SFT)
Center for Land-Based Learning California Farm Academy	Registered apprenticeship combining paid on-the-job training and instruction to elevate farmworkers to farm or ranch manager roles

Farm and Land Steward Apprenticeship Program – San Francisco Zen Center	Seasonal apprenticeship for farm or land stewardship roles on the organic farm and gardens at Green Gulch
Alemany Farm Internships	Interns work alongside Alemany Farm managers growing food and maintaining the organic farm dedicated to food security and community education
Regenerative Agriculture Farm Training (RAFT) - California Native Garden Foundation (CNGF)	15-week course to teach students how to manage regenerative organic agriculture methods
University of California Cooperative Extension	Connects University of California research and expertise with local residents, offering programs in food and nutrition, youth development, gardening and pest management, and natural resources to improve community health, the environment, and local economy
California Resource Conservation Districts (RCDs)	Provides leadership in conserving natural resources, preserving wildlife and habitat, training land stewards, and supporting sustainable agriculture through education, outreach, technical assistance, and partnerships
Santa Rosa Junior College Sustainable Agriculture Program	Offers an Associate of Science degree and two certificates focused on organic farming, ecological land management, and direct marketing to prepare for careers in Sonoma County's agricultural sector

Frontline Communities

Employment demand created through BARCAP measures can also offer substantial opportunity for individuals from frontline communities. Over 1.9 million residents in the region live within areas identified as frontline communities. The labor force participation rates for both frontline and non-frontline communities are around 66%—although the unemployment rate for frontline communities is nearly two percentage points higher than non-frontline communities. Job seekers residing in these frontline communities may also require additional resources, such as childcare, transportation assistance, and other services to overcome the systemic barriers to participating in certification and training programs and secure high road employment.

Table *16*: Employment and Labor Force Data by Community

	Population	Employment	Unemployment Rate	Labor Force Participation Rate	Median Family Income
Non-Frontline	3,815,995	1,989,720	4.81%	66.36%	$160,548
Frontline	1,910,134	974,520	6.65%	66.39%	$112,046

Job Quality and Accessibility

Nearly three-quarters (19 of the 26) of the priority occupations highlighted throughout this workforce study do not require college degrees for entry into the field, and they also provide livable wages, which means that not only are these roles accessible for individuals in frontline communities who may not have a college degree, but these jobs also provide an entry point into sustainable pathways to greater wealth and income levels.

While these occupations are technically accessible based on educational requirements and provide higher quality given wages, this does not mean that people in frontline communities will be able to access these roles in the absence of additional policy or support. For example, job seekers from frontline communities may be aware of these opportunities, but may lack access to childcare, accessible last mile transit options, or have other barriers beyond education.

Many of the measures in the BARCAP identify these needs and provide support to address these challenges. Initiatives beyond the BARCAP, such as California Jobs First, also offer funding streams to improve access to these opportunities. However, additional funding and organizational structures to support these initiatives will be important to ensure job seekers in frontline communities have access to the employment opportunities generated through the BARCAP.

Community Engagement Workforce

In addition to the professional services, skilled trades, and other types of jobs that will be crucial to implementing the measures in the BARCAP, there is also an important community engagement component of the BARCAP measures that offers jobs beyond the priority occupations already listed. Many BARCAP measures involve engaging residents, business owners, and communities, and sharing information about new technologies and opportunities. These community engagement roles will also be crucial for informing and recruiting jobs seekers, empowering them to receive the necessary certification and training, and connecting them with relevant employment opportunities that the BARCAP presents, so that job seekers from frontline communities can have the opportunity of working to make their communities less polluted and more climate resilient while also securing employment in good-paying jobs.

Furthermore, many of the BARCAP measures identify engagement specifically with frontline communities. After decades of disinvestment and disenfranchisement, these communities may be skeptical of new opportunities or technologies, though having informed and trusted advisors within their own communities that encourage participation in these opportunities or technologies may help alleviate these concerns. Therefore, educating and training individuals to support building electrification programs or provide information on rebate programs and education opportunities or waste collection initiatives –while paying them living wages – will be a central component of successful implementation.

Table *17*: BARCAP Region Non-Profit and Community Organization Occupations

Occupation	Total Employment[101]	Employment Percent Change (2022-2032)[102]	Location Quotient[103]	Median Hourly Wage[104]
Social and Community Service Managers	5,478	15.7	1.4	$44.50
Community and Social Service Specialists	2,589	8.9	1.33	$33.02
Environmental Scientists and Specialists	2,079	9.7	1.37	$53.93

Many jobs exist within the community organization sector, and the ones highlighted in the table below are only a small sample of opportunities available to individuals. While some positions may prefer undergraduate or advanced degrees or more extensive experience, the field also offers numerous accessible entry points. Individuals can begin their careers through part-time roles, coordinator-level roles, or support and assistance roles that typically require less formal education and training yet still provide valuable experience and pathways for growth.

Table *18*: Non-Profit and Community Organization Occupational Education & Training Analysis

Occupation	Role Within Sector	Minimum Education Requirement	Minimum Training Requirements/Preferences
Social and Community Service Managers	Manage green initiative programs and coordinate food recovery programs/community environmental health outreach	Bachelor's degree	Several years OTJ training
Community and Social Service Specialists	Build relationships with local communities, educate on green initiatives, and mobilize participation in programs	Associate's or Bachelor's degree	Several years OTJ training
Environmental Scientists and Specialists	Work within non-profits to address disproportionate environmental burdens, advocate for policy change, and support community-led solutions	Bachelor's degree	Several years OTJ training

Recommendations and Strategies to Meet Workforce Needs

This section outlines a series of recommendations to help ensure that the BARCAP region can meet a range of workforce needs across the five sectors. While some solutions may be more applicable to certain sectors than others, the full suite of recommendations will help address workforce challenges across all five sectors.

1. **Coordinate across unions, community colleges, vocational and technical schools, private sector, workforce development boards, and non-profit training organizations.** Most sectors have at least a few training providers that provide clear examples of the types of curricula, training support, and connection to employer networks that are necessary to meet workforce needs and support job seekers within frontline communities. For example, in the building sector the partnership between the Rising Sun Center for Opportunity and local trade unions provides a strong pipeline that encompasses everything from community outreach and engagement of job seekers within priority populations, training on modern technologies and support services along the way, and eventual connection and integration into the high road workforce through labor unions. AC Transit's Zero Emission Bus University program in partnership with Chabot College is another great example found within the transportation sector. Other sectors could benefit from identifying similar programmatic champions, implementing these systems throughout the Bay Area, and ensuring that training is accessible to priority populations.

2. **Increase communication and awareness of BARCAP careers within K-16 education.** A program that helps teach students about the in-demand careers outlined in the BARCAP and anticipated wages could help raise awareness of opportunities, guide students towards relevant coursework, and get them started early on career paths. The BARCAP can serve as a foundational document that demonstrates the wide range of initiatives already underway that promote job security and introduce job seekers to potential employers and training programs.

3. **Encourage and facilitate sustained and consistent funding for workforce development, which is a core component to perpetuating the activities of the BARCAP.** While there are some existing funding streams and initiatives that can be leveraged, a more consistent pool of funds could help support job creation and the training to help frontline communities secure those jobs. Regional coordination of funding, whether that be pooling of funds or 'earmarked' amounts within local agencies that fund similar 'archetypical' programs, could be one opportunity here. Sonoma County's classification as a Climate Resiliency District may also be a new avenue to raise and

utilize funds that are specifically geared towards addressing climate-related challenges, including the necessary workforce.

4. **Incentive program administrators can lead the way on encouraging job quality.** Existing job quality within a sector is driven primarily by market dynamics—how much cost will the market bear and what benefits does it perceive with greater job quality? The buildings sector is a great example of this phenomenon, where large scale projects often utilize unionized labor forces because those employers have access to a very large pool of highly trained and skilled talent, ensuring that job sites can scale quickly, are safer for workers, and result in high quality construction. However, smaller scale projects, such as those within single-family homes, often cannot bear the additional expense of such large and qualified teams. As a result, smaller scale employers or informal workers make up the majority of this market.[105] Local governments and agencies can intervene by requiring labor standards for publicly funded projects. Local agencies can also get inventive to circumvent some of these additional market factors. For example, the City of Berkeley's Just Transition Residential Electrification Pilot seeks to aggregate residential projects to make them more accessible and efficient for employers with high road employment practices. This system could work for other sectors, such as setting labor standards for waste processing centers or urban greening initiatives.

5. **Policymakers must continue to monitor the energy transition.** While most of the sectors within the BARCAP are likely to see additional employment needs without driving significant employment disruption, there are segments of the economy that will undergo change, and workers within these sectors may require assistance to transition to new roles. The region could start up an 'energy transition' working group that is responsible for tracking developments in technology and the workforce, proactively identifying areas where employment disruption may be occurring, and working with existing local workforce and economic development organizations to support workers facing disruption.

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[1] "California High-Road: A Road Map to Job Quality." UCLA Labor Center, (n.d.). https://cwdb.ca.gov/wp-content/uploads/sites/43/2020/08/OneSheet_Job-Quality_ACCESSIBLE.pdf

[2] "Workforce Impacts of Achieving Carbon-Neutral Transportation in California." UCLA Luskin Center for Innovation, 2022. https://innovation.luskin.ucla.edu/wp-content/uploads/2022/09/Workforce-Impacts-of-Achieving-Carbon-Neutral-Transportation-in-California.pdf

[3] "Driving California's Transportation Emissions to Zero." University of California Institute of Transportation Studies, 2021. https://escholarship.org/uc/item/3np3p2t0

[4] Includes direct, indirect, and induced workers. Estimate does not account for substantial decline in internal combustion engine vehicles (ICEVs) jobs or fossil fuel jobs between now and 2045.

[5] "Evaluating Benefits from Transportation Investments Aligned with the Climate Action Plan for Transportation Infrastructure (CAPTI)." San Jose State University Mineta Transportation Institute, 2023. https://transweb.sjsu.edu/sites/default/files/2227-Alexander-California-Climate-Action-Plan-Transportation-Infrastructure.pdf

[6] This employs a similar methodology to what was utilized in the Bay Area's Priority Climate Action Plan (https://www.baaqmd.gov/en/plans-and-climate/climate-planning/bay-area-regional-climate-action-planning-initiative/priority-climate-action-plan)

[7] "EVs Cost 40 Percent Less to Maintain Than Conventional Cars." Yale School of the Environment, 2021. https://e360.yale.edu/digest/energy-department-report-finds-that-evs-cost-40-percent-less-to-maintain-than-conventional-cars?

[8] "Fossil Fuel Layoff: The Economic and Employment Effects of a Refinery Closure on Workers in the Bay Area." UC Berkeley Labor Center, 2023. https://laborcenter.berkeley.edu/fossil-fuel-layoff/#:~:text=Targeted%2C%20individualized%20job%20search%20assistance,during%20layoffs%20and%20job%20transitions

[9] The "Retail Salespersons" occupational category spans many industries beyond automotive sales, and because most roles in those industries require limited training and are often part-time or seasonal, the overall median wage for the occupation skews lower than other more specific occupations identified in this memo.

[10] "Living Wage Calculation for San Francisco-Oakland-Berkeley, CA." MIT Living Wage Calculator, 2025. https://livingwage.mit.edu/metros/41860

[11] Data from JobsEQ. 2025Q1. Figures reflect total employment for each occupation across all industries and sectors, not limited to those directly associated with the BARCAP sector.

[12] Percent change in employment across the state of California. Data from Long-Term Occupational Employment Projections, California Open Data Portal (https://data.ca.gov/dataset/long-term-occupational-employment-projections/resource/274e273c-d18c-4d84-b8df-49b4d13c14ce)

[13] Location quotients (LQ) measure the concentration of an occupation in a local/regional area by comparing its share of employment to its share of national employment. An LQ greater than 1 means the occupation is more concentrated locally than nationally, while an LQ less than 1 indicates less concentration. Data from JobsEQ. 2025Q1.

[14] Data from JobsEQ. 2025Q1.

[15] O*NET OnLine, U.S. Department of Labor (https://www.onetonline.org/)

[16] Provided by CA Department of Motor Vehicles (DMV).

[17] This list is not exhaustive, and other key partners and funders in the space may be absent.

[18] "U.S. Energy and Employment Report." U.S. Department of Energy, 2024. https://www.energy.gov/media/330956

[19] "California Building Decarbonization Workforce Needs and Recommendations." UCLA Luskin Center for Innovation, 2019. https://innovation.luskin.ucla.edu/wp-content/uploads/2019/11/California_Building_Decarbonization.pdf

[20] "California Building Decarbonization Workforce Needs and Recommendations." UCLA Luskin Center for Innovation, 2019. https://innovation.luskin.ucla.edu/wp-content/uploads/2019/11/California_Building_Decarbonization.pdf

[21] "Identifying and Defining High Priority Commercial Building Energy Efficiency and Electrification Jobs and Skills for a Growing and Diverse Workforce." American Council for an Energy-Efficient Economy (ACEEE), 2024. https://www.aceee.org/sites/default/files/proceedings/ssb24/assets/attachments/20240722163107796_c092d835-2227-4c8b-8cd5-580adbb01746.pdf

[22] Data from JobsEQ. 2025Q1.

[23] The *federal poverty wage* reflects the minimum income needed to avoid poverty, but does not account for regional variations in cost of living or the actual expenses required to maintain a basic standard of living. For this analysis, we use the *living wage* designation to more accurately capture the income necessary for workers to meet essential needs, providing a more realistic benchmark for evaluating job quality.
[24] "Living Wage Calculation for San Francisco-Oakland-Berkeley, CA." MIT Living Wage Calculator, 2025. https://livingwage.mit.edu/metros/41860
[25] Data from JobsEQ. 2025Q1. Figure reflects total employment for each occupation across all industries and sectors, not limited to those directly associated with the BARCAP sector.
[26] Percent change in employment across the state of California. Data from Long-Term Occupational Employment Projections, California Open Data Portal (https://data.ca.gov/dataset/long-term-occupational-employment-projections/resource/274e273c-d18c-4d84-b8df-49b4d13c14ce)
[27] Location quotients (LQ) measure the concentration of an occupation in a local/regional area by comparing its share of employment to its share of national employment. An LQ greater than 1 means the occupation is more concentrated locally than nationally, while an LQ less than 1 indicates less concentration. Data from JobsEQ. 2025Q1.
[28] Data from JobsEQ. 2025Q1.
[29] "Bay Area Residential Building Decarb High Road Training Partnership Summary." Rising Sun Center for Opportunity, (n.d.). https://risingsunopp.org/wp-content/uploads/Rising-Sun-Bay-Area-Residential-Building-Decarb-HRTP-Summary.pdf
[30] O*NET OnLine, U.S. Department of Labor (https://www.onetonline.org/)
[31] OSHA certification verifies that a worker has completed training on workplace safety and health hazards.
[32] NCCER offers industry-recognized credentials across numerous skilled trades.
[33] Occupation defined in accordance with the nomenclature of the Standard Occupational Classification system used in federal labor statistics. Steamfitters may entail different job activities than Plumbers and Pipefitters in the building sector and may have different licensing and education requirements.
[34] EPA 608 certification is a federally mandated requirement for technicians who handle refrigerants in HVAC systems, ensuring compliance with environmental regulations.
[35] NATE certification is a nationally recognized credential for HVAC technicians that validates their skills in installing, maintaining, and troubleshooting HVAC systems.
[36] "Workforce Challenges for Zero Nox Requirements – Implementation Working Group Research." Bay Area Air District and BW Research, 2024. https://www.baaqmd.gov/~/media/files/community-health/building-appliance-implementation/workforce-summary-memo-pdf.pdf?rev=a8670756237f4fcdbc4e3b8603ff951b&sc_lang=en
[37] This list is not exhaustive, and other key partners and funders in the space may be absent.
[38] Events & Training, Bay Area Regional Energy Network. https://www.bayren.org/events-training?audience=All&type=Training&title=&protect_form_flood_control=protect_form_flood_control
[39] Energize Careers. https://www.energizecareers.org/participate.html
[40] "U.S. Energy and Employment Report." U.S. Department of Energy, 2024. https://www.energy.gov/media/330956
[41] "Role of Distributed Generation in Decarbonizing California by 2045." Vibrant Clean Energy, 2021. https://vibrantcleanenergy.com/wp-content/uploads/2021/07/VCE-CCSA_CA_Report.pdf#:~:text=The%20total%20full%20time%20equivalent,scale%20solar%20and%20storage%20by
[42] Quarterly Census of Employment and Wages (QCEW), California Open Data Portal. https://data.ca.gov/dataset/quarterly-census-of-employment-and-wages/resource/119eef38-3b59-499f-8f7c-9bea4768469d
[43] "Refining Transition: A Just Transition Economic Development Framework For Contra Costa County, California." UC Berkeley Labor Center, 2025.

[44] "Careers in Geothermal Energy." U.S. Bureau of Labor Statistics.
[45] "Next Generation Battery Innovation and Manufacturing Hub in the Bay Area: Activation Plan." Bay Area Jobs First Collaborative, 2025.
[46] "Living Wage Calculation for San Francisco-Oakland-Berkeley, CA." MIT Living Wage Calculator, 2025. https://livingwage.mit.edu/metros/41860
[47] "An Updated Review of the Solar PV Installation Workforce Literature" NREL 2023.
[48] Data from JobsEQ. 2025Q1. Figures reflect total employment for each occupation across all industries and sectors, not limited to those directly associated with the BARCAP sector.
[49] Percent change in employment across the state of California. Data from Long-Term Occupational Employment Projections, California Open Data Portal (https://data.ca.gov/dataset/long-term-occupational-employment-projections/resource/274e273c-d18c-4d84-b8df-49b4d13c14ce)
[50] Location quotients (LQ) measure the concentration of an occupation in a local/regional area by comparing its share of employment to its share of national employment. An LQ greater than 1 means the occupation is more concentrated locally than nationally, while an LQ less than 1 indicates less concentration. Data from JobsEQ. 2025Q1.
[51] Data from JobsEQ. 2025Q1.
[52] O*NET OnLine, U.S. Department of Labor (https://www.onetonline.org/)
[53] This list is not exhaustive, and other key partners and funders in the space may be absent.
[54] Events & Training, Bay Area Regional Energy Network. https://www.bayren.org/events-training?audience=All&type=Training&title=&protect_form_flood_control=protect_form_flood_control
[55] Occupational Employment and Wage Statistics (OEWS), U.S. Bureau of Labor Statistics. https://www.bls.gov/oes/
[56] Quarterly Census of Employment and Wages (QCEW), California Open Data Portal. https://data.ca.gov/dataset/quarterly-census-of-employment-and-wages/resource/119eef38-3b59-499f-8f7c-9bea4768469d
[57] "SB 54 Statewide Needs Assessment." CalRecycle, (n.d.). https://calrecycle.ca.gov/packaging/packaging-epr/needs-assessment/
[58] "Putting California on the High Road: A Jobs and Climate Action Plan for 2030." UC Berkeley Labor Center, 2020. https://laborcenter.berkeley.edu/wp-content/uploads/2020/08/Chapter-9-Waste-Sector-Putting-California-on-the-High-Road.pdf
[59] Estimate does not include indirect employment in equipment supply chains or manufacturing with recycled inputs, nor do they account for induced jobs created by the spending of newly employed workers. As a result, the full economic impact of this sector is likely greater than stated.
[60] "Embodied Carbon Reduction Roadmap." ARUP and Natural Resources Defense Council (NRDC), 2023. https://www.arup.com/en-us/insights/embodied-carbon-reduction-roadmap/
[61] "Reducing Embodied Carbon in Buildings." RMI, 2021. https://rmi.org/insight/reducing-embodied-carbon-in-buildings/
[62] California's SB 1383 requires entities to collect, maintain, and report data on waste stream tracking and contamination monitoring for compliance purposes, creating potential for jobs in data management and compliance. https://calrecycle.ca.gov/organics/slcp/recordkeeping/
[63] "Jobs and Skills in the Circular Economy: State of Play and Future Pathways." Circle Economy, 2020. https://cdn.prod.website-files.com/5d26d80e8836af2d12ed1269/5e6897dafe8092a5a678a16e_202003010%20-%20J%26S%20in%20the%20circular%20economy%20report%20-%20297x210.pdf
[64] Data from JobsEQ. 2025Q1. Figures reflect total employment for each occupation across all industries and sectors, not limited to those directly associated with the BARCAP sector.

[65] Percent change in employment across the state of California. Data from Long-Term Occupational Employment Projections, California Open Data Portal (https://data.ca.gov/dataset/long-term-occupational-employment-projections/resource/274e273c-d18c-4d84-b8df-49b4d13c14ce)
[66] Location quotients (LQ) measure the concentration of an occupation in a local/regional area by comparing its share of employment to its share of national employment. An LQ greater than 1 means the occupation is more concentrated locally than nationally, while an LQ less than 1 indicates less concentration. Data from JobsEQ. 2025Q1.
[67] Data from JobsEQ. 2025Q1.
[68] O*NET OnLine, U.S. Department of Labor (https://www.onetonline.org/)
[69] NCCER offers industry-recognized credentials across numerous skilled trades.
[70] This list is not exhaustive, and other key partners and funders in the space may be absent.
[71] StopWaste. https://www.stopwaste.org/
[72] Employment estimates for this sector were derived using California Open Data Portal's Quarterly Census of Employment and Wages (QCEW) data aligned with relevant NWL NAICS codes. These codes were selected based on the BARCAP definition of the NWL sector and informed by desktop research of California reports that assess land management industries and activities. Retrieved September 10, 2025. NAICS codes selected include: 111, 112, 112, 11511, 11521, 11531, 22131, 23799, 333111, 54162, 56173, 813312, 92512, 92613.
[73] "Scoping Plan for Achieving Carbon Neutrality." California Air Resources Board (CARB), 2022. https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents
[74] Includes direct, indirect, and induced employment. Figure represents a headcount of jobs in 2045 compared to a baseline scenario.
[75] "Scoping Plan for Achieving Carbon Neutrality." California Air Resources Board (CARB), 2022. https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents
[76] Occupation defined in accordance with the nomenclature of the Standard Occupational Classification system used in federal labor statistics. While this occupational category includes both urban and wildland firefighters, emphasis is placed on wildland firefighters due to their central role in NWL BARCAP measures.
[77] "Service Sharing: How Counties Do More with Less." National Association of Counties, 2017. https://www.naco.org/resources/service-sharing-1
[78] "Farmer and Rancher-Led Climate Change Solutions." California Department of Food and Agriculture, 2021. https://www.cdfa.ca.gov/oefi/climate/docs/cdfa_farmer_and_rancher-led_climate_solutions_meetings_summary.pdf
[79] Titles for this role also include Sustainability Consultant, Energy Strategic Advisor, Sustainable Design Coordinator.
[80] "Living Wage Calculation for San Francisco-Oakland-Berkeley, CA." MIT Living Wage Calculator, 2025. https://livingwage.mit.edu/metros/41860
[81] Data from JobsEQ. 2025Q1. Figures reflect total employment for each occupation across all industries and sectors, not limited to those directly associated with the BARCAP sector.
[82] Percent change in employment across the state of California. Data from Long-Term Occupational Employment Projections, California Open Data Portal (https://data.ca.gov/dataset/long-term-occupational-employment-projections/resource/274e273c-d18c-4d84-b8df-49b4d13c14ce)
[83] Location quotients (LQ) measure the concentration of an occupation in a local/regional area by comparing its share of employment to its share of national employment. An LQ greater than 1 means the occupation is more concentrated locally than nationally, while an LQ less than 1 indicates less concentration. Data from JobsEQ. 2025Q1.
[84] Data from JobsEQ. 2025Q1.

[85] Occupation defined in accordance with the nomenclature of the Standard Occupational Classification system used in federal labor statistics. While this occupational category includes both urban and wildland firefighters, emphasis is placed on wildland firefighters due to their central role in NWL BARCAP measures.
[86] Includes Urban Forestry Planners. Can include planners employed at Resource Conservation Districts.
[87] Includes roles involved in wildfire GIS analysis and environmental analysts. Can include scientists employed at Resource Conservation Districts.
[88] Agricultural Engineers design and implement technologies that improve water efficiency, soil health, and sustainable farming infrastructure. Also called Agricultural Systems Specialist, Conservation Engineer, Field Engineer, Product Engineer, Product Technology Scientist, Research Engineer. Can include engineers employed at Resource Conservation Districts.
[89] O*NET OnLine, U.S. Department of Labor (https://www.onetonline.org/)
[90] Occupation defined in accordance with the nomenclature of the Standard Occupational Classification system used in federal labor statistics. While this occupational category includes both urban and wildland firefighters, emphasis is placed on wildland firefighters due to their central role in NWL BARCAP measures.
[91] CRMs are rangeland professionals recognized in California for applying scientific principles to manage rangelands. The California CRM designation is a state license under the California Board of Forestry and Fire Protection.
[92] Administered by the California Department of Public Health (CDPH).
[93] ISA offers several voluntary certifications that demonstrate a professional arborist has attained a high standard of knowledge and skill in tree care.
[94] Certification offered through the American Institute of Certified Planners (AICP).
[95] Certification offered through the American Planning Association (APA).
[96] CRMs are rangeland professionals recognized in California for applying scientific principles to manage rangelands. The California CRM designation is a state license under the California Board of Forestry and Fire Protection.
[97] Provided by the CA Board of Forestry and Fire Protection.
[98] Provided by the CA Board for Professional Engineers, Land Surveyors, and Geologists (BPELSG).
[99] A CRD is new type of financing district enabled by California's SB 852, which allows cities, counties, and special districts to coordinate across jurisdictional boundaries to implement climate adaptation and resilience strategies. The role of a CRD is to secure public, private, state, and federal funds to support locally-determined climate and clean energy priorities. https://rcpa.ca.gov/what-can-a-climate-resilience-district-do-for-your-community/
[100] This list is not exhaustive, and other key partners and funders in the space may be absent.
[101] Data from JobsEQ. 2025Q1. Figures reflect total employment for each occupation across all industries and sectors, not limited to those directly associated with the BARCAP sector.
[102] Percent change in employment across the state of California. Data from Long-Term Occupational Employment Projections, California Open Data Portal (https://data.ca.gov/dataset/long-term-occupational-employment-projections/resource/274e273c-d18c-4d84-b8df-49b4d13c14ce)
[103] Location quotients (LQ) measure the concentration of an occupation in a local/regional area by comparing its share of employment to its share of national employment. An LQ greater than 1 means the occupation is more concentrated locally than nationally, while an LQ less than 1 indicates less concentration. Data from JobsEQ. 2025Q1.
[104] Data from JobsEQ. 2025Q1.
[105] "Bay Area Priority Climate Action Plan Appendix E: Workforce Planning Analysis Documentation." BW Research and Bay Area Air District, 2024. https://www.baaqmd.gov/en/plans-and-climate/climate-planning/bay-area-regional-climate-action-planning-initiative/priority-climate-action-plan

Appendix A: Methodology

Current and future workforce estimates were derived from existing literature and datasets that highlight activities similar to those outlined in the BARCAP and supplemented with proportional adjustments to reflect region-specific counties. For research that was initially developed at the state level, BARCAP region-specific estimates were scaled using the ratio of BARCAP region employment to state employment within the industries that are most relevant to the respective sectors.

This methodology makes a few assumptions, the greatest being that future growth trends will follow existing growth patterns. This assumption may not hold in instances where entirely new industries are formed, activities occur within industries outside of those originally captured, or where the BARCAP region takes on activities within a sector at an accelerated rate relative to the rest of the state.

In addition, the studies used represent the best available research, yet they do not perfectly align with the full range of activities in the BARCAP measures. Some studies may be more aggressive than the BARCAP measures and lack sufficient detail to better tailor data from the study to the measures. However, the studies are inclusive of the respective measures, align with the scope of the activities conducted and the types of occupations created, and address both the challenges and opportunities involved in building a workforce capable of meeting BARCAP goals. In these instances, the projected future demand may overestimate the number of additional workers needed. Future analyses geared towards providing policymakers and training providers with detailed anticipated workforce estimates may consider utilizing tailored economic impact models built on programmatic cost data or labor-intensity tools to more accurately forecast the quantitative needs for specific occupations.

Transportation Sector

Current and future employment estimates were sourced from the UC Institute of Transportation Study.[1] Additional estimates for Measures T-3 and T-4, which relate to transportation reduction or mode switching as opposed to fuel switching (in Measures T-1 and T-2) were included. These estimates followed the methods utilized in the Bay Area's Priority Climate Action Plan,[2] and proportion the spending utilized in the "Evaluating Benefits from Transportation Investments Aligned with the Climate Action Plan for Transportation Infrastructure (CAPTI)"[3] report to proportion the estimated spending on Measure T-3 and T-4 related activities.

Building Sector

Current employment was calculated by summing county-level Energy Efficiency data from the U.S. Energy and Employment Report across the eight counties in the BARCAP region. Future demand projections were based on the 2019 *California Building Decarbonization Workforce Needs and Recommendations*[4] by UCLA and Inclusive Economics. The research team took these employment estimates and proportioned them to the relative share of devices (heat pumps and NOx-emitting equipment replacement) anticipated to be installed through BARCAP measure B-1.

Power Sector

Current employment was estimated by aggregating county-level Electric Power Generation data from the U.S. Energy and Employment Report. Forecasted demand was based on state-level projections from Vibrant Clean Energy,[5] apportioned to the BARCAP region using the proportion of employment in the region within relevant industries—in this case, Utilities (NAICS 22) relative to the broader state. By utilizing employment within utilities to proportion these employment numbers, much of the employment impacts of constructing large-scale electricity generation projects, which are disproportionately less likely to be built within BARCAP region, are mitigated. Employment within the Utilities sector will continue to be very important as electricity providers increasingly have to monitor, operate, and plan for a greater number of the Distributed Energy Resources (DERs) coming online (as is detailed in BARCAP measures P-1 and P-2).

Waste and Materials Sector

Future employment estimates were taken from existing data from UC Berkeley Labor Center.[6] The report utilized 2016 Bureau of Labor Statistics Occupational Employment and Wage Statistics (BLS OES) data to estimate current employment in this sector. Current employment numbers were taken from the latest BLS OES data (May 2024) for the same NAICS codes used in the report to provide the most up-to-date figures.

Natural and Working Lands Sector

Employment estimates for this sector were derived using the Quarterly Census of Employment and Wages (QCEW) from the California Open Data Portal, aligned with relevant NWL North American Industry Classification System (NAICS) codes. These codes were selected based on the BARCAP definition of the NWL sector and informed by desktop research of California reports that assess land management industries and activities. The following NAICS codes were included: 111, 112, 112, 11511, 11521, 11531, 22131, 23799, 333111, 54162, 56173, 813312, 92512, 92613. Future employment estimates were drawn from economic modeling conducted in the CARB 2022 Scoping Plan.[7]

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[1] "Driving California's Transportation Emissions to Zero." University of California Institute of Transportation Studies, 2021. https://escholarship.org/uc/item/3np3p2t0

[2] "Bay Area Priority Climate Action Plan Appendix E: Workforce Planning Analysis Documentation." BW Research and Bay Area Air District, 2024. https://www.baaqmd.gov/en/plans-and-climate/climate-planning/bay-area-regional-climate-action-planning-initiative/priority-climate-action-plan

[3] "Evaluating Benefits from Transportation Investments Aligned with the Climate Action Plan for Transportation Infrastructure (CAPTI)." San Jose State University Mineta Transportation Institute, 2023. https://transweb.sjsu.edu/sites/default/files/2227-Alexander-California-Climate-Action-Plan-Transportation-Infrastructure.pdf

[4] "California Building Decarbonization Workforce Needs and Recommendations." UCLA Luskin Center for Innovation, 2019. https://innovation.luskin.ucla.edu/wp-content/uploads/2019/11/California_Building_Decarbonization.pdf

[5] "Role of Distributed Generation in Decarbonizing California by 2045." Vibrant Clean Energy, 2021. https://vibrantcleanenergy.com/wp-content/uploads/2021/07/VCE-CCSA_CA_Report.pdf#:~:text=The%20total%20full%20time%20equivalent,scale%20solar%20and%20storage%20by

[6] "Putting California on the High Road: A Jobs and Climate Action Plan for 2030." UC Berkeley Labor Center, 2020. https://laborcenter.berkeley.edu/wp-content/uploads/2020/08/Chapter-9-Waste-Sector-Putting-California-on-the-High-Road.pdf

[7] "Scoping Plan for Achieving Carbon Neutrality." California Air Resources Board (CARB), 2022. https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents

Appendix B: Ecosystem of Initiatives Across BARCAP Sectors

The following list of initiatives and efforts highlights several key organizations that apply to all five sectors. It should not be considered an exhaustive list. See the appendix to this document, Appendix D: References, for links to programs.

Organization / Initiative / Program	Description
Anchoring Worker Cooperative Hubs	Plan to develop worker-owned co-op centers in each Bay Area county to empower excluded workers and expand access to green economy opportunities
High Road to Early Childhood Education Consortium	Expands affordable childcare, addressing the need for subsidized care during non-traditional hours
Regenerative Jobs Program	Offers environmental-based workforce training and holistic career development for underrepresented communities
Clipper START	Provides discounted public transit rides to eligible individuals in Equity Priority Communities to expand job access
Kids Konnect Childcare Financial Assistance Programs	Partners with multiple organizations across California to offer subsidized childcare and provide support to families looking for quality childcare
Bay County ARPA Childcare Grant Program	Awards $300,000 to expand childcare capacity and access in Bay County, addressing workforce shortages and affordability barriers
Oakland Forward	Provides paid employment and career development for youth ages 16–30 in climate resilience, public service, and public safety sectors
Women's Environmental Network (WEN)	Builds a Bay Area community of women advancing environmental leadership, careers, and stewardship
Young Professionals in Energy	Connects energy professionals through networking, tours, and educational events to foster industry leadership and community engagement
East Bay Works	Offers free employment services and support to job seekers and youth through a regional network of job centers and partners
Youth Opportunity Pathways (YOP)	Equips Bay Area youth with career skills and hands-on learning through nonprofit and corporate partnerships, with youth co-designing their pathways
SEI's Climate Corps	A fellowship program that trains and places emerging professionals in sustainability and climate action roles through hands-on project experience

Appendix C: Ecosystem of Funding

The following table outlines several key workforce funding opportunities by sector that are available at the time the BARCAP is published. It does not represent an exhaustive list of available funding. See the appendix to this document, Appendix D: References, for links to funding programs.

A variety of federal and state grant portals, agency solicitation sites, and workforce and climate funding resources informed this funding inventory review, including:

- Grants.gov
- California Grants Portal
- California Energy Commission Solicitations
- Federal Green Economy Public Funding Tracker - UC Berkeley Labor Center
- Department of Labor Grants | U.S. Department of Labor
- Funding Opportunities | Department of Energy
- Funding Resources - California Climate and Energy Collaborative
- Grant Information | California Workforce Development Board
- California Climate Investments Funding Resources
- California Employment Development Department
- California Air Resources Board
- CalRecycle Funding
- California Department of Conservation Funding, Grants, & Easements

BARCAP Sector	Funding Program	Grantor	Description	Funding Amount
All Sectors	Employment and Training Pathways Program (ETPP)	California Employment Development Department	Supports projects that expand access to high-quality, career-connected learning for Californians facing systemic employment barriers, including English language learners, justice-involved individuals, opportunity youth, and veterans	$500,000 – $2,000,000
All Sectors	Sales Tax Exclusion (STE) Program	California State Treasurer's Office	Provides sales and use tax exclusions for manufacturers investing in clean energy, recycling, and advanced manufacturing equipment, supporting innovation and job creation	Total available: $100,000,000
All Sectors	Employment Training Panel (ETP) Funding	California Employment Training Panel	Provides funding to employers to deliver workforce training that upgrades employee skills, supports job retention, and promotes	Case Dependent/TBD

			high-wage, long-term employment opportunities	
All Sectors	Apprenticeship Innovation Funding (AIF)	California Department of Apprenticeship Standards	Invests in expanding and sustaining apprenticeship programs across non-traditional industries to scale workforce development in high-demand sectors	Approx. $22,000,000 for FY25-26
All Sectors	Homeless Veterans Reintegration Workforce Program	U.S. Department of Labor - Veterans Employment and Training Service	Supports veterans reach their full employment potential and obtain high-quality career outcomes; helps veterans return to work by providing job training services that support their needs	Program Funding: $23,000,000 Award Minimum: $150,000 Award Maximum: $500,000
All Sectors	Helping Justice-Involved Reenter Employment (HIRE)	California Workforce Development Board	Aims to increase employment opportunities and job mobility for justice-involved individuals by supporting training, supportive services, reskilling and upskilling, and needs-related payments	Available Funding: $50,000,000 Amount Awarded: $29,289,309
All Sectors	Workforce Accelerator 12 Grant Program	California Workforce Development Board	Supports local workforce board development and implementation of projects that incorporate High Road strategies	Available Funding: $3,000,000 Amount Awarded: $2,900,000
All Sectors	Workforce Accelerator 13 Grant Program	California Workforce Development Board	Focuses on workforce development projects that will drive quality jobs for California workers, incorporating High Road principles into projects that improve job quality, create upward mobility, and bridge workforce programs to quality jobs for workers from disadvantaged or low-income communities	Available Funding: $3,000,000 Amount Awarded: $2,900,000
All Sectors	Employment Pathways Technical Assistance Grant	California Employment Development Department	Provides funding for technical assistance and developmental evaluation to grantees of the PY 25-26 Employment and Training Pathways Program grants	Total available: $1,500,000
Buildings	MCE Support to Grow Contractor Business	MCE	Supports residential contractors in Bay Area counties by offering funding, training stipends, and access to pre-vetted job seekers to help grow their businesses	$3,500+
Buildings	YouthBuild 2025	U.S. Department of Labor - Employment and Training Administration	Provides pre-apprenticeship construction skills training, education, and job placement services to opportunity youth and prepares participants for quality jobs in various industry sectors; includes wrap-around supportive services such as assistance in transportation, childcare, and housing.	Program Funding: $98,000,000 Award Minimum: $1,000,000 Award Maximum: $2,000,000
Natural & Working Lands	Career Pathways Grants Program	Parks California	Funds partnerships that provide career training and mentorship to support workforce development in California parks, integrating	Case Dependent/TBD

			diverse perspectives and Indigenous knowledge into public land stewardship	
Transportation	Caltrans Sustainable Transportation Planning Grant	California Department of Transportation	Funds multimodal transportation and land use planning initiatives that reduce greenhouse gas emissions, improve system performance, and support economic equity by enabling opportunities for individuals with barriers to employment	$50,000 – $700,000
Transportation	Human Resources & Training - 5314 (b)	U.S. Department of Transportation Federal Transit Administration	Supports public transportation workforce development through innovative training, research, outreach to underrepresented populations, and national standard-setting in partnership with industry stakeholders	Case Dependent/TBD
Transportation	CEC Clean Transportation Program	California Energy Commission	Funds workforce training and development initiatives to grow California's zero-emission vehicle and infrastructure workforce, creating long-term career pathways in the clean transportation sector	Case Dependent/TBD
Transportation	Planning Capacity Building Grants	California Air Resources Board	Supports early-stage planning, outreach, workforce development, and community readiness for equitable clean transportation solutions, with a focus on Tribal, rural, school-based, and first-time applicants	Up to $500,000 per award
Transportation	Pay-for-Performance Incentive Payments Program	U.S. Department of Labor - Employment and Training Administration	Incentivizes the expansion and growth of the National Apprenticeship System, specifically in the following sectors: transportation, AI/semiconductors/nuclear energy, IT, healthcare, telecommunication, shipbuilding/defense	Program Funding: $145,000,000 Award Minimum: $10,000,000 Award Maximum: $40,000,000
Waste & Materials	Edible Food Recovery Grant Program	CalRecycle	Funds projects that expand food recovery and waste-reduction efforts to keep food out of CA landfills	TBD

Appendix D: References

Transportation Sector Ecosystem of Key Stakeholders and Programs

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2. Zero Emission Bus University (ZEBU): https://www.actransit.org/zeb
3. CalTrans Workforce Development Branch: https://dot.ca.gov/programs/civil-rights/workforce-development-branch
4. Electric Vehicle Infrastructure Training Program (EVITP) - California Energy Commission: https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/clean-transportation-funding-areas-2-0
5. California Transit Works! (CTW): https://cwdb.ca.gov/wp-content/uploads/sites/43/2024/10/HRTP-2024.CTW_.High-Road-to-Public-Transit_ACCESSIBLE.pdf
6. Contra Costa Harnessing Change: Refinery Transition Partnership (CCRTP): https://cwdb.ca.gov/wp-content/uploads/sites/43/2023/08/2022.HRTP_.BGAF_.Contra-Costa-Harnessing-Change_ACCESSIBLE.pdf
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Building Sector Ecosystem of Key Stakeholders and Programs

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2. California Heat Pump Partnership: https://heatpumppartnership.org/wp-content/uploads/2025/03/CAHPP_Blueprint_2025.pdf
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6. Catalyzing Quality Careers in Building Decarbonization - Rising Sun Center for Opportunity: https://www.allhomeca.org/catalyst-projects/catalyzing-quality-careers-in-building-decarbonization/

7. East Contra Costa Healthy Homes Collaborative - Richmond Community Foundation: https://www.allhomeca.org/catalyst-projects/the-east-contra-costa-healthy-homes-collaborative/
8. JobTrain: https://www.jobtrainworks.org/
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10. Opportunity Build - Rising Sun Center for Opportunity: https://risingsunopp.org/programs/opportunity-build/
11. Climate Careers - Rising Sun Center for Opportunity: https://risingsunopp.org/programs/climate-careers/
12. Catalyzing Quality Careers in Building Decarbonization - Rising Sun Center for Opportunity: https://www.allhomeca.org/catalyst-projects/catalyzing-quality-careers-in-building-decarbonization/
13. High School Girls Construction Camp - Trades Women, Inc.: https://www.allhomeca.org/catalyst-projects/twi-high-school-girls-construction-camp/
14. City Build - San Francisco Office of Economic and Workforce Development: https://www.sf.gov/departments--workforce-development-division--citybuild
15. Workforce Development Services - Family & Child Empowerment Services (FACES): https://facessf.org/our-programs/workforce-development/
16. SEI's Energize Careers: https://www.energizecareers.org/participate.html
17. Installation Basics Training 200 (IBT 200) - GRID Alternatives: https://gridalternatives.org/ibt200?faIframeUniqueId=l42sjv4w4k&hostURL=https://gridalternatives.org/ibt200/sign-up&jsid=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.ImQ5ZGQ2MTQwNTlhMTUwM2VkODY1OWQ5ODA2ZjFkNjRmIg.hCnAewVYIdZuoaSPcjHQgWBZ65hiYZ-si1e0Q8hq0Io
18. NextGen Trades Academy - Lime Foundation: https://www.thelimefoundation.org/nextgen-trades-academy/
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20. Equal Representation in Construction Apprenticeship (ERiCA) Grant - Department of Industrial Relations: https://www.grants.ca.gov/grants/equal-representation-in-construction-apprenticeship-erica-grant/
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2. Bay Area High-Road Manufacturing Initiative - Working Partnerships USA: https://www.allhomeca.org/catalyst-projects/bay-area-high-road-manufacturing-initiative/
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6. The Energy Skills Collaborative (TESC): https://energyskillsca.org/
7. Bay Area E-Contractor Academy - Emerald Cities Collaborative: https://emeraldcities.org/bayareaecontractoracademy/
8. Bay Area Regional Energy Network (BayREN): https://www.bayren.org/
9. SunWork Volunteer Training Program: https://sunwork.org/volunteer/#get-involved
10. College of San Mateo Electrical Power Systems Certificate: https://collegeofsanmateo.edu/powersystems/
11. Contra Costa Harnessing Change: Refinery Transition Partnership (CCRTP): https://cwdb.ca.gov/wp-content/uploads/sites/43/2023/08/2022.HRTP_.BGAF_.Contra-Costa-Harnessing-Change_ACCESSIBLE.pdf

Waste and Materials Sector Ecosystem of Key Stakeholders and Programs

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2. Civicorps: https://cvcorps.org/programs/careers/#career-pathways
3. Conservation Corps North Bay: https://www.ccnorthbay.org/careerpathways/
4. California Climate Action Corps (CCAC) Fellowship: https://www.californiavolunteers.ca.gov/climateactioncorps/
5. Community Composting for Green Spaces – California Alliance for Community Composting: https://www.thecacc.org/projects
6. Gardening and Composting Educator Training Program (Get Up!): https://www.gardenfortheenvironment.org/getup

Natural & Working Lands Sector Ecosystem of Key Stakeholders and Programs

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3. Civicorps: https://cvcorps.org/programs/careers/#career-pathways
4. Friends of the Urban Forest: https://www.friendsoftheurbanforest.org/workforce-development
5. Conservation Corps North Bay: https://www.ccnorthbay.org/careerpathways/
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Ecosystem of Funding

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Appendix G
Funding Roadmaps

March 2026

Bay Area Regional Climate Action Plan

Building a Resilient Climate Action Funding and Financing Strategy: Pathways to Capital for the Bay Area Regional Climate Action Plan

Produced by HIP (Human Impact + Profit) Investor, www.HIPinvestor.com

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The Climate Action Funding and Financing Strategy distills HIP Investor's research on sources of capital for climate action for the Bay Area Regional Climate Action Plan (BARCAP). The resulting roadmap provides a practical framework to guide local governments and communities in mobilizing a resilient mix of capital types, partners, and resources for equitable climate action.

Over the past two years, HIP has worked closely with the Bay Area Air District (Air District) to develop a strategic approach to funding and financing climate action. Initially, HIP and the Air District co-developed a database of Federal, State, and Local climate funding programs, and an assessment of funding gaps for a targeted regional Priority Climate Action Plan (or PCAP).

For the BARCAP, HIP and the Air District collaborated to identify high-impact, capital-intensive climate action measures to match against HIP's catalog of more than 100 funding mechanisms and assemble a menu of viable pathways to capital. These funding pathways span grants, public-private partnership structures, loans, private credit, bonds, taxes, and fees – which offer multiple options to cover both the governmental and community costs of implementing the BARCAP.

This funding strategy is not intended to list every possible grant or loan program in existence. Instead, it illustrates the breadth of funding sources that can support BARCAP measures and provides examples that have been implemented at least once nationally or globally – thus offering a pragmatic roadmap for implementation.

Each listed pathway (framed horizontally) is organized by the following: capital type, potential funding pathway, key partners or resources, and a tailored case study, with an emphasis on Bay Area and California examples to support local adoption. Any specific resources, partners, and case studies mentioned are not endorsements, but potential collaborators who have implemented at least one similar project.

The funding strategies shown here demonstrate that ambitious climate action can be fiscally sound, relying on a balanced blend of capital rather than solely on taxes, fees, debt, municipal bonds, or general fund expenditures.

When structured appropriately, financed projects can generate savings and revenue that exceed repayment costs. Grants can be a limited resource for pilot projects to prove a concept when the internal resources exist to manage the application and tracking process. Public-private partnerships allow governments to offload portions of project financing and performance risk to private partners, often at the cost of sharing future revenues or limiting potential gains for the public sector, as in an energy savings performance contract or a power purchase agreement.

The deliberate and disciplined blending of grants, public capital, private investment, and risk-sharing structures in these funding pathways results in a real-world framework for supporting climate action.

Climate Action Funding & Financing Map

Pathways to Capital for The Bay Area Regional Climate Action Plan

February 2026

Bay Area Air District

Regional Climate Action Strategy	Capital Types	Top Funding and Finance Pathways	Programs and Partners	Case Examples
POWER SECTOR **Measure P-1** Increase Development of In Front-Of-The-Meter Small and Medium Sized Local Clean Energy Projects	**GRANT**	State Grants via CA Energy Commission	CERRI	Anaheim PUB
	GRANT	State Grants via CA Public Utilities Commission	EPIC Grant, CSGT and DAC-GT	Ava / Oakland, CA Adelanto, CA
	GRANT	State Grant via CA Strategic Growth Council	Transformative Climate Communities (TCC)	Stockton, CA Pacoima / Sun Valley
	GRANT	Federal & State Grants via Solar For All **	California iBank GRID Alternatives	Energy For All
	GRANT	Federal & State Grants via EPA	Brownfield Revolving Loan Fund Grant Program	Carson, CA
	GRANT	Federal Grant via Department of Energy	Grid Resilience & Innovation Partnerships (GRIP)	Entergy New Orleans Redwood Coast
	PARTNER	DOE Technical Assistance	Nat Com Solar Partn (NCSP) Office of Indian Energy	Canal Lines LLC San Pasqual Mission
	PARTNER	Power Purchasing Agreement	ENGIE, Ameresco GRID Alternatives	Glendale, San Jose, CA, Oxon Run DC
	PARTNER	Collaborative Community Ownership	Inclusive Prosperity Capital People Powered Solar Coop	Oakland, CA Boardman Hill, VT
	PARTNER	Utility-Led Incentives *	PG&E / CPUC CMIP & MIP Microgrid Incentive Program	9 Nor Cal Microgrids
	LOAN	Tax-Exempt Lease Purchase Agreement	GS (Golden State) $mart	Bloomington, IN
	LOAN	Green Bank or Revolving Loan Fund	Coalition For Green Capital	Washington DC
	LOAN	State Revolving Loan Fund	Infrastructure State Revolving Fund (ISRF) Program	Orange County Library
	LOAN	Private Investment Firm Loan	Generate Capital	Goldenrod Mercer, IL MCE Richmond
	BOND	General Obligation Bond (Green)	California Infrastructure and Econ. Dev. Bank (IBank)	Bright Farms DeKalb County, IL

Measure P-1: Increase Development of Local Clean Energy and Storage Projects (with a Focus on Small- to Medium-Scale Projects), Including Behind-the-Meter and Distributed Energy Resources

Pathways highlighted in darker gray are particularly applicable and/or accessible to the Bay Area Community

** Indicates a pathway may Involve Residential & Commercial Costs*

*** Pathway cancelation currently under dispute or may not have future funding*

**** Case Study is an imperfect fit, but the measure is fundable through this pathway and program*

Resources, partners, and case studies are not endorsements, but examples where at least one similar project has been implemented

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HIP INVESTOR Human Impact + Profit

Bay Area Air District

Climate Action Funding & Financing Map

Pathways to Capital for The Bay Area Regional Climate Action Plan

February 2026

Regional Climate Action Strategy	Capital Types	Top Funding and Finance Pathways	Programs and Partners	Case Examples
POWER SECTOR **Measure P-1** Increase Development of Behind -The-Meter Local Clean Energy Projects	**GRANT**	State Grant via CA Energy Commission	BUILD, CalEHP	CalEHP (Electric Homes Program)
	GRANT	State Grant via CA Strategic Growth Council	Transformative Climate Communities (TCC)	West Fresno, CA
	GRANT	Federal & State Grants via Solar For All **	California iBank Grid Alternatives	Energy For All
	PARTNER	State Solar Incentives for Disadvantaged Communities	Grid Alternatives DAC-SASH	PG&E Projects
	PARTNER	State Incentive Program (CA-PUC)*	Solar on Multi-Family Affordable Housing (SOMAH)	Saint Mary's Oakland,CA
	PARTNER	State Incentive Program (CA-PUC)*	Self-Generation Incentive (SGIP)	SGIP Self Generation Incentive Program
	PARTNER	Energy Savings Performance Contracts	Ameresco, CMTA	Grant Co. Schools, WV
	PARTNER	Private Financing + Project Management	ENGIE North Am	Belle Haven, Menlo Park, CA
	LOAN	Solar Billing Plan / On-Bill Financing (Tariff) *	PG&E Net Billing Plan PG&E On-Bill Financing	San Jose, CA Bay Area Home
	LOAN	PACE or C-PACE Financing *	CaliforniaFirst / Renew Financial	Sunnyvalley Smoked Meats, Manteca, CA
	LOAN	Green Bank or Revolving Loan Fund *	Coalition For Green Capital	Connecticut Green Bank
	LOAN	Federal or State Loan Program *	GoGreen Financing	GoGreen Case Studies
	LOAN	State Revolving Loan Fund	Infrastructure State Revolving Fund (ISRF) Program	Orange County Library
	LOAN	Federal Loan Program *	Energy Efficiency and Conservation Loan Program	REAP (Rural Energy for America) Recipients
	LOAN	HomeStyle Energy Mortgage *	Fannie Mae, New American Funding	Agrisolar & Fannie Mae, GBREB sample

Measure P-1: Increase Development of Local Clean Energy and Storage Projects (with a Focus on Small- to Medium-Scale Projects), Including Behind-the-Meter and Distributed Energy Resources

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Resources, partners, and case studies are not endorsements, but examples where at least one similar project has been implemented

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Climate Action Funding & Financing Map

Pathways to Capital for The Bay Area Regional Climate Action Plan

February 2026

Regional Climate Action Strategy	Capital Types	Top Funding and Finance Pathways	Programs and Partners	Case Examples
Power Sector **Measure P-2.1** Increase Key Public & Community Facilities with Clean Resilience Power and Storage	**GRANT**	State Grants via Governor's Office / Integrated Climate Adaptation and Resiliency Programs (ICARP)	Regional Resilience Planning & Implementation Grant Program	2023 ICARP Grantees
	GRANT	State Grant via CA Strategic Growth Council	Community Resilience Centers Grant Program	2024 CRC Planning Grantees
	GRANT	Federal Grants via FEMA	FEMA Hazard Mitigation Program (BRIC Program)	St. Croix, U.S. Virgin Islands (USVI)
	GRANT	Federal Grants via Department of Energy	Grid Resilience & Innovation Partnerships (GRIP)	The Hoopa, Yurok, and Karuk Tribes
	GRANT	Foundation Grants *for all aspects of Resilience Hubs*	Hilton Foundation ; California Resilience Partnership	San Diego, CA
	PARTNER	Utility-Led Incentives *	PG&E / CPUC CMIP & MIP Microgrid Incentive Program	9 NorCal Microgrids
	PARTNER	Public Private Partnership (PPP)	BayREN Pub. Building Assist Gridscape Solutions	Fremont, CA White Earth Nation
	PARTNER	Nonprofits, Educational Institutions, Libraries and/or Foundations as locations	BayREN Community Resilience Center Res.	West Oakland Branch Library
	LOAN	Private Investment Loan *for microgrid and efficiency costs*	Generate Capital	Green Mountain, NC
	LOAN	State Low Interest Loans	Energy Conservation Assist. Act Low-Interest Loans	San Diego, CA
	LOAN	Green Bank	Coalition For Green Capital	Takoma Park, MD
	BOND	General Obligation Bond (Green)	California Infrastructure and Econ. Dev. Bank (IBank)	Lincoln Square Park Oakland, CA

P-2.1: Increase the number of critical public facilities with reliable clean backup power and key community facilities with clean resilient energy resources (e.g., solar+storage, microgrids), such as resilience hubs, in coordination with local government emergency response managers and plans. In some cases, solar+storage hybrid may be necessary depending on end use.

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Bay Area Air District

Climate Action Funding & Financing Map

Pathways to Capital for The Bay Area Regional Climate Action Plan

February 2026

Regional Climate Action Strategy	Capital Types	Top Funding and Finance Pathways	Programs and Partners	Case Examples
Power Sector **Measure B-1, B-2, B-3** Advance Decarbonization & Public Health Through Electrification & Energy Efficiency	**GRANT**	State Grant via CA Energy Commission	BUILD (Low Emissions Dev.) CalEHP (Electric Homes Prog)	Rancho Cordova, CA CalEHP Impact Map
	GRANT	State Grant via CA Strategic Growth Council	Transformative Climate Communities (TCC)	West Fresno, CA
	GRANT	State Grant for Workforce Training	Cal EDD ETPP Cal ETP	NYSERDA's Workforce Development (WFD)
	PARTNER	State Incentives via Golden State Rebate*	Golden State Rebates	Buyers Guide
	PARTNER	Utility and CCA-led Incentives *	PCE Rebates Program PG&E Business Rebates	San Mateo Co. BayREN Lincoln Ave
	PARTNER	Weatherization Assistance Programs (WAP) + Incentives *	BayREN EASE Program CA Weatherization AP	Madera County, CA
	PARTNER	Statewide Incentives Program	TECH Clean California	Redwood Coast Energy Authority
	PARTNER	Energy Savings Performance Contracts	Ameresco, Schneider Electric	Anderson, CA Westin Rancho Mirage
	PARTNER	Public Private Partnerships (PPPs)	CA Heat Pump Partnership (CAHPP)	New Program Blueprint
	PARTNER	Private Financing + Project Management	ENGIE North America	Belle Haven, Menlo Park, CA
	LOAN	On-Bill Financing *	PG&E Energy Efficiency Financing (EEF) Program	Clayburn Apartments, San Jose, CA
	LOAN	PACE or C-PACE Financing *	CaliforniaFirst / Renew Financial	Sunnyvalley Smoked Meats, Manteca, CA
	LOAN	Green Bank or Revolving Loan Fund *	Coalition For Green Capital	Connecticut Green Bank
	LOAN	Federal or State Loan Program *	GoGreen Financing	Meadowcrest Energy Upgrade (Sherman Oaks, CA)
	LOAN	Federal Loan Program *	Energy Efficiency and Conservation Loan Program	REAP: Rural Energy for America (Recipients)
	LOAN	HomeStyle Energy Mortgage *	Fannie Mae, New American Funding	Roc360 Case Studies

B-1: Support Implementation of the Air District's Zero- NOx Building Appliances Rules by Addressing Key Opportunities and Challenges

B-2: Advance Decarbonization and Public Health Goals by Integrating Electrification Incentives with Home Repair and Weatherization Services and Other Non-Energy Programs Targeted Toward Low-Income and Frontline Communities

B-3:Support Collaborations and Partnerships to Ensure the Building Decarbonization Workforce is Successful, Skilled, and Diverse Enough to Serve the Entire Region Effectively and in a Culturally Competent Manner

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Resources, partners, and case studies are not endorsements, but examples where at least one similar project has been implemented

Bay Area Air District

Climate Action Funding & Financing Map

Pathways to Capital for The Bay Area Regional Climate Action Plan

February 2026

Regional Climate Action Strategy	Capital Types	Top Funding and Finance Pathways	Programs and Partners	Case Examples
TRANSPORTATION SECTOR **Measure T-1** Accelerate Light-Duty Electric Vehicle and Charging Adoption `T-1: Accelerate Light-Duty Electric Vehicle Adoption	**GRANT**	State Grants via CARB / Bay Area Air District	Clean Cars 4 All Charge! Program	SF, Oakland, Vallejo, San Rafael, and more
	GRANT	State Grant via CARB	Planning and Capacity Building Grants	Pittsburg, Pleasanton San Mateo, and more
	GRANT	Federal & State Grants via CEC and Caltrans	National EV Infrastructure Formula Program (NEVI)	Boulder County, CO
	PARTNER	Tribal Nations Technical Assistance	Technical Assistance for Tribal Nations	San Pasqual Mission Indians Microgrid
	PARTNER	Federal Incentives	EV Charging Property Tax Credit (30C)	Stanford Analysis
	PARTNER	Utility Incentives, Pricing Plans, & Rebates *	Alameda Municipal Power; PG&E Rebates	Avista Corp - PNW; C40: Oslo, Shenzhen
	PARTNER	PPP with Operations and Maintenance *	Carbon Solutions Group; Blink; ChargePoint	Porterville, CA
	PARTNER	State Infrastructure Incentive Program *	CALeVIP; Communities In Charge	Livermore, Fremont, San Jose, and more
	LOAN	State Loan (with Loan Loss Reserve) *	CalCAP (current lender list)	Los Angeles + Noodoe EV
	FEE	Variable Pricing Model, Idling Fee	Carbon Solutions Group; NovaCHARGE	Chapel Hill, NC

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Climate Action Funding & Financing Map

Pathways to Capital for The Bay Area Regional Climate Action Plan

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Bay Area Air District

Regional Climate Action Strategy	Capital Types	Top Funding and Finance Pathways	Programs and Partners	Case Examples
TRANSPORTATION SECTOR **Measure T-2, T-3** Accelerate Medium- and Heavy-Duty Electric Vehicle and Charging Adoption Measure T-2: Accelerate Medium- and Heavy-Duty Vehicle and Equipment Decarbonization T-3: Accelerate Decarbonization of Goods Movement	**GRANT**	State Grants via CARB	Clean Truck & Bus Vouchers (HVIP), Clean Mobility In Schools	Outcomes & Results
	GRANT	State Grants via CARB	Planning and Capacity Building Grants	CMO Awards Dashboard
	GRANT	State Grant via CalSta	Zero-Emission Transit Capital Program	BART, UCLA & Central Costa Costa
	GRANT	State Grant via CEC Clean Transportation Program	Charging Infrastructure for Medium- and Heavy-Duty	Long Beach, CA
	GRANT	Federal / State Grants via CEC and Caltrans	National EV Infrastructure Formula Program (NEVI)	Boulder County, CO
	PARTNER	Tribal Nations Technical Assistance	Technical Assistance for Tribal Nations	San Pasqual Mission Indians Microgrid
	PARTNER	Incentives From CARB / Bay Area Air District *	Carl Moyer Memorial Program	2024 Program Stats
	PARTNER	Utility Incentives, Pricing Plans, & Rebates *	CEC EnergIIZE, PG&E Grants & Incentives	SF Trolley, C40 Energize Impact Map
	PARTNER	PPP with Operations and Maintenance *	Carbon Solutions Group Blink, ChargePoint	Porterville, CA
	PARTNER	PPP with 'Fleet-as-a-Service' *	Carbon Solutions Group NovaCHARGE	Montgomery Schools
	PARTNER	State Infrastructure Incentive Program *	CALeVIP	Current Projects
	LOAN	State Loan via CARB *	Zero-Emission Truck Loan, Infrastructure Loan Pilot	Outcomes & Results
	LOAN	State Loan (with Loan Loss Reserve) *	CalCAP Zero-Emission Heavy-Duty Programs	Los Angeles + Noodoe EV

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TRANSPORTATION **Measures T-4 Plan Bay Area** Increase Access To Active Transportation, Transit, and Micro-Mobility (Plan Bay Area) Measure T-4: Support Implementation of Plan Bay Area 2050+	**GRANT**	State Grant via Caltrans	Active Transportation Program	Santa Barbara, CA
	GRANT	State Grant via CA Strategic Growth Council	Transformative Climate Communities (TCC)	Ontario, CA
	GRANT	State Vouchers via CARB & CEC	Clean Mobility Options Pilot Program (CMO)	San Jose, CA
	GRANT	Fed Grant via Department of Transportation	Buses & Bus Facilities Grants Program	Alameda-Contra Costa Transit District
	GRANT	Fed Grant via Department of Transportation	Capital Investment Grants Program	San Francisco, CA
	GRANT	Fed Grant via Department of Transportation	Reconnecting Communities Pilot Grant Program	Alameda CTC Philadelphia, PA
	GRANT	Fed Grant via Department of Transportation	Active Transportation Infrastructure Inv. Prog **	Yolo County, CA
	GRANT	Foundation Grants	People for Bikes; Outride	American Falls, Idaho
	PARTNER	PPP with Economic Development Council	Bay Area Council	Chattanooga, TN; Indianapolis Cultural
	PARTNER	PPP with Local Employers	Bay Area Council Economic Institute	Bay Area Shuttles St. Paul, MN
	PARTNER	PPP with 'Fleet-as-a-Service' *	PhoenixEV / Proterra	Santa Rosa, CA Valley Regional
	LOAN	State Government Loan Program	Infra. State Revolving Fund (ISRF) Program	Santa Cruz, CA
	LOAN	Federal Government Loan Program	TIFIA Transport Infra. and Innovation Act: Loan	State of Maryland
	BOND	General Obligation Bond	CA Alternative Energy & Adv Transp Fin Auth (CAEATFA)	San Diego County, CA
	FEE	Developer Impact Fee *	San Francisco Planning	Santa Monica, CA Watsonville, CA
	TAX	Enhanced Infrastructure Financing District *	Enhanced Infrastructure Financing District (CALED)	Los Angeles County, CA

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NATURAL AND WORKING LANDS SECTOR **Measures NWL-4** Expand and Maintain Urban Green Spaces While Advancing Environmental Justice Outcomes	**GRANT**	State Grant via Cal State Parks	Statewide Park Development and Community Revitalization Program	Richmond, CA
	GRANT	State Grant via California Natural Resources Agency	Environmental Enhancement & Mitigation Grant Program **	Los Angeles, CA
	GRANT	State Grant via CalRecycles	Community Composting for Green Spaces Grant	Fresno "Yo'Ville" Community Garden
	GRANT	Federal Grant via The Forest Service	Urban and Community Forestry Program	Manchester, NH
	GRANT	Local Grants via UC Berkeley	UC Berkeley: Chancellor's Community Partnership Fund	Berkeley, CA
	PARTNER	Private Public Partnership	CIS Solutions	Prince George's County, Maryland
	PARTNER	Community Based Partnership	Green Print Partners	SFPUC Greenprint Milwaukee MMSD
	LOAN	Federal Loan via Environmental Protection Agency (EPA)	Clean Water State Revolving Fund	El Cerrito, CA
	BOND	General Obligation Bond (Green)	California Infrastructure and Econ. Dev. Bank (IBank)	Prop 4 Climate Bond
	BOND	Environmental Impact Bond	Quantified Ventures	Southwest Colorado
	Incentive	Stormwater Credits*	SFPUC Stormwater Components & Credits	Springfield, OH
	Tax	Tax increment financing*	Enhanced Infra. Financing District Pub. Auth'y (EIFD)	Redondo Beach, CA; SD River Park District

NWL 4.1: Expand urban green spaces and prevent loss through new regional funding and technical support, prioritizing green spaces that benefit frontline communities

NWL 4.2: Advance environmental justice-centered approaches for urban greening through policy innovation, community-led planning, and support for frontline community land stewardship

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Regional Climate Action Strategy	Capital Types	Top Funding and Finance Pathways	Programs and Partners	Case Examples
NATURAL AND WORKING LANDS **Measures NWL-2, NWL-3,** Accelerate Implementation of Climate Beneficial Agriculture	**GRANT**	State Grant via California Dept. of Food & Agriculture	Healthy Soils Program	Sacramento, CA (Loewen Family Farm)
	GRANT	State Grant via CAL FIRE	Wildfire Prevention Grants	Nevada County, CA
	GRANT	State Grant via UC Agriculture Research & Education Program	Sustainable Agriculture and Food Systems small Grant	Oakland, CA
	GRANT	State Grant via CARB & Bay Area Air District	Funding Agricultural Replacement for Emission Reduction	San Joaquin, CA
	GRANT	Grants and on farm support	Zero Foodprint, Marin County Fare Program	San Rafael, CA San Diego, CA
	GRANT	Federal Grant via The Forest Service	Joint Chiefs' Landscape Restoration Partnership	Blackfoot River, MT
	GRANT	Federal Grant via The Forest Service	Community Wildfire Defense Grant Program	Lake County, CA
	GRANT	Federal Grant via Natural Resources Conservation Service	Conservation Tech. Assist Conservation Stewardship	Iowa Farmers
	GRANT	Federal Grant via Natural Resources Conservation Service	Regional Conservation Partnership Program (RCPP)	San Diego County
	GRANT	Federal Grant via Natural Resources Conservation Service	Environmental Quality Incentives Program (EQIP)	Fresno County, CA (McMullen Area Project)
	PARTNER	State Tax Credit via State Natural Heritage Preservation Tax Credit Program	Conservation Easements	Henry Ranch, near Napa Co., CA
	PARTNER	Private Public Partnership	Alameda County RCD, Carbon Cycle Institute, Fibershed	Marin County, CA
	LOAN	Federal Loan via Environmental Protection Agency (EPA)	Clean Water State Revolving Fund	San Francisco, CA
	BOND	Environmental Impact Bond	Quantified Ventures	Southwest Colorado

NWL-2: Prevent Losses of Carbon Held in NWL through Land Conservation, Wildfire Management, and Ecosystem Restoration

NWL 2.2: Increase fuel management and reduce wildfire risk on natural and working lands and at the wildland-urban-interface (WUI) through new funding and financing mechanisms, workforce development, and innovation

NWL-3: Enhance Carbon Sequestration and Reduce Greenhouse Gas Emissions through Management and Restoration of Agricultural and Working Lands

NWL 3.1: Scale climate-beneficial agriculture and catalyze widespread adoption of practices that increase or maintain above- and below-ground carbon stocks, and achieve climate resilience on working lands

NWL 3.5: Reduce energy-related emissions and increase groundwater recharge through adoption of sustainable water management practices

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NATURAL AND WORKING LANDS (NWL) SECTOR **Measures NWL-1.2, NWL 2.2, 2.3** Reduce Wildfire and Increase Fuels Management	**GRANT**	State Grant via California Natural Resources Agency	Tribal Nature-Based Solutions	Amah Mutsun Tribe
	GRANT	State Grant via CAL FIRE	Wildfire Prevention Grants & Tribal Wildfire Resil. Grants	Butte County; Koy'o Land Conserv.
	GRANT	Grants via Prop 4 through CAL FIRE	CalFire Regional Programs	Diablo Range, CA
	GRANT	Federal Grant via The Forest Service	Joint Chiefs' Landscape Restoration Partnership	Blackfoot River, MT
	GRANT	Federal Grant via The Forest Service	Community Wildfire Defense Grant Program	Lake County, CA
	GRANT	State Grant via Coastal Conservancy	Wildfire Resilience Program	Big Basin Redwood Wildfire Resilience
	GRANT	Grants Private Foundations & Philanthropy	Climate Smart Communities Initiative	New Orleans: Nevada Co. CA; and more
	PARTNER	Public Private Partnership via Dept Of Interior	Fuels Management Program and Preparedness Program	Animas City, CO
	PARTNER	Public Private Partnership Network	Climate Resilience Fund	Gordon and Betty Moore Foundation
	PARTNER	Network Technical Assistance	Fire Adapted Communities Learning Network	Montana Dept of Nat Res and Conservation
	PARTNER	Technical Assistance via US Forest Service	Community Mitigation Assistance Team (CMAT)	Lake Co. CA; Santa Fe NM; Mt. Hood OR, and more
	PARTNER	Network Technical Assistance & Certification	Firewise, CA Wildfire & Forest Resilience Task Force	CA Insurance Discounts
	PARTNER	Community Benefits Agreement	PowerSwitch Action	Lincoln County, MN
	LOAN	Federal Loan via Environmental Protection Agency (EPA)	Clean Water State Revolving Fund	Flagstaff, AZ; Yurok Tribe, CA
	BOND	Environmental Impact Bond (defined here)	Quantified Ventures	Southwest Colorado
	Tax	Personal Tax Benefits	WILTR: Wildlife Infra. And Land Tax Relief Act (proposed)	NC Tax Credit
	Tax	Tax Increment Financing (TIF); and Climate Resilience District	Regional Climate Protection Authority. ABAG	Sonoma County (Reg. Climate Prot. Auth'y)

NWL-1.2: Increase long-term funding for nature-based solutions through dedicated support for regional-scale grant writing and exploration of emergent sources of long-term funding

Measure NWL-2: Prevent Losses of Carbon Held in NWL through Land Conservation, Wildfire Management, and Ecosystem Restoration

NWL-2.2: Increase fuel management and reduce wildfire risk on natural and working lands and at the wildland-urban-interface (WUI) through new funding and financing mechanisms, workforce development, and innovation

NWL-2.3 Incentivize private landowners managing large land areas to manage fuel at scale through innovations in cost sharing and financing

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NATURAL AND WORKING LANDS SECTOR **Measures NWL-2.1** Increase Land Conservation Measure NWL-2: Prevent Losses of Carbon Held in Natural and NWL through Land Conservation, Wildfire Management, and Ecosystem Restoration NWL-2.1: Support conservation of lands at the regional scale through the Priority Conservation Area (PCA) Program	GRANT	State Grant via California Natural Resources Agency	Envir Enhancement Mitigation Tribal Nature-Based Solutions	Anaheim; Chino Hills CA; and local NGOs
	GRANT	Grant via Metro. Planning Commission (MTC)	Priority Conservation Area (PCA) Grants	Napa Soscol Headwaters Preserve
	GRANT	State Grant via Coastal Conservancy	Coastal Conservancy Grants	Trust For Public Land Sonoma Ecology Center
	GRANT	Federal Grant via The Forest Service	Joint Chiefs' Landscape Restoration Partnership	Blackfoot River, MT
	GRANT	Federal Grant via Natural Resources Conservation Service	Conservation Technical Assistance	Iowa Farmers
	GRANT	Federal Grant via Natural Resources Conservation Service	Regional Conservation Partnership Program (RCPP)	San Diego County
	PARTNER	Conservation Easements	Sonoma Open Space Peninsula Open Space Trust	Santa Clara Valley
	PARTNER	Incentive / Tax Credit For Conservation Easement Donation	Natural Heritage Preservation Program	Henry Ranch, near Napa Co., CA
	PARTNER	Carbon Credits	The Conservation Fund	Preservation Ranch Sonoma, CA
	PARTNER	Community Benefits Agreement	PowerSwitch Action	Los Angeles, CA
	LOAN	Federal Loan via Environmental Protection Agency (EPA)	Clean Water State Revolving Fund	Yurok Tribe, CA
	BOND	General Obligation Bond (Green)	California Infrastructure and Econ. Dev. Bank (IBank)	Buncombe Co, NC Prop 4 Climate Bond

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WASTE & MATERIALS **Measures W-1** Expand Access To Edible Food Waste Programs	**GRANT**	State Grant via CalRecycle	Community Composting for Green Spaces Grant	Fresno "Yo'Ville" Community Farm
	GRANT	State Grant via CalRecycle	Organics Grant Program	Foodbank of Santa Barbara
	GRANT	State Grant via California Natural Resources Agency	Urban Greening Program Envir Enhance. & Mitigation	San Pablo, Alameda Co., Watsonville, CA
	GRANT	State Grant via CA Strategic Growth Council	Transformative Climate Communities (TCC)	Fresno, CA
	GRANT	Local Grant	StopWaste, Altamont Education Advisory Board	Tri-Valley Haven Oakland USD
	GRANT	Fed Grant via EPA	Consumer Recycling Education and Outreach Grant Program **	Tacoma, WA
	GRANT	Philanthropic Grants	ReFED	New York State
	PARTNER	Public-Private Partnership	Recology	San Francisco, CA
	LOAN	State Government Loan Program	Recycling Market Development Revolving Loan Program	Riverside County, CA
	BOND	Tax-Exempt Bond - Loan Financing	California Pollution Control Financing Authority	Napa Recycling & Waste Services, LLC
	FEE	Land Tipping Fee*	CalRecycle	Alameda County, CA

Measure W-1: Enable Food Access and Clean Compost

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Appendix H
Glossary

March 2026
Bay Area Regional Climate Action Plan

Appendix H - Glossary

2022 Scoping Plan for Achieving Carbon Neutrality (Scoping Plan)	The State of California's plan to reduce greenhouse gas emissions by 85 percent below 1990 levels and achieve carbon neutrality by 2045.
Active transportation/transit	Walking, biking, roller skating, using mobility devices (wheelchairs or e-bikes/scooters), and other non-motorized travel modes.
Behind-the-meter (BTM)	Refers to generating power on the customer's side of the utility meter, such as rooftop solar.
Blue carbon	Carbon captured by the world's ocean and coastal ecosystems.
Brownfield-to-brightfield projects	Deployment of clean energy (often solar) on brownfields (i.e. abandoned, underused, or idled properties, often former industrial or commercial lands, with environmental contamination from past uses).
Building decarbonization	Transitioning buildings away from gas appliances to clean electric alternatives, paired with energy efficiency.
Cap-and-Invest program	Regulation that establishes a declining limit on major sources of greenhouse gas emissions in California. The state issues a declining number of allowances (or permits) equal to the total amount of permissible emissions (or 'cap'), which decreases each year, Revenue raised through issuing allowances goes into the Greenhouse Gas Reduction Fund to support a variety of programs and projects.
Carbon neutrality	Achieved when the amount of carbon dioxide emissions (CO_2) emitted into the atmosphere is offset by an equivalent amount removed, such as through sequestration, resulting in net-zero CO_2 emissions.
Carbon sequestration	The process of removing and storing carbon dioxide from the atmosphere naturally or artificially.
Carbon sink	A system or mechanism which absorbs more carbon dioxide from the atmosphere than it releases.
Carbon stock	The amount of carbon stored in a certain "pool" such as terrestrial ecosystems (forests, grasslands, etc).

Clean energy	Zero-emissions technologies that produce electricity without emitting greenhouse gases or harmful air pollution. Renewable natural gas and biodiesel are not considered clean energy sources due to air pollution impacts of combustion. Hydrogen, depending on how it is generated and used, may or may not be considered a clean energy source.
Climate adaptation	Process by which natural and human systems adjust to a new or changing climate.
Climate action plan	A roadmap for a city, state, region, nation, organization or community that outlines actions to reduce greenhouse gas emissions and track progress toward emission reduction goals.
Climate change	Changes to the Earth's climate that affect weather, oceans, ecosystems, and global temperatures. Human activities are driving climate change, primarily through the reliance on fossil fuels to power the economy, homes, and transportation that results in emissions of billions of tons of greenhouse gases each year.
Climate resilience	The capacity for entities (individual, community, organization, or natural system) to prepare for (climate-related) disruptions, recover from (climate-related) shocks and stresses, and adapt and learn from them (BARC, paraphrased from LCI).
Cogeneration facilities	Facilities that produce electricity on-site and utilize the thermal energy, or heat, released during generation of electricity for other processes.
Community-based organization (CBO)	A nonprofit or grassroots organization entity that operates within, serves, and is accountable to a specific geographic or demographic community, focusing on addressing local social, economic, health, or civic needs through direct services, advocacy, community organizing, and resident/worker engagement (MTC).
Community Choice Aggregators (CCAs)	Electricity providers who purchase electricity on behalf of the residents and businesses in their communities. They are public entities run by a city or county government or by a joint powers authority made up of two or more participating cities or counties.

Community solar	Solar projects or purchasing programs within a specific geographic area that benefit multiple customers such as individuals, businesses, nonprofits, and other groups. Customers typically subscribe to or own a portion of a solar array and receive credits on their electric bills for the power generated by their share (DOE).
Criteria air pollutants	Six air pollutants that the Clean Air Act directs the U.S. EPA to set standards for: particulate matter, ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide and lead. These pollutants can harm human health and the environment, and cause property damage.
Decarbonization	Transitioning fossil fuel energy-using appliances, equipment, and vehicles to clean electric alternatives, paired with energy efficiency.
Demand flexibility	Solutions that adjust energy usage to match electricity supply and can shift demand from periods when electricity is more expensive, polluting, and scarce to when it is cheaper, cleaner, and more plentiful (CEC).
Distributed energy resources (DERs)	Devices and technologies that interface with the electricity system at the building level by directly connecting to a utility's wires or on a customer's property behind the utility meter. Examples include rooftop solar and battery storage, electric vehicles and their charging stations, microgrids, as well as more traditional demand response resources and energy efficiency strategies (CEC).
Distribution lines	Power lines that deliver electricity from distribution substations (where voltages are reduced) to individual customers.
Electric vehicles	Vehicles that can be powered by electric motors that draw electricity from batteries and are capable of being charged by plugging into an external electrical source.
Electrification	Transitioning gas appliances, equipment, and vehicles to electric alternatives, paired with energy efficiency.
Embodied carbon	Greenhouse gas emissions from the lifecycle of materials, from raw material extraction, manufacturing, transport, and construction, to maintenance and eventual disposal.

Emergency diesel back-up generator (BUG)	Stationary power systems that supply electricity during a power outage in commercial, industrial, and residential buildings and homes by burning diesel fuel. These units should exclusively be operated for emergency use or for reliability-related activities.
Environmental justice	This term refers to the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (Gov. Code, § 65040.12(e)(1)). Dr. Bunyan Bryant, a pioneering environmental justice scholar, defines environmental justice as "...cultural norms and values, rules, regulations, behaviors, policies, and decisions [that] support sustainable communities where people can interact with confidence that the environment is safe, nurturing, and productive. Environmental justice is served when people can realize their highest potential … where both cultural and biological diversity are respected and highly revered and where distributive justice prevails."
Equity	In environmental justice work, equity is often defined as increasing access to power, redistributing, and providing additional resources, and eliminating barriers to opportunity to empower historically marginalized or otherwise disadvantaged communities to thrive and reach full potential (Bay Area Air District, paraphrased from the Greenlining Institute).
Feed-in tariff (FIT)	A standardized, long-term, guaranteed contract that enables smaller local renewable energy projects to sell power they generate directly to the local utility or another power provider. Market-based, cost-effective feed-in-tariffs with streamlined interconnection allow local entities, such as businesses, residents, and organizations, to install clean local energy projects in available spaces (Clean Coalition). MCE and Sonoma Clean Power currently have feed-in tariff programs.
First mile/last mile	The start or end of a trip, bridging public transit from the trip's origin and to its destination, e.g. walking to or from a bus stop.

Frontline communities	Communities who bear the brunt of the impacts from fossil fuel dependence, including poor air quality, and are often the first to experience climate impacts such as extreme heat. They may include communities of color, lower-income neighborhoods, and other historically marginalized groups and communities They are identified in the BARCAP region by using the US EPA Inflation Reduction Act Disadvantaged Communities tool and two frameworks used by Bay Area regional agencies to identify priority communities for regional planning efforts: the Assembly Bill 617 communities framework and the MTC Equity Priority Communities framework. To learn more about the data and tools used to identify frontline communities visit: BARCAP's Frontline Communities Map.
Global warming potential (GWP)	A measure of how much heat a specific greenhouse gas traps in the atmosphere, or its potential to warm the planet, relative to the same amount of CO_2. For example, over 100 years, a ton of methane produces an amount of heat equivalent to 34 tons of CO_2.
Greenhouse gas (GHG)	Gases that absorb and trap heat energy emitted from the Earth's surface, reradiating some of it back towards the surface and warming the atmosphere. Greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, halogenated fluorocarbons, ozone, perfluorocarbons, sulfur hexafluoride, and hydrofluorocarbons.
Grid-enhancing technologies	Sensors, power flow control devices, and analytical tools that maximize electricity transmission across the existing electric system or grid. They can reduce the need for new electric transmission infrastructure by increasing efficiency and capacity, and enabling the addition of clean, renewable power to the grid (DOE).
Hazardous air pollutants	Also known as toxic air contaminants, toxic air pollutants or air toxics, these pollutants may cause or contribute to an increase in mortality or in serious illness or that may pose a present or potential hazard to human health.
Heat pump space heaters	Space heating appliances that operate on electricity and use mechanical compression and evaporation (i.e. refrigerant cycle) to transfer thermal energy instead of generating heat directly by gas combustion, making them 3-5 times more efficient than natural gas options.

Heat pump water heaters	Water heaters that operate on electricity and use a refrigerant cycle to transfer heat from the surrounding air to the water instead of directly heating the water with gas combustion, making them 3-5 times more efficient than natural gas options.
Heavy-duty vehicle	Vehicles with a gross vehicle weight rating above 10,000 pounds.
Just transition	The California Workforce Development Board defines just transition as “integrated policy approaches offering protection, support, and compensation for displaced workers and communities in specific industries or regions” (CWDB).
Light-duty vehicle	Vehicles with a gross vehicle weight rating less than 8,500 pounds.
Load flexibility	Solutions that adjust load (or energy usage) to match electricity supply and can shift load or demand away from periods when electricity is expensive, polluting, and scarce to when it is cheaper, cleaner, and more plentiful (CEC).
Load shifting	The ability to shift or reduce electric demand from times of high demand (and often higher cost) and scarcity to periods of lower demand (CEC). This is often accomplished through electricity management equipment such as smart devices.
Medium-duty vehicle	Vehicles with a gross vehicle weight rating between 8,501-10,000 pounds.
Micro-grid	A small, local power system with its own power generators and distribution lines that supplies power to a specific area, such as a single building or group of buildings. It can connect to the main grid or operate as one single controllable entity independent of the main grid when necessary.
Nature-based solutions	Actions aimed at protecting, conserving, restoring, and sustainably managing natural lands and ecosystems, to address societal, economic and environmental challenges like climate change and its impacts (UNEP).
Reach code	An ordinance adopted by a local government that creates additional requirements going beyond those required by state statute.

Reconductoring	Replacing old, existing power line conductors with newer, more efficient conductors, which can increase how much electricity they can carry.
Redlining	Policies and practices that financing entities and governments deployed to segregate communities of color in “declining” neighborhoods while reserving the “best” and most “desirable” neighborhoods for white communities (Bay Area Air District, paraphrased from CalEPA).
Renewable energy	Energy produced from natural and continually replenishing resources such as sunlight, wind, water, and heat from the earth’s core (DOE).
SB 1383	California State Senate Bill 1383, the Short Lived Climate Pollutant Act, aims to reduce organic waste going to landfills by 75%, and recover and redirect 20% of currently wasted edible food to feed people.
Transmission lines	High-voltage power conductors that transmit electricity over long distances, from electricity generation sites to substations and the local power distribution system.
Transportation Demand Management (TDM)	Policies, programs, information, services, and tools to reduce single occupancy vehicle (SOV) trips by promoting public transit, carpooling, biking, walking, and flexible work schedules.
Vehicle miles traveled (VMT)	The number of miles a vehicle is driven that can be used as a metric to measure the number of miles traveled for all vehicles in a geographic region over a given time period. Annual VMT denotes the miles driven over a one-year period.
Vehicle-to-everything	Also known as bi-directional electric vehicle charging, it allows vehicle owners to use the energy stored in the electric vehicle’s battery to power homes, buildings, the wider grid, and other devices.
Virtual power plants (VPP)	Software-based system to manage distributed energy resources, such as rooftop solar, batteries, electric vehicle chargers, and appliances *(including smart thermostats, smart water heaters, smart plugs),* to support the electric grid and reduce costs to consumers. By aggregating distributed energy resources, they can help reduce the need for additional grid infrastructure and enhance local resilience.

Wildland-urban-interface (WUI)	The zone of transition between unoccupied land and human development. It is the line, area or zone where structures and other human development meet or intermingle with undeveloped wildland (FEMA).
Zero-emission vehicle (ZEV)	A vehicle that does not emit tailpipe emissions including air pollutants, toxic air contaminants, or greenhouse gas emissions.
Zero-NO_x building appliance rules	The Air District's Rules 9-4 and 9-6 that phase in requirements to reduce nitrous oxides (NO_x) from space and water heating appliances.

BARCAP Summary Response to Public Comment

The Air District received 409 comments during the public comment period. The table below summarizes major comment themes and describes how these comments were addressed. A number of comments raised issues that will best be addressed during the implementation of individual measures.

How to read the response to comments table:

- Sector – indicates which economic sector the comment addresses. Comments that address more than one sector, the planning approach, or high-level themes are labeled as "General."
- Comment Themes – summarizes the theme of similar comments that have been grouped together.
- Response – describes how comments were addressed and incorporated in the Bay Area Regional Climate Action Plan or how they will be addressed in the future.

Bay Area Regional Climate Action Plan Summary Response to Public Comments		
Sector	**Comment Themes**	**Response**
General	Include sustainable lifestyle choices such as diet changes, reduced vehicle miles traveled, and reduced consumption of goods	Added language in the Implementation chapter to emphasize the need for sustainability at all levels
General	Include people with disabilities when considering equity and access	Added language in the Introduction chapter recognizing people with disabilities and other groups at greater risk to climate change impacts
General	Include youth in outreach and education	Added language in the Implementation chapter to include youth in plan implementation and future outreach and education
General	Highlight the need for additional funding and financing opportunities	Added language in the sector chapters to emphasize the need for more funding
General	Modify the GHG emission charts, confusion around how to read	Replaced the charts in every chapter with new, easier to interpret graphics
Buildings	Acknowledge the need to grow the building decarbonization workforce, including the importance of outreach and engagement, training, and partnering with manufacturers, labor organizations, schools and colleges, need for targeted support for small and frontline contractors	Added new language to measure B-3 Additional partners including labor organizations will be considered during implementation

Buildings	Recognize obstacles to building electrification, including the lack of electrical capacity, the need for panel upgrades and installation challenges (e.g. space constraints)	Will be addressed during implementation of measure B-1
Buildings	Acknowledge need for funding/financing options for building electrification, particularly for low- to medium-income communities	Refined language in action B-1.4
Buildings	Include a concierge program for appliances, contractors, and incentives	May be considered during implementation of measure B1, depending on available funding
Buildings	Recognize the importance of public outreach and education regarding building decarbonization	Will be further considered during implementation
Buildings	Include zonal/neighborhood building decarbonization	Refined language in action B-2.3
Buildings	Include a measure or action on laws and reach codes to require or encourage building electrification	Outside of the scope of the plan, which focuses on regional actions; reach codes must be enacted at the local level
Natural and Working Lands	Incorporate concerns regarding green space access and community engagement and empowerment on green solutions	Language was refined in the NWL chapter to emphasize the importance of equity and community involvement in developing green spaces
Natural and Working Lands	Recognize importance of green infrastructure to reduce heat island effect and its impact on public health	Added more language on the threat of extreme heat in NWL sector narrative and in the climate resilience text box
Natural and Working Lands	Recommend actions around land use, removing paving, and dense in-fill housing	Added new language on removing paving in measure NWL 4 and on land use growth in the NWL chapter introduction
Natural and Working Lands	Recognize the importance of connecting with youth and schools on urban greening	Added language on the importance of youth education throughout the NWL chapter
Natural and Working Lands	Highlight the importance of coastal ecosystems and water systems as carbon sinks	Added language to measure B2 clarify and emphasize the importance of coastal and water systems
Power	Highlight the importance of enhancing energy resilience and resilience hubs	Refined the language in the power sector chapter regarding resilience
Power	Include greater adoption of solar energy projects on local properties such as schools, multifamily buildings, parking lots	Minimal language edits, language refined highlighting the important of local solar energy
Power	Acknowledge concerns regarding electricity rates and affordability	Added language in the Power sector narrative on how power sector

		measures can help apply downward pressure on rates
Power	Acknowledge concerns regarding data center energy use	Added a textbox discussing data center energy use
Power	Highlight the need to recognize storage as an important grid asset	Added language in the power sector narrative and measure co-benefits emphasizing the importance of energy storage deployment
Transportation	Kudos for the focus on frontline communities and multifamily residences for EV charging infrastructure, identified the need for more public charging infrastructure	No change needed
Transportation	Include concern regarding EV accessibility and cost	Refined language in action T-1.1
Transportation	Highlight the need for e-bike incentives and other micromobility devices	Refined language in action T-1.1
Transportation	Highlight the need for e-bike charging infrastructure and secure e-bike parking	Will be considered during implementation
Transportation	Acknowledge the importance of reducing airplane travel	Outside of the scope of the plan, which focuses on regional actions
Transportation	Acknowledge concerns regarding alternate vehicle fuels such as hydrogen fuel cells and low-carbon liquid fuels	Outside of the scope of the plan, which focuses on regional actions; requires state level action such as the Low Carbon Fuel Standard
Transportation	Include expanded and safe public transit and pedestrian, bicycle, and e-mobility infrastructure to reduce VMT and increase active transit	Added measure T-4 to support Plan Bay Area 2050+ implementation
Waste	Highlight expanded food recovery, recognizing food waste as a large emitter and highlighting the importance of addressing food waste in the near term	Refined language in the waste sector narrative and in measure W-1
Waste	Provide public education on food waste and proper organics sorting	Additional language added to action W-1 regarding priority groups for outreach such as multifamily property owners and tenants
Waste	Include durability of building materials and adaptability of building spaces	Added language to the Waste chapter highlighting the importance of durable and adaptable buildings and building materials
Waste	Support regulations and incentives to require or encourage low carbon concrete and other construction materials with low embodied GHG emissions in construction projects,	Added language to the sector narrative regarding materials with low embodied GHG emissions

	require public works projects to reduce embodied carbon, or GHG emissions associated with the lifecycle production of building materials	
Waste	Recognize concerns regarding incorrect or low code enforcement regarding building/construction requirements	Added language to emphasize the importance of code enforcement

Bay Area Air District

Update on Bay Area Regional Climate Action Plan

Board of Directors Meeting

April 1, 2026

Jamesine Rogers Gibson
Senior Advanced Projects Advisor
Planning and Climate Protection Division

Bay Area Regional Climate Action Plan (BARCAP) Overview



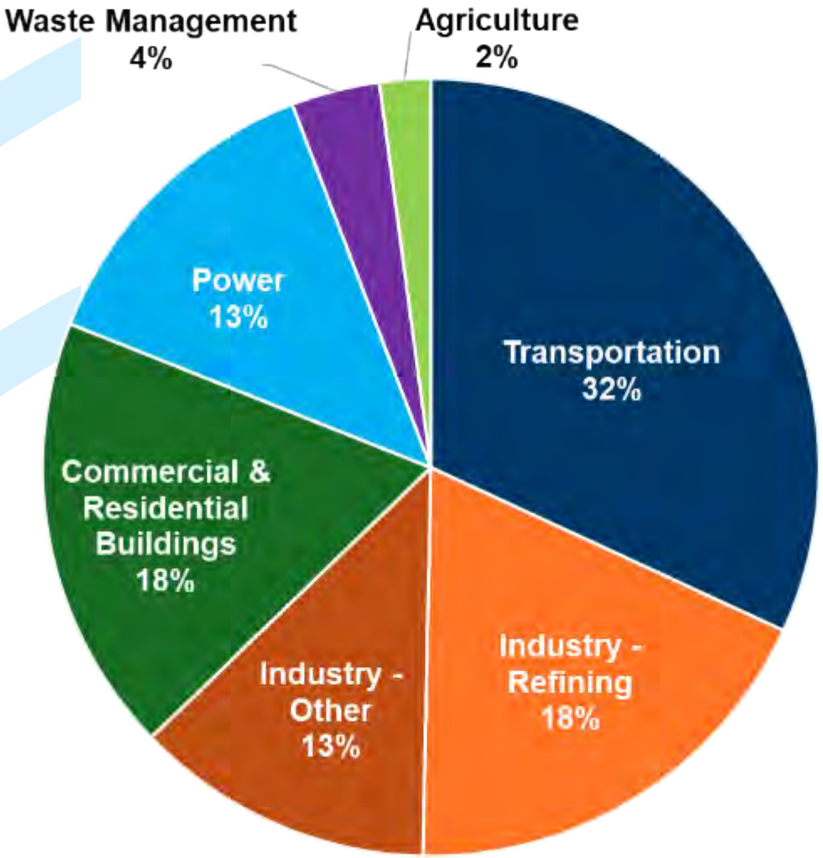
Map of the BARCAP region

- Bay Area's first regional climate action plan
- Consistent with commitments in the Air District Strategic Plan Strategy 1.7, New Climate Solutions
- Funded in part by United States Environmental Protection Agency (US EPA)

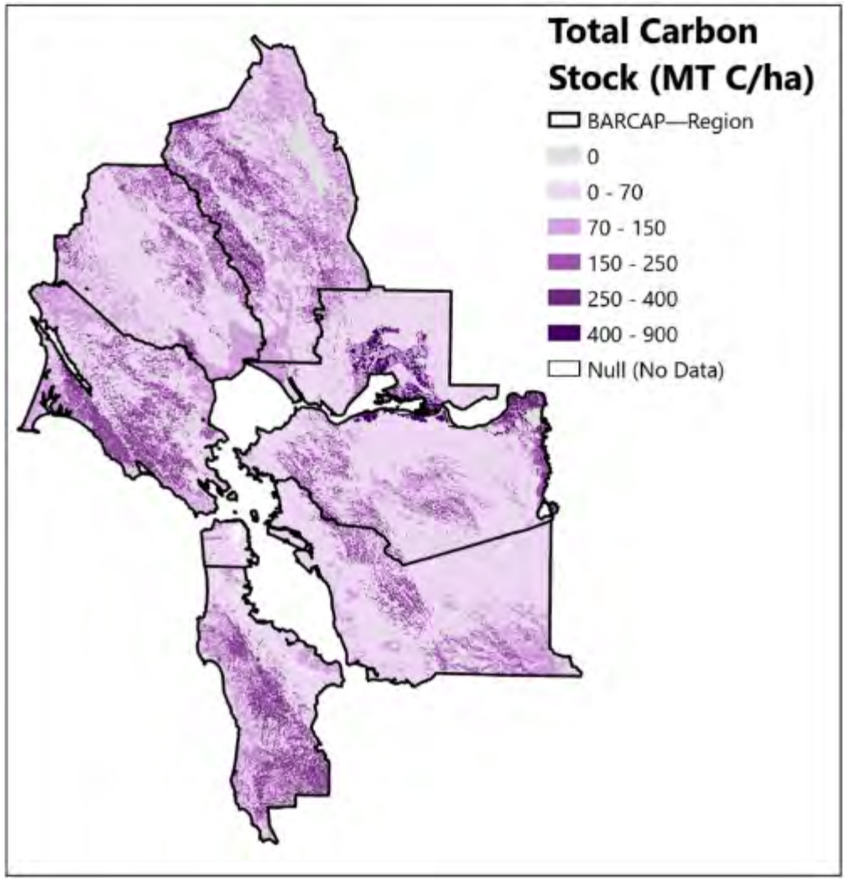
Goals of the BARCAP



BARCAP Greenhouse Gas and Carbon Stock Inventories



2022 Greenhouse Gas (GHG) Inventory for the BARCAP Region
Total of 54 Million Metric Tons of Carbon Dioxide Equivalents (MMTCO2e)



2022 Carbon Stock Inventory for the BARCAP Region
Total 92 Million Metric Tons of Carbon (MT C) Held in Plants & Soils

BARCAP Snapshot

16 Measures

57 Actions

>35 Implementers Identified



Transportation

Residential & Commercial Buildings

Electricity Generation (Power)

Waste & Materials Management

Agriculture/ Natural & Working Lands

Transportation



An individual charging an electric vehicle.

Measures:

- Accelerate light-duty electric vehicle adoption
- Accelerate medium- and heavy-duty vehicle and equipment decarbonization
- Accelerate decarbonization of goods movement
- Support implementation of Plan Bay Area 2050+

Buildings



A heat pump water heater.

Measures:

- Develop solutions for key challenges of zero-nitrogen oxides (NOx) appliance rules
- Promote healthy home retrofits by combining electrification, energy efficiency, and home repair programs
- Grow and diversify building decarbonization workforce through new initiatives and partnerships

Power



A field of solar panels.

Measures:

- Increase development of local small to medium scale clean energy and storage projects
- Expand customer programs and deploy power system and grid technologies (flexibility, resilience, and efficiency)

Waste and Materials Management



Community members at a composting workshop.

Measures:

- Enable food access and clean compost
- Advance low-carbon building materials and reuse
- Reduce methane emissions from waste management facilities

Natural and Working Lands



A redwood forest.

Measures:

- Support Nature-Based Solution Funding and Data
- Advance Conservation, Wildfire Management, and Restoration
- Accelerate Climate-Beneficial Agriculture
- Advance Environmental Justice-Centered Urban Greening

Advisory Work Group for BARCAP



































Logos of public agencies and community organizations

Logos courtesy of agency websites

Bay Area Air District

BARCAP Engagement Highlights



BARCAP Deliverables Benefit the Region



Regional GHG Inventory (Dashboard)

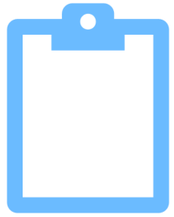


Regional Carbon Stock Inventory

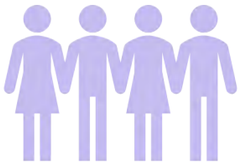




Workforce Planning Analysis



Public Survey Results



Frontline Communities Impacts Analysis

Sample Funding Roadmap



Pathways highlighted in darker gray are particularly applicable and/or accessible to the Bay Area Community

** Indicates a pathway may Involve Residential & Commercial Costs*

*** Pathway cancelation currently under dispute or may not have future funding*

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Bay Area Air District

Air District Role in Implementation

- Serve as lead or supporting implementer for specific actions
  - *Regulations, funding, other*
- Track progress
- Play key overarching role in support of implementation



Puzzle pieces joining together in a circle

Next Steps



Hand holding a magnifying glass showing city lights

- Meet with other lead implementers
- Set up framework for tracking progress
- Update Board on implementation periodically

Questions & Discussion

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