BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

BOARD OF DIRECTORS
REGULAR MEETING

DECEMBER 7, 2016

A regular meeting of the Bay Area Air Quality Management District Board of Directors will be held at 9:45 a.m. in the 1st Floor Board Room at the Air District Headquarters, 375 Beale Street, San Francisco, California 94105.

Questions About an Agenda Item

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

Meeting Procedures

The public meeting of the Air District Board of Directors begins at 9:45 a.m. The Board of Directors generally will consider items in the order listed on the agenda. However, any item may be considered in any order.

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

This meeting will be webcast. To see the webcast, please visit http://www.baaqmd.gov/about-the-air-district/board-of-directors/resolutionsagendasminutes at the time of the meeting.

Public Comment Procedures

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

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

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

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

Up to ten (10) speakers may speak for three minutes on each item on the Agenda. If there are more than ten persons interested in speaking on an item on the agenda, the Chairperson or other Board Member presiding at the meeting may limit the public comment for all speakers to fewer than three minutes per speaker, or make other rules to ensure that all speakers have an equal opportunity to be heard. Speakers are permitted to yield their time to one other speaker; however no one speaker shall have more than six minutes. The Chairperson or other Board Member presiding at the meeting may, with the consent of persons representing both sides of an issue, allocate a block of time (not to exceed six minutes) to each side to present their issue.

BOARD OF DIRECTORS REGULAR MEETING AGENDA

WEDNESDAY **BOARD ROOM**
DECEMBER 7, 2016 **1st FLOOR**
9:45 A.M.

CALL TO ORDER **Chairperson, Eric Mar**

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

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

PUBLIC COMMENT ON NON-AGENDA MATTERS

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

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

COMMENDATIONS/PROCLAMATIONS/AWARDS

3. *The Board of Directors will recognize outgoing Board Chairperson Eric Mar for his outstanding leadership as Chair of the Board of Directors in 2016.*

4. *The Board of Directors will present the "Lifetime Achievement Award" to Director Thomas H. Bates for his service, leadership, and dedication to protecting air quality in the Bay Area.*

   The Board of Directors will recognize outgoing Directors John Avalos, David Canepa, and Osby Davis for their service, leadership, and dedication to protecting air quality in the Bay Area.

CONSENT CALENDAR (ITEMS 5 – 7) **Staff/Phone (415) 749-**

5. Minutes of the Board of Directors Regular Meeting of November 16, 2016
   Clerk of the Boards/5073

   The Board of Directors will consider approving the draft minutes of the Regular Board of Directors Meeting of November 16, 2016.

6. Board Communications Received from November 16, 2016 through December 6, 2016

J. Broadbent/5052
jbroadbent@baaqmd.gov

A copy of communications directed to the Board of Directors received by the Air District from November 16, 2016 through December 6, 2016, if any, will be at each Board Member's place.

7. Proposed Regulatory Agenda for 2017 **J. Broadbent/5052**
jbroadbent@baaqmd.gov

State law requires each Air District to publish a list of potential regulatory measures for the upcoming year. No regulatory measure can be brought before the Board that is not on the list, with specified exceptions. Consequently, the list contains all regulatory measures that may come before the Board of Directors in 2017.

COMMITTEE REPORTS

8. Report of the **Climate Protection Committee** Meeting of November 17, 2016

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

The Committee received the following report:

A) Solar Energy Master Plans for Bay Area Schools

1) None; receive and file.

B) Summary of Climate Forward Bay Area: A Leadership Forum

1) None; receive and file.

9. Report of the **Executive Committee** Meeting of November 21, 2016

CHAIR: E. Mar **J. Broadbent/5052**
jbroadbent@baaqmd.gov

The Committee received the following reports:

A) Bay Area Regional Collaborative (BARC) Update

1) None; receive and file.

B) Update of Remote Participation Protocol for Committee Meetings

1) None; receive and file.

C) Clean Air Plan/Regional Climate Protection Strategy Update

1) None; receive and file.

D) **<u>Ongoing Community Grant Project Status and Report on First Round of Proposed Community Science Partnership Projects for Fiscal Year End (FYE) 2017</u>**

1) *None; receive and file.*

E) **<u>Update on My Air Online Program</u>**

1) *None; receive and file.*

<u>PUBLIC HEARING</u>

10. Public Hearing to Consider Adoption of Proposed Amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants and Adoption of a Negative Declaration Pursuant to the California Environmental Quality Act (CEQA) **J. Broadbent/5052**
jbroadbent@baaqmd.gov

The Board of Directors will consider adoption of proposed amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants and adoption of a Negative Declaration pursuant to the California Environmental Quality Act (CEQA).

<u>PRESENTATION</u>

11. Regulation 6, Rule 3: Wood Burning Devices and Winter Spare the Air Messaging Program **J. Broadbent/5052**
jbroadbent@baaqmd.gov

The Board of Directors will receive an update on Regulation 6, Rule 3: Wood Burning Devices and the Winter Spare the Air Messaging Program.

<u>CLOSED SESSION</u>

12. **CONFERENCE WITH LEGAL COUNSEL**

EXISTING LITIGATIONS (Government Code Section 54956.9(a))

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

a) **<u>Valero Refining Company – California, and Tesoro Refining & Marketing Company, LLC v. Bay Area AQMD</u>**, Contra Costa County Superior Court, Case No. N16-0095

b) **<u>Western States Petroleum Association, Valero Refining Company – California, Tesoro Refining and Marketing Company, LLC, and Phillips 66 Company v. Bay Area AQMD</u>,** Contra Costa County Superior Court, Case No. N16-0963

<u>OPEN SESSION</u>

PUBLIC COMMENT ON NON-AGENDA MATTERS

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

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

BOARD MEMBERS' COMMENTS

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

OTHER BUSINESS

15. Report of the Executive Officer/APCO: Update on Progress of Regulation 11, Rule 18 and Regulation 12, Rule 16

16. Chairperson's Report

17. Time and Place of Next Meeting:

    Wednesday, January 18, 2017, (location to be determined) at 9:45 a.m.

18. Adjournment

    The Board meeting shall be adjourned by the Board Chair.

CONTACT:

MANAGER, EXECUTIVE OPERATIONS **(415) 749-5016**
375 BEALE STREET, SAN FRANCISCO, CA 94105 **FAX: (415) 928-8560**
mmartinez@baaqmd.gov **BAAQMD homepage:**
www.baaqmd.gov

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

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

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

Accessibility and Non-Discrimination Policy

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

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

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

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

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

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

375 Beale Street, San Francisco, California 94105

FOR QUESTIONS PLEASE CALL (415) 749-5016 or (415) 749-4941

EXECUTIVE OFFICE:
MONTHLY CALENDAR OF AIR DISTRICT MEETINGS

DECEMBER 2016

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets on the 1st & 3rd Wednesday of each Month)*	**Wednesday**	**7**	**9:45 a.m.**	**1st Floor Board Room**
Board of Directors Legislative Committee *(At the Call of the Chair)*	**Monday**	**12**	**9:30 a.m.**	**1st Floor Board Room**
Board of Directors Mobile Source Committee *(Meets on the 4th Thursday of each Month)*	**Thursday**	**15**	**9:30 a.m.**	**1st Floor Board Room**
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of Each Month)*	**Friday**	**16**	**9:30 a.m.**	**1st Floor Board Room**
Board of Directors Executive Committee *(Meets on the 3rd Monday of each Month)* **- CANCELLED**	**Monday**	**19**	**9:30 a.m.**	**1st Floor Board Room**
Board of Directors Stationary Source Committee *(Meets on the 3rd Monday of each Month)* **- CANCELLED**	**Monday**	**19**	**10:30 a.m.**	**1st Floor Board Room**
Board of Directors Regular Meeting *(Meets on the 1st & 3rd Wednesday of each Month)* **- CANCELLED**	**Wednesday**	**21**	**9:45 a.m.**	**1st Floor Board Room**
Board of Directors Mobile Source Committee *(Meets on the 4th Thursday of each Month)* **- CANCELLED**	**Thursday**	**22**	**9:30 a.m.**	**1st Floor Board Room**
Board of Directors Budget & Finance Committee *(Meets on the 4th Wednesday of each Month)* **- CANCELLED**	**Wednesday**	**28**	**9:30 a.m.**	**1st Floor Board Room**

JANUARY 2017

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets on the 1st & 3rd Wednesday of each Month)* **- CANCELLED**	**Wednesday**	**4**	**9:45 a.m.**	**1st Floor Board Room**
Advisory Council Meeting *– (At the Call of the Chair)* **- CANCELLED**	**Thursday**	**5**	**10:00 a.m.**	**1st Floor Board Room**
Board of Directors Executive Committee *(Meets on the 3rd Monday of each Month)*	**Monday**	**16**	**9:30 a.m.**	**1st Floor Board Room**
Board of Directors Stationary Source Committee *(Meets on the 3rd Monday of each Month)*	**Monday**	**16**	**10:30 a.m.**	**1st Floor Board Room**

JANUARY 2017

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets on the 1st & 3rd Wednesday of each Month)*	Wednesday	18	9:45 a.m.	1st Floor Board Room
Board of Directors Climate Protection Committee *(Meets 3rd Thursday of Every Other Month)*	Thursday	19	9:30 a.m.	1st Floor Board Room
Board of Directors Budget & Finance Committee *(Meets on the 4th Wednesday of each Month)*	Wednesday	25	9:30 a.m.	1st Floor Board Room
Board of Directors Mobile Source Committee *(Meets on the 4th Thursday of each Month)*	Thursday	26	9:30 a.m.	1st Floor Board Room

FEBRUARY 2017

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets on the 1st & 3rd Wednesday of each Month)*	Wednesday	1	9:45 a.m.	1st Floor Board Room
Advisory Council Meeting *(At the Call of the Chair)*	Monday	6	10:00 a.m.	1st Floor Board Room
Board of Directors Regular Meeting *(Meets on the 1st & 3rd Wednesday of each Month)*	Wednesday	15	9:45 a.m.	1st Floor Board Room
Board of Directors Executive Committee *(Meets on the 3rd Monday of each Month)*	Monday	20	9:30 a.m.	1st Floor Board Room
Board of Directors Stationary Source Committee *(Meets on the 3rd Monday of each Month)*	Monday	20	10:30 a.m.	1st Floor Board Room
Board of Directors Budget & Finance Committee *(Meets on the 4th Wednesday of each Month)*	Wednesday	22	9:30 a.m.	1st Floor Board Room
Board of Directors Mobile Source Committee *(Meets on the 4th Thursday of each Month)*	Thursday	23	9:30 a.m.	1st Floor Board Room

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 28, 2016

Re: Minutes of the Board of Directors Regular Meeting of November 16, 2016

RECOMMENDED ACTION

Approve the attached draft minutes of the Board of Directors Regular Meeting of November 16, 2016.

DISCUSSION

Attached for your review and approval are the draft minutes of the Board of Directors Regular Meeting of November 16, 2016.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Marcy Hiratzka
Reviewed by: Maricela Martinez

Attachment 5A: Draft Minutes of the Board of Directors Regular Meeting of November 16, 2016.

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

Board of Directors Regular Meeting
Wednesday, November 16, 2016

DRAFT MINUTES

Note: Audio recordings of the meeting are available on the website of the Bay Area Air Quality Management District at *http://www.baaqmd.gov/about-the-air-district/board-of-directors/resolutionsagendasminutes*

CALL TO ORDER:

1. **Opening Comments:** Chairperson Eric Mar called the meeting to order 10:19 a.m.

Roll Call:

Present: Chairperson Eric Mar; Vice-Chairperson Liz Kniss; Secretary David Hudson; and Directors John Avalos, Teresa Barrett, Tom Bates, Cindy Chavez, John Gioia, Osby Davis, Carole Groom, Scott Haggerty, Tyrone Jue, Rebecca Kaplan, Nate Miley, Karen Mitchoff, Katie Rice, Mark Ross, Rod Sinks, Jim Spering, Brad Wagenknecht, and Shirlee Zane.

Absent: Directors David J. Canepa, Jan Pepper, and Warren Slocum.

2. **PUBLIC COMMENT ON NON-AGENDA MATTERS**

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

David Gassman, System Change Not Climate Change, stated that the Board's priority is not to preserve refinery jobs, but to protect the public's air quality.

Susan Gustofson, Valero, addressed the Board regarding her opinion that the proposed amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants, is not ready to be considered for adoption at the Public Hearing on December 7, 2016, but should be developed in concert with other Rules that are currently under development.

Ernesto Arevalo, Communities for a Better Environment (CBE), requested that Board meetings be held on days and times that do not conflict with the public's work and school schedules. Mr. Arevalo said that he hopes for a more inclusive and equitable process from the District in the future.

Greg Reed, Chevron, requested that the Board base its decisions on sound science and consider potential impacts to refinery workers and small businesses adjacent to the refineries before adopting regulations, rather than making quick decisions derived from pressure from community activists.

Roger Lin, CBE, emphasized various opinions of the California Attorney General's office regarding the implementation of the Brown Act relating to public access to information and types of matters that may be discussed in Closed Session. Mr. Lin then requested that the Board move Item 22 ahead of Closed Session.

Devorah Ancel, Sierra Club, also requested that the Board move Item 22 ahead of Closed Session, so that the public's voice is heard prior to private discussion between staff and the Board, which Ms. Ancel said the public fears will address policy and rulemaking decisions, and not litigation decisions.

At this time, Chair Mar stated that he wished to proceed with adjourning the Board meeting to go into Closes Session as planned, although he acknowledged the requests from the public comments. The Board members traded opinions on proceeding as planned, versus rearranging the agenda to meet the public's requests. Jack Broadbent, Executive Officer/Air Pollution Control Officer, explained what he intended to cover under Item 22, which included an update on the Environmental Impact Report (EIR) schedule, and Initial Study. Chair Mar decided to move forward with Closed Session as planned.

Public Comments on Closed Session Items 17-19 were given prior Closed Session.

Steven Nadel, Sunflower Alliance, thanked those Board members who are sensitive to the public's request to speak prior to certain items on the agenda, and urged the Board to utilize a more open process which clarifies to the public the exact issues that are being discussed during Closed Session, so that the public's speculation may be decreased.

Martinez resident, Tom Lewis, asked that the Board be mindful of the fact that the public is fearful of the incoming Administration's lack of support on environmental issues, and will look to local agencies to protect the environment.

Berkeley resident, Dr. Claire Broome, said that the community worker proposal submitted legal opinions as to why proposed Rule 12-16 is appropriate, then submitted rebuttals to staff comments, but staff's arguments about the legal defensiveness of Rule 12-16 are discussed in Closed Session. Dr. Broome requested a more open process, and also urged staff to be fully responsive to Board direction.

Janet Stromberg, 350 Bay Area, thanked Vice Chair Kniss for acknowledging the Board's past practice of having Closed Session at the end of the meeting and also stated that there could be no pending litigation on Rule 12-16 as the rule has not yet been adopted.

Greg Karras, CBE, stated that proposed Rule 12-16 does not change current refinery operations, but only prohibits emission increases and urged the Board not to let the oil companies divide the public from the District and silence or intimidate the District.

Andres Soto, CBE, acknowledged the public's disagreements with executive staff regarding District procedures and urged the Board to take advantage of partnerships with community organizations advocating for environmental issues and protect the community.

Janet Johnson, Richmond Progressive Alliance, referenced a report by the International Transport Workers' Federation called "The Chevron Way: Polluting California and Degrading Democracy." Ms. Johnson shared data concerning Chevron's greenhouse gas (GHG) emissions in California and Chevron's lobbying expenses and contributions to political campaigns.

Minda Berbeco, Sierra Club, expressed her concerns with the nature of the District's Closed Session process, saying that potential conflicts with state laws and the Clean Air Act should be subject to public discussion. Ms. Berbeco asked the Board to keep in mind that there are hundreds of community members who would come make similar statements, if their scheduled permitted.

Chair Mar acknowledged that he agrees with the public's request to change meeting time and locations to better fit the needs of the public and urged the incoming Board officers to move meetings to frontline communities to promote stronger participation.

Richard Gray, 350 Bay Area, said that the public speculates that proposed Rule 12-16 has already been discussed in several Closed Sessions over the past months, though he does not believe that the District has the authority to discuss it in Closed Session, because it is not yet an official rule. Mr. Gray also said that certain acts by staff, such as cancelling meetings at the last minute and placing hot topics at the end of agendas, breeds mistrust within the community and hinders District-community relations.

Director Gioia emphasized that the District has been sued over every rule that the District has adopted, and stated that the District wishes to protect its legal information from groups that wish to undercut District rules through litigation. He also said that EIRs do not typically cover legal risks for that very purpose, though the Board is aware of the public's desire to have factual issues included in the EIR. Director Gioia said that the District is very cognizant of refraining from discussion policy while in Closed Session.

San Mateo resident, Mark Roest, expressed his concern that staff has abandoned its commitment to a community-based forum in Richmond, in which frontline community members were to have weighed in on inclusion of an emissions cap in proposed Rule 12-16, by instead offering two scoping meetings for comments on the technical scope of the EIR. Mr. Roest requested that the Board prevent further obstructions by separating the EIR into two EIRs.

Devorah Ancel, Sierra Club, gave her impressions on the most recent staff report addressing proposed Rule 12-16, saying that she believes that staff's claim that the rule is legally unjustified is not substantiated, and that the rule should not be discarded based on a potential conflict with the State's Cap and Trade program, which may not even be readopted. Ms. Ancel requested that any legal concerns about the Rule 12-16 be made public so that the public may weigh in on that discussion.

Roger Lin, CBE, referred to the California Environmental Quality Act (CEQA) guidelines to demonstrate that an EIR shall discuss inconsistencies between the proposed project and applicable policies and plans. Mr. Lin stated that the Legislature, through the CEQA process, has established a mechanism to vet any perceived conflicts between Rule 12-16 and existing regulations, and that these issues should not be subject to Closed Session, but must be included in the Draft EIR.

Megan Zapanta, Asian Pacific Environmental Network (APEN), acknowledged the organization's mistrust of the refineries and explained that passing refinery rules which limit emissions in a timely and transparent way is the organization's utmost priority.

Jeff Kilbreth, Richmond Progressive Alliance, stated that Rule 12-16 is fundamentally a legal question which must be rigorously analyzed by a combination of legal counsel both within and outside of the District. Mr. Kilbreth said that the public is hindered from helping to shape the rule properly by staff's ambiguous assertions about legal obstacles.

Albert Kueffner, Western Service Workers Association, described, in his opinion, an analogy of oil companies consorting government agencies and municipalities, to the detriment of the community.

Woodacre resident, Cory VanGelder, said that she is having her students follow the 22nd Conference of the Parties to the United Nations Framework Convention on Climate Change (COP22) in Morocco, and that she hopes that other countries experiencing issues of environmental racism and legal transparency will be able to relate to what is happening in the Bay Area regarding refinery regulation.

Laura Gracia, CBE, showed a video of high school students giving their opinions of how Bay Area refineries are affecting the health of young people.

Nancy Cuellar, CBE, offered data from the Asthma and Allergy Foundation of America to indicate the cost of preventative care and treatment for respiratory diseases, and said that this is expensive for low-income people who need the medical attention for living, playing, and attending school near refineries.

Richmond resident, Nick Despota, stated that there is ample documentation of the disproportionate health impacts on local communities and confirmation of the District's legal authority to control emissions through direct regulation, but questioned the District's will to use that authority to protect fence line communities due to the perceived shielding of conversation about legal requirements under Closed Session.

Berkeley resident, Samantha Klein, advocated for industrial pollutant-limiting measures that would protect public health and climate change, emphasizing that local action and cooperation will be needed due to lack of support on environmental issues from incoming administration.

CLOSED SESSION (commenced at 11:12 p.m.)

3. CONFERENCE WITH LABOR NEGOTIATORS *(Government Code § 54957.6(a))* **(OUT OF ORDER, ITEM 17)**

Agency Negotiators: *Jack P. Broadbent, Executive Officer/APCO*
Rex Sanders, Director of Executive and Administrative Resources

Employee Organization*: Bay Area Air Quality Employee's Association, Inc.*

4. CONFERENCE WITH LEGAL COUNSEL (ITEM 18)

ANTICIPATED LITIGATION (Government Code Section 54956.9(d)(2))

Significant exposure to litigation pursuant to paragraph (2) of subdivision (d) of Section 54956.9: one potential case.

5. CONFERENCE WITH LEGAL COUNSEL (ITEM 19)

EXISTING LITIGATION (Government Code Section 54956.9(a))

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

OPEN SESSION (commenced at 11:41p.m.)

Brian Bunger, District Counsel, stated that there was no reportable action for Items 17 and 18, and that regarding Item 19, the Board authorized staff to pursue an appeal of the Superior Court Decision.

CONSENT CALENDAR (ITEMS 3-11)

6. **Minutes of the Board of Directors Regular Meeting of October 19, 2016 (ITEM 3)**
7. **Board Communications Received from October 19, 2016 through November 15, 2016 (ITEM 4)**
8. **Air District Personnel on Out-of-State Business Travel (ITEM 5)**
9. **Notices of Violations Issued and Settlements in Excess of $10,000 in the month of October 2016 (ITEM 6)**
10. **Quarterly Report of the Executive Office and Division Activities for the Months of July 2016 through September 2016 (ITEM 7)**
11. **Extension of Contract for Website Development and Maintenance (ITEM 8)**
12. **New Administrative Grant Program Revenue and Authorization to Add Two New Full-Time Positions in the Strategic Incentives Division (ITEM 9)**
13. **Consider Authorizing a California Environmental Quality Act (CEQA) Review Consultant Services Contract for the Phillips 66 Marine Terminal III Project (ITEM 10)**
14. **Draft Resolution to Refrain from Initiating any Business with Wells Fargo Bank for a Period of Two Years (ITEM 11)**

Public Comments:

No requests received.

Board Comments:

None.

Board Action:

Director Haggerty made a motion, seconded by Director Groom, to **approve** the Consent Calendar Items 3 through 11, inclusive; and the motion **carried** by the following vote of the Board:

AYES:	Avalos, Barrett, Bates, Chavez, Davis, Gioia, Groom, Haggerty, Hudson, Kaplan, Kniss, Jue, Mar, Miley, Mitchoff, Rice, Ross, Sinks, Spering, Wagenknecht, and Zane.
NOES:	None.
ABSTAIN:	None.
ABSENT:	Canepa, Pepper, and Slocum.

COMMITTEE REPORTS

15. Report of the Public Engagement Committee Meeting of October 20, 2016 (ITEM 12)

In the interest of time, the Public Engagement Committee Chair Report was not read, though it was distributed to all Board members.

Public Comments:

No requests received.

Board Comments:

None.

Board Action:

None; receive and file.

16. Report of the Mobile Source Meeting of October 27, 2016 (ITEM 13)

In the interest of time, the Mobile Source Committee Chair Report was not read, though it was distributed to all Board members.

Public Comments:

No requests received.

Board Comments:

None.

Board Action:

Director Haggerty made a motion, seconded by Secretary Hudson, to **approve** the recommendations of the Mobile Source Committee; and the motion **carried** by the following vote of the Board:

AYES:	Avalos, Barrett, Bates, Chavez, Davis, Gioia, Groom, Haggerty, Hudson, Kaplan, Kniss, Jue, Mar, Miley, Mitchoff, Rice, Ross, Sinks, Spering, Wagenknecht, and Zane.
NOES:	None.
ABSTAIN:	None.
ABSENT:	Canepa, Pepper, and Slocum.

17. Report of the Nominating Committee Meeting of November 16, 2016 (ITEM 14)

Chair Mar reported that the Nominating Committee met prior to the Board meeting and nominated the Board Officers for 2017 as follows: Liz Kniss for Chairperson, Dave Hudson for Vice-Chairperson, and Katie Rice for Secretary. Director Groom, who participated in the meeting as Immediate-Past

Chair, described the Committee's consideration of balancing regional, gender, and city versus county representation among Board Officers. Chair Mar thanked those on the Board who had expressed interest in serving on the Board and other candidates who were nominated.

Public Comments:

No requests received.

Board Comments:

Upon approval of the motion below, the Board congratulated the incoming Board Officers for 2017.

Board Action:

Chair Mar made a motion, seconded by Director Mitchoff, to **approve** the recommendations of the Nominating Committee; and the motion **carried** by the following vote of the Board:

AYES:	Avalos, Barrett, Bates, Chavez, Davis, Gioia, Groom, Haggerty, Hudson, Kaplan, Kniss, Jue, Mar, Miley, Mitchoff, Rice, Ross, Sinks, Spering, Wagenknecht, and Zane.
NOES:	None.
ABSTAIN:	None.
ABSENT:	Canepa, Pepper, and Slocum.

18. Report of the Ad-Hoc Building Oversight Committee Meeting of November 16, 2016 (ITEM 15)

In the interest of time, the Ad-Hoc Building Oversight Committee Chair Report was not read, though it was distributed to all Board members.

Public Comments:

No requests received.

Board Comments:

None.

Board Action:

None; receive and file.

OTHER BUSINESS

19. Report of the Executive Officer/APCO: Update on Regulation 12, Rule 16: Update on Regulation 12, Rule 16: Petroleum Refining Facility-Wide Emissions and Regulation 11, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities (ITEM 22)

Regarding air quality standards and attainment status, Mr. Broadbent stated that the District's wood smoke season began on November 1, 2016, and no Spare the Air days have been called since then, and there have been no violations of the federal PM standards in the Bay Area thus far.

Regarding rulemakings that are currently underway, Mr. Broadbent displayed the schedule for the development of Rules 11-18 and 12-16. The schedule included completed steps, steps that are in the process of being carried out, and upcoming key dates. Mr. Broadbent explained that the EIR's Initial Study and Draft Staff Report have been released and that the public's comments are being collected. Mr. Broadbent also described the California Air Resources Board's (CARB) revision of the AB 32 Scoping Plan, and the progression of AB 197, which he believes will be informative to the District's rulemaking efforts to reduce GHG emissions.

Public Comments:

Richmond resident, Rebecca Auerbach, urged the Board to prevent further delays of the approval of a backstop against increased refinery emissions.

Charles Davidson, Sunflower Alliance, listed several provisions that Rule 12-16 would allow Bay Area refineries during a refinery outage.

Steve Nadel, Sunflower Alliance, said that a wall should be built around the Bay Area to protect it from the extreme crudes that the oil industry wants to bring into the Bay Area and that said that Rule 12-16 is not in conflict with Rule 11-18 or AB 32.

Steven Yang, Chevron, urged the Board to continue considering Rule 12-16 and 11-18 as alternatives that address the central issue of health risks, rather than separating the two into two EIRs.

Andres Soto, CBE, requested the locations of the workshops that have already been held, and asked how much impact public comments generated from those attending the workshops has had on the EIR, as he said he attended several of the workshops and noticed that staff members outnumbered public members.

Roger Lin, CBE, thanked Director Gioia for bringing to staff's attention the need to disclose all available factual information relevant to alleged legal conflicts with climate and permitting policies in the EIR.

Berkeley resident, Dr. Claire Broome, urged the Board to separate the EIR into two, if, at any time, the EIR process begins to fall behind schedule, as she said that refinery expansions have been in development during this rulemaking process. Dr. Broome also said that in a recent CARB webinar addressing how to reach 2030 targets, one scenario used was that of imposing refinery caps simultaneously with the Cap and Trade program.

Kimberly Ronan, Valero, spoke of the Valero refinery's equipment that was installed in 2011 in order to permanently reduce SO_2, NOx, and PM emissions by thousands of tons per year, and added that Valero works hard to remain environmentally and socially conscious for the community and refinery employees. Ms. Ronan said that Rule 12-16 proposes to impose numeric emissions limits below what was legally permitted by the District.

Don Cuffel, Valero, said that refineries require regulatory certainty to plan for compliance, and that Rule 11-18 does not define what the Toxic Best Available Retrofit Control Technology (TBARCT) is for toxics. Mr. Cuffell asked the Board to direct staff to involve all stakeholders to determine what the appropriate TBARCT is before Rule 11-18 is adopted.

Bob Brown, Western States Petroleum Association (WSPA), said that WSPA continues to support the staff recommendation of keeping Rules 12-18 and 11-18 under the same EIR, and of not pursuing local GHG emission caps on refineries.

Devorah Ancel, Sierra Club, said that any position that CARB had previously taken on GHG caps at refineries conflicting with State regulations was done so before the adoption of SB 32 and AB 197, and urged the Board to use AB 197 to develop rules, as she said that the Board will continue to have the authority to set caps on GHG emissions at refineries.

Susan Gustofson, Valero, expressed her concern about the potential compliance uncertainty (for business) of Rule 11-18, as the Rule's language indicates that the District will be allowed to reset compliance requirements, or end goals. Ms. Gustofson said that Rule 11-18 requires refinement in order to ensure compliance certainty for refineries.

Berkeley resident, Paula Baker, said that she does not want to see refineries shut down, but that she wishes for Rule 12-16 to be separated from Rule 11-18 so that refinery GHG emission may be capped.

Iren Suhami, Valero, addressed the proposed numeric cap calculations for the Valero refinery, as drafted in Rule 12-16, saying that 2010 was not included in Valero's baseline years. Ms. Suhami requested that the draft proposal for Rule 12-16 include the baseline years of 2010-2014 for Valero's cap calculations, as was used for the other refineries.

Glen Turner, Sunflower Alliance, questioned the frequency of (outreach for) forums or workshops at which the public may comment on the EIR. Mr. Turner urged the Board to direct staff to adhere to the rulemaking schedule to which it committed.

Audrey Nelson, Chevron, stated that AB 32 and the Low Carbon Fuel Standard are efficient in monitoring GHG emissions at refineries, and that additional caps on emissions would be redundant.

Chair Mar asked staff for the locations of the EIR workshops that have been held thus far, and staff responded that workshops were held in Richmond, Oakland, San Francisco, and Martinez, and that another is to be held in Fremont.

Shawn Lee, Chevron, distributed additional copies of the Office of Environmental Health Hazard Assessment's "A Guide to Health Risk Assessment", which he had distributed at the October 19, 2016 Board meeting, and copies of CARB/California Air Pollution Control Officers Association's "Risk Management Guidance for Stationary Sources of Air Toxics", cross-referencing the two documents' language regarding the topic of cancer risk, and requesting that the Board make informed decisions that govern health impacts.

Richmond resident, Deborah Bayer, described the children with respiratory diseases that she has treated as a pediatric nurse, and questioned why refinery workers believe that caps on GHG emissions at refineries will threaten job security.

Janet Stromberg, 350 Bay Area, said that Rule 12-16 is necessary because of discretionary loopholes in the District's New Source Review Rule, which are biased towards refinery wishes. Ms. Stromberg added that she is a former employee of the District, who developed the Title V permit program, and that facilities in other industries already have facility-wide caps because they lack the political clout that refineries have.

Jan Warren, Interfaith Climate Action Network of Contra Costa County, stated that all people are entitled to clean air, not just those who reside outside of fence line communities. Ms. Warren added that, despite progress in reducing PM, exposure to PM remains the leading public health risk for premature death in the Bay Area, and said that the transition to a clean-energy economy is needed.

Walt Gill, Chevron, expressed Chevron's support of staff's recommendation of evaluating both Rules under a single EIR, and added that imposing numeric GHG caps on refineries is the not correct approach to attaining GHG emission reductions.

Minda Berbeco, Sierra Club, said that she attended the Rule 11-18 Scoping Meeting on November 14, where she was told by District staff that there were no community workshops scheduled to address Rule 12-16. Ms. Berbeco said that she is concerned that the public's desire to collaborate with the District on the development of Rule 12-16 is not being taken seriously, and advocated for the separation of Rules 12-16 and 11-18, if the schedule is not adhered to in the future.

Richard Gray, 350 Bay Area, stated that oil companies should not be left to self-regulate, and urged the District to challenge the oil industry, regardless of the threat of litigation. Mr. Gray also said that Rule 12-16 would be ready to implement upon adoption, but that Rule 11-18 would not.

Eileen Boken, Sierra Club, said that the District's processes do not demonstrate strong environmental leadership, as changes are not being implemented as quickly as the public would like. Ms. Boken added that there is no political will at the federal level, and that the public is relying upon the District to adopt Rule 12-16 as soon as possible.

Albert Kueffner, Western Service Workers Association, stated that, while canvassing in West Oakland for the No Coal in Oakland campaign, he met at least one person in each household who had asthma or knew someone with asthma.

Jeff Kilbreth, Richmond Progressive Alliance, said that, as a member of the City of Richmond's Planning Commission who is familiar with the EIR for the Chevron Modernization project, he understands both the values and limitations of the EIR process. After attending the Richmond workshop, Mr. Kilbreth said that he determined that District staff does not believe that legal issues should be discussed in the EIR.

Laura Gracia, CBE, urged the Board not to shirk on its responsibilities, even though CARB is revising its Scoping Plan. Ms. Gracia said Richmond has the highest rates of asthma in the nation that the community will continue to advocate for Rule 12-16.

Director Gioia clarified that, while Richmond does experience high rates of hospitalization visits due to asthma, it does not have the highest asthma rate in the country.

Nancy Cuellar, CBE, expressed her concern that workshops do not accommodate many people's schedules or language abilities.

Berkeley resident, Samantha Klein, supported Rule 12-16, noting that professionals in academia claim that the Richmond refinery is the most serious environmental injustice in the Bay Area. Ms. Klein also said that Director Gioia's clarification of Richmond not having the highest asthma rates in the country does not mean that refinery employees should forget the rates of asthma that exist in the Bay Area.

San Mateo resident, Mark Roest, projected the rapid decline of fuel purchase for local use due to battery vendors dropping their prices and expanding auto ranges, and also projected that local governments switching to Community Choice Aggregation will rapidly transition to renewables for electricity generation.

Richard Black, United Steel Workers (USW) 326, said that USW supports neither Rule 12-16, nor Rule 11-18, because until real scientific evidence is carried out to support these Rules, they are considered bad legislation.

Gordon Johnson, Shell, stated that, regarding Rule 11-18, no reason was given for the District's plan to require all facilities with a cancer risk in excess of 25 in a million (25/M) to reduce that risk below 10/M. Mr. Johnson requested that the Board direct staff to evaluate the incremental cost-effectiveness of this reduction in risk level (from 25/M to 10/M and from 100/M to 25/M and compare the difference.)

Laurie Mintzer, Chevron, expressed her concern that District staff is expending resources on a refinery emissions cap rule (12-16) that is not recommended by scientists, the District's Advisory Council, CARB, or the California Energy Commission.

As a member of the CARB Board of Directors, Director Gioia clarified that CARB has not made any official recommendations to any parties regarding capping GHG emissions at refineries.

Bill Pinkham, Sunflower Alliance, referenced an article in *The New Yorker* called "Greenland is Melting", which discusses sea-level rise, and urged the Board not to forget the over-arching problem of global warming and climate change.

Kathy Wheeler, Shell, expressed her support of what Rule 11-18 is trying to accomplish, but requested clarification of the definition and cost-effectiveness of TBARCT, and said that the prioritization score should dictate the implementation schedule for the Rule.

Dan Sabelesky, Shell, said that over the years, government regulations on businesses have contributed to the increase of the prices of consumer products, and this has caused irreparable economic damage in some areas. Mr. Sabelesky said that all parties must work together to achieve a balance of clean environment and prosperity.

Janet Pyegeorge, Rodeo Citizens Association, described past community struggles as the result of refinery exposure, and urged the Board to make clean air possible for future generations, while not ceasing refinery operations.
Palo Alto resident, Stephen Rosenblum, suggested that the Board holds Closed Session prior to the commencement of Board meetings, so that members of the public participating in the Board meetings will have less time to wait. Mr. Rosenblum urged the Board to prevent any further delays in adopting Rule 12-16.

Richmond resident, David Reinerston, said that he was surprised that PM is not being measured in the middle of the asthma zones, or “hot spots.” Mr. Reinerston said that a cap on emissions is simple and predictable, and that money should be spent on science and engineering, rather than on meetings.

Richmond resident, Jessica Leimone, said that clean air should not be a luxury, requested that Board meetings and community workshops be held at more convenient times, and said that adopting Rule 12-16 is the least the District can do for the community.

Richmond resident, Stan Criss, said that human activity is wearing down the planet’s immune system and that we need to protect the environment.

Greg Reed, Chevron, said that people need to have the correct facts before making statements that could misrepresent a particular organization, party, or company, and thanked Director Gioia for setting the example of clarifying which information is accurate and which is not. Mr. Reed also invited Director to attend future Town Hall meetings in Richmond.

Jan Cecil, Sunflower Alliance, spoke of a planned eight-fold increase in delivery of tar sands crude oil to the Bay Area by 2030.

Lucia Watson, Chevron, acknowledged that that people are entitled to their own opinion, and that there are two sides to every story, but said that facts need to be correct when they are presented.

Rand Wrobel, 350 Bay Area, said that the Board’s vote on these Rules will establish the direction that California will take regarding the capping of refinery emissions. He urged the Board to carry out the District’s mission statement by adopting Rule 12-16.

Maricela Angel, recited the District’s mission statement, and said that the implementation of Rule 12-16 would be retreating from the mission statement and putting residents at risk.

Nancy Navarro, Shell, said that capping emissions is not the solution to reducing GHG emissions and that the cost of living in the Bay Area is already unaffordable for many residents.

<u>Board Comments:</u>

The Board and staff discussed goals of the AB 32 Scoping Plan revision involving GHG reductions at refineries and throughout the industrial sector; the timeline for the adoption of the revised Scoping Plan; whether or not further factual analyses of the EIR is needed; relative asthma rates in and around

the Bay Area that staff will send to the Board and post on the website; how to increase multi-lingual translation and access to (outreach for) community workshops and public meetings; upcoming opportunities for public input on these rulemakings; how legal interpretations rely on factual assumptions that still need to be explored in the EIR; the process that staff uses to integrate public comments from workshops into staff recommendations; staff's struggle of responding to public comments that contain incorrect information; and the need for language on the website that illustrates and explains the difference between Rules 11-18 and 12-18, or a Frequently Asked Questions page.
Board Action:

None; receive and file.

PUBLIC COMMENT ON NON-AGENDA MATTERS

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

No requests received.

BOARD MEMBERS' COMMENTS

21. Board Members' Comments

Chair Mar thanked Director Chavez who prompted staff to request that the Board direct staff to refrain from initiating any business with Wells Fargo for a period of two years, as Wells Fargo recently admitted to creating over two million fake bank and credit card accounts to collect fees.

Secretary Hudson said that he hoped that staff would be able to avoid calling for a Spare the Air day on Thanksgiving day.

Director Haggerty congratulated staff on a successful "Climate Forward Bay Area: A Leadership Forum" conference that was held on October 13-14, 2016.

OTHER BUSINESS CONTINUED

22. Chairperson's Report (ITEM 23)

Chair Mar congratulated the eleven Board members who were re-elected to their current office in 2016, and Director Canepa, who is currently serving on the City of Daly City's City Council and was elected to serve on the San Mateo County Board of Supervisors. Chair Mar also acknowledged Director Bates' decades of service on the Air District's Board, as he terms out of his Mayoral and Board positions on November 30, 2016. Director Bates will be officially recognized at the December 7, 2016 Board of Directors meeting.

23. Time and Place of Next Meeting (ITEM 24)

Wednesday, December 7, 2016, 1st Floor Board Room, 375 Beale Street, San Francisco, California 94105 at 9:45 a.m.

24. Adjournment (ITEM 25)

The Board meeting adjourned at 1:11 p.m.

Marcy Hiratzka
Clerk of the Boards

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 1, 2016

Re: Board Communications Received from November 16, 2016 through December 6, 2016

RECOMMENDED ACTION

None; receive and file.

DISCUSSION

Copies of communications directed to the Board of Directors received by the Air District from November 16, 2016, through December 6, 2016, if any, will be at each Board Member's place at the December 7, 2016, Board meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Marjorie Villanueva
Reviewed by: Maricela Martinez

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer / APCO

Date: November 29, 2016

Re: Proposed Regulatory Agenda for 2017

RECOMMENDED ACTION

None; receive and file.

DISCUSSION

Each year, the Air District is required by Health and Safety Code section 40923 to publish a list of regulatory measures scheduled or tentatively scheduled for consideration during the next calendar year. If a measure is not on this list, it may not be brought before the Board of Directors unless it is necessary to:

1. Satisfy federal requirements,
2. Abate a substantial endangerment to public health or welfare,
3. Comply with state toxic air contaminant requirements,
4. Comply with an ARB requirement that the Air District adopt contingency measures due to inadequate progress towards attainment,
5. Preserve an existing rule's "original intent," or
6. Allow for alternative compliance under an existing rule.

The attached list includes all measures that may come before the Board in calendar year 2017. Some of the measures may fall within exceptions listed above but are nevertheless included for completeness. There is no expectation that all of the measures on the list will be enacted during the calendar year. Rules are listed in numerical order as they appear in the Air District Rules and Regulations.

All new rules and rule amendments must be adopted at a public hearing conducted by the Board of Directors of the Air District. Public comment is accepted at these hearings. Public notice of hearings is provided as required by law. In addition, the District staff conducts public workshops and provides opportunities for oral and written comments before scheduling a rule for public hearing for the Board's consideration. Information on workshops, hearings, and other rule development issues may be obtained from the Air District website.

BUDGET CONSIDERATION/FINANCIAL IMPACTS

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Greg Nudd
Reviewed by: Jean Roggenkamp

Attachment 7A: Bay Area Air Quality Management District 2017 Regulatory Measures List

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
2017 DRAFT REGULATORY MEASURES LIST

Regulation, Rule	Title	Objectives [1]
Reg. 1	General Provisions and Definitions	Clarify and enhance District policies, VOC definition
Reg. 2, Rule 1	General Requirements (Permits)	EPA, CARB policy; State law, clarifications
Reg. 2, Rule 2	New Source Review	EPA policy, lower GHG threshold, State law, clarify District policies
Reg. 2, Rule 4	Emissions Banking	Clarifications
Reg. 2, Rule 5	New Source Review for Toxic Air Contaminants	Clarifications
Reg. 2, Rule 6	Major Facility Review (Title V)	EPA policy, clarifications
Reg. 2, Rule 9	Interchangeable Emission Reduction Credits	EPA policy, clarifications
Reg. 2, Rule 10	Large Confined Animal Facilities	EPA policy, clarifications
Reg. 2, Rule TBD	Biogas Flares	Reduce emissions
Reg. 3	Fees	Cost recovery
Reg. 4	Air Pollution Episode Plan	Reduce emissions
Reg. 5	Open Burning	Reduce emissions
Reg 6	Particulate Matter	New rule for definitions, general provisions, and Manual of Procedure test method references
Reg. 6, Rule 1	Particulate Matter, General Limitations	Reduce emissions
Reg. 6, Rule 2	Commercial Cooking Devices	Reduce emissions
Reg. 6, Rule 3	Wood Burning Devices	Clarifications, reduce emissions
Reg. 6, Rule 5	Fluid Catalytic Cracking Units	Reduce emissions
Reg. 6, Rule 6	Prohibition of Trackout	Reduce emissions
Reg. 6, Rule 7	Roofing Asphalt	Reduce emissions
Reg. 6, Rule 8	Bulk Material Storage and Handling	Reduce emissions
Reg. 6, Rule TBD	Glass Melting and Forming Operations	Reduce emissions
Reg. 7	Odorous Substances	Clarifications, reduce emissions
Reg. 8, Rule 1 and others	General Provisions	Applicability, VOC definition, remove methane exemption if applicable
Reg. 8, Rule 2	Miscellaneous Operations	Clarifications
Reg. 8, Rule 3	Architectural Coatings	Clarifications, flexibility, VOC definition
Reg. 8, Rule 4	General Solvent and Surface Coating Operations	Clarifications, reduce emissions, VOC definition
Reg. 8, Rule 5	Storage of Organic Liquids	Reduce emissions
Reg. 8, Rule 6	Organic Liquid Bulk Terminals and Bulk Plants	Clarifications, reduce emissions
Reg. 8, Rule 7	Gasoline Dispensing Facilities	Reduce emissions

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
2017 DRAFT REGULATORY MEASURES LIST

Regulation, Rule	Title	Objectives [1]
Reg. 8, Rule 8	Wastewater Collection and Separation Systems	Clarifications, VOC definition, emission reductions
Reg. 8, Rule 9	Vacuum Producing Systems	Clarifications, VOC definition
Reg. 8, Rule 10	Process Vessel Depressurization	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 11	Metal Container, Closure and Coil Coating	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 12	Paper, Fabric and Film Coating	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 13	Light and Medium Duty Motor Vehicle Assembly Plants	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 14	Surface Preparation and Coating of Large Appliances and Metal Furniture	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 15	Emulsified and Liquid Asphalts	Reduce emissions
Reg. 8, Rule 16	Solvent Cleaning Operations	Clarifications, reduce emissions, VOC definition
Reg. 8, Rule 18	Equipment Leaks	Clarifications, VOC definition, applicability
Reg. 8, Rule 19	Surface Preparation and Coating of Miscellaneous Metal Parts and Products	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 20	Graphic Arts Operations	Clarifications, reduce emissions, EPA policy, VOC definition
Reg. 8, Rule 21	Rubber Tire Manufacturing Operations	Clarifications, VOC definition
Reg. 8, Rule 22	Valves and Flanges at Chemical Plants	Clarifications
Reg. 8, Rule 23	Coating of Flat Wood Paneling and Wood Flat Stock;	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 24	Pharmaceutical and Cosmetic Manufacturing Operations;	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 26	Magnet Wire Coating Operations	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 28	Episodic Releases from Pressure Relief Devices at Petroleum Refineries and Chemical Plants	Clarifications, flexibility

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
2017 DRAFT REGULATORY MEASURES LIST

Regulation, Rule	Title	Objectives [1]
Reg. 8, Rule 29	Aerospace Assembly and Component Coating Operations	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 30	Semiconductor Manufacturing Operations	Reduce emissions, VOC definition
Reg. 8, Rule 31	Surface Coating of Plastic Parts and Products	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 32	Wood Products Coatings	Clarifications, flexibility, reduce emissions, VOC definition
Reg. 8, Rule 33	Gasoline Bulk Terminals and Gasoline Delivery Vehicles	Clarifications
Reg. 8, Rule 34	Solid Waste Disposal Sites	Reduce emissions
Reg. 8, Rule 35	Coating, Ink and Adhesive Manufacturing	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 36	Resin Manufacturing	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 37	Natural Gas and Crude Oil Production Facilities	Reduce emissions, consistency with ARB standards
Reg. 8, Rule 38	Flexible and Rigid Disc Manufacturing	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 39	Gasoline Bulk Plants and Gasoline Delivery Vehicles	Clarifications
Reg. 8, Rule 40	Aeration of Contaminated Soil and Removal of Underground Storage Tanks	Clarifications, VOC definition
Reg. 8, Rule 41	Vegetable Oil Manufacturing Operations	Clarifications, VOC definition
Reg. 8, Rule 43	Surface Preparation and Coating of Marine Vessels	Clarifications, VOC definition, reduce emissions
Reg. 8, Rule 44	Marine Vessel Loading	Clarifications, reduce emissions
Reg. 8, Rule 45	Motor Vehicle and Mobile Equipment Coating Operations	Clarifications, flexibility, VOC definition
Reg. 8, Rule 46	Marine Tank Vessel to Marine Tank Vessel Loading	Clarifications
Reg. 8, Rule 49	Aerosol Paint Products	Clarifications, consistency with ARB standards, reduce emissions, VOC definition
Reg. 8, Rule 50	Polyester Resin Operations	Clarifications

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
2017 DRAFT REGULATORY MEASURES LIST

Regulation, Rule	Title	Objectives [1]
Reg. 8, Rule 51	Adhesive and Sealant Products	Clarifications, reduce emissions, VOC definition
Reg. 8, Rule 52	Polystyrene, Polypropylene and Polyethylene Foam Product Manufacturing Operations.	Clarifications
Reg. 8, Rule 53	Vacuum Truck Operations	Clarifications
Reg. 8, Rule TBD	Green Waste Operations	Reduce emissions
Reg. 8, Rule TBD	Livestock Waste/Confined Animal Facilities	Reduce emissions
Reg. 8, Rule TBD	Digital Printing	Reduce emissions
Reg. 8, Rule TBD	Natural Gas Transmission and Distribution	Reduce emissions
Reg. 8, Rule TBD	Wastewater from Coke Cutting	Reduce emissions
Reg. 8, Rule TBD	Wineries	Reduce emissions
Reg. 8, Rule TBD	Vanishing Oils and Rust Inhibitors	Reduce emissions
Reg. 8, Rule TBD	LPG, Propane, Butane, and other Pressurized Gases	Reduce emissions
Reg. 9, Rule 1	Sulfur Dioxide	Monitoring, recording requirements
Reg. 9, Rule 2	Hydrogen Sulfide	Monitoring, recording requirements
Reg. 9, Rule 4	NOx from Fan Type Residential Central Furnaces	Reduce emissions
Reg. 9, Rule 6	NOx from Natural Gas-Fired Water Heaters	Clarifications, reduce emissions
Reg. 9, Rule 7	NOx and CO from Boilers, Steam Generators and Process Heaters	Clarifications, reduce emissions
Reg. 9, Rule 8	Stationary IC Engines	Clarifications, reduce emissions
Reg. 9, Rule 9	Stationary Gas Turbines	Reduce emissions
Reg. 9, Rule 10	Refinery boilers, steam generators and process heaters	Reduce emissions
Reg. 9, Rule 12	NOx, SO_2 and Particulate from Glass Melting Furnaces	Reduce emissions
Reg. 9, Rule 13	NOx, Particulate Matter and Toxic Air Contaminants from Cement Kilns	Clarifications, reduce emissions
Reg. 9, Rule 14	SOx from Petroleum Coke Calcining	Reduce emissions
Reg. 9, Rule TBD	NOx from Kilns, Ovens and Furnaces	Reduce emissions
Reg. 9, Rule TBD	NOx from Large Residential and Commercial Space Heating	Reduce emissions
Reg. 9, Rule TBD	Sulfur content for gaseous fuels	Reduce emissions
Reg. 9, Rule TBD	Sulfur content for liquid fuels	Reduce emissions
Reg. 10	Standards of Performance for New Stationary Sources	Federal standards update
Reg. 11	Hazardous Air Pollutants	Reference federal standards
Reg. 11, Rule 1	Lead	Clarifications, reference federal standards
Reg. 11, Rule 2	Asbestos Demolition, Lead Paint Removal, Renovation and Manufacturing	Clarifications

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
2017 DRAFT REGULATORY MEASURES LIST

Regulation, Rule	Title	Objectives [1]
Reg. 11, Rule 10	Hexavalent Chromium from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers	Clarifications
Reg. 11, Rule 14	Asbestos-Containing Serpentine	Clarifications
Reg. 11, Rule 18	Reduction of Risks from Air Toxics at Existing Facilities	Reduce toxic emissions and risks
Reg. 12, Rule 11	Flare Monitoring at Petroleum Refineries	Clarifications
Reg. 12, Rule 12	Flares at Petroleum Refineries	Reduce emissions
Reg. 12, Rule 15	Refinery Emissions Tracking	Monitor emissions, assess health impacts
Reg. 12, Rule 16	Petroleum Refining Facility-Wide Emissions Limits	Ensure that some refinery emissions do not increase
Reg. 14, Rule 1	Commuter Benefits Program	Legislative update
Reg. and Rule TBD	Indirect Source Mitigation	Reduce emissions
Reg. and Rule TBD	Episodic Controls	Reduce emissions
Reg. and Rule TBD	Sulfur Hexafluoride	Reduce emissions
Reg. and Rule TBD	Refrigeration Management	Reduce emissions
Reg. and Rule TBD	Magnet Source Rule	Reduce emissions
Reg. and Rule TBD	Emergency Stand-by Stationary IC Engines	Reduce emissions
Reg. and Rule TBD	Methane Leaks and Releases	Climate Protection
Reg. and Rule TBD	Short-Lived Climate Pollutants	Climate Protection
Reg. and Rule TBD	Carbon Intensity Limits on Large GHG Sources	Climate Protection
Reg. and Rule TBD	Refining Intensity of Crude Oil	Climate Protection
Reg. and Rule TBD	Heat Mitigating Technologies Deployment	Climate Protection
Reg. and Rule TBD	Energy Use in Residential, Commercial and Industrial Sectors	Climate Protection
Reg. and Rule TBD	Greenhouse Gas Emissions from Sewage Treatment Facilities	Climate protection
Reg. and Rule TBD	Refinery Fuel Gas	Reduce emissions
Reg. and Rule TBD	Limiting Health Impacts from Particulate Matter Pollution	Reduce emissions and health impacts
Reg. and Rule TBD	Sulfuric Acid Plants	Reduce emissions
Reg. and Rule TBD	Sulfur Plants	Reduce emissions
Reg. and Rule TBD	Refinery Delayed Cokers	Reduce emissions
Reg. and Rule TBD	Methane and Air Toxics from Oil & Gas Capped Wells	Reduce emissions
Reg. and Rule TBD	Ammonia from Stationary Sources	Reduce emissions
Reg. and Rule TBD	Sample and Analyze Episodic Event Plumes	Monitor emissions, assess health impacts
Reg. and Rule TBD	Impacts of Crude Changes Upstream of Crude Units	Improve enforceability
Reg. and Rule TBD	Start-up, Shutdown & Malfunction Emissions	Reduce emissions
Reg. and Rule TBD	Refinery Emissions Best Practices Backstop Rule	Reduce emissions

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
2017 DRAFT REGULATORY MEASURES LIST

Regulation, Rule	**Title**	**Objectives** [1]
Reg. and Rule TBD	Periodic Assessment of Significant Emission Sources	Reduce emissions
MOP, Volume I	Enforcement Procedures	Clarification, improve data submittals
MOP, Volume II	Engineering Permitting Procedures	Consistency with EPA requirements, clarifications
MOP, Volume III	Laboratory Methods	New and improved analytical procedures
MOP, Volume IV	Source Test Methods	New and improved analytical procedures
MOP, Volume V	Continuous Emission Monitoring	New and improved analytical procedures
MOP, Volume VI	Ground Level Monitoring	Consistency with EPA requirements
New MOP, Volume IX	Procedures for Evaluating and Lists of Non-Precursor Organic Compounds, Group I and Group II	Evaluation and listing of NPOCs

1 Objectives are listed for information only and are subject to change. Rule development efforts for a rule are not limited to listed objectives.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 29, 2016

Re: Report of the Climate Protection Committee Meeting of November 17, 2016

RECOMMENDED ACTION

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

BACKGROUND

The Committee met on Thursday, November 17, 2016, and received the following reports:

A) Solar Energy Master Plans for Bay Area Schools; and

B) Summary of Climate Forward Bay Area: A Leadership Forum

Chairperson Jan Pepper will provide an oral report of the Committee meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

A) None; and

B) None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Marcy Hiratzka
Reviewed by: Maricela Martinez

Attachment 8A: 11/17/16 – Climate Protection Committee Meeting Agenda #4
Attachment 8B: 11/17/16 – Climate Protection Committee Meeting Agenda #5

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jan Pepper and Members of the Climate Protection Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 1, 2016

Re: Solar Energy Master Plans for Bay Area Schools

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The California Clean Energy Jobs Act (Prop. 39), passed in 2012, provides up to $550 million annually to improve energy efficiency and expand clean energy generation in California schools. In addition to Prop. 39, funding for school-based energy efficiency upgrades and renewable energy systems can be accessed through general obligation bonds, Clean Renewable Energy Bonds, Qualified Zone Academy Bonds, and California Energy Commission Energy Efficiency Financing. While funding opportunities exist, many school districts lack the staffing resources and expertise to identify and prioritize their specific energy needs and to apply to often complicated funding programs. The Air District has contracted with KyotoUSA to develop solar master plans for Bay Area school districts to support these efforts.

DISCUSSION

A Solar Master Plan (SMP) is a planning tool for public school districts that are interested in installing renewable energy systems – either now or at some point in the future. An SMP can be used to identify suitable locations for solar installations, as well as for assessing photovoltaic (PV) system cost, electricity generation, annual utility bill savings, and to aggregate savings over the expected lifetime of the PV system. An SMP also calculates greenhouse gas (GHG) reductions due to replacing utility power with on-site renewable electricity generation.

Through the Air District's contract, KyotoUSA assisted sixty-eight school districts to identify solar power potential and energy efficiency opportunities, and developed detailed, strategic, cost effective plans to achieve clean energy goals for nineteen of these school districts.

A representative from KyotoUSA will brief the Committee on the activities undertaken, and results from the Solar Master Plan project.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Abby Young
Reviewed by: Henry Hilken

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jan Pepper and Members
of the Climate Protection Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 10, 2016

Re: Summary of Climate Forward Bay Area: A Leadership Forum

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

This year marks the 10-year anniversary of the Bay Area Air District's Climate Program. In 2006 the Air District hosted a climate summit featuring key note speaker, Vice President Al Gore. At this conference the Air District initiated grant funding to initiate climate planning initiatives throughout the Bay Area.

In 2009 the Air District built upon the growing momentum and hosted our second climate conference in Oakland featuring then Attorney General Jerry Brown and keynote speaker, New York Times columnist and author Thomas Friedman. The 2009 conference focused on local cities and counties and grant funds were announced to initiate climate action planning in the Bay Area's 101 cities.

This year the Air District is celebrating our 60th anniversary. The Air District has established a new Climate Planning section that continues to build on the success of the past 10 years. To commemorate this milestone, the Air District received Board approval in 2015 for \$300,000 in funding from the 2016-2017 budget to host a Climate Leadership Forum.

DISCUSSION

Planning for Climate Forward Bay Area: A Leadership Forum began in late 2015. The UCSF Mission Bay Conference Center was selected as the location and over 300 participants registered for the Forum and 275 attend each day of this 2-day event. Ideas generated from the Climate Forum will be incorporated in to the Air District's 2017 Clean Air Plan and Regional Climate Protection Strategy.

Feedback from the event was positive and attendees believe the Forum will spark further climate protection conversations throughout the region.

The Committee will receive a summary of the Climate Forward Bay Area: A Leadership Forum, as well as an overview of the budget, attendee's feedback and lessons learned.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Planning and Forum execution was funded out of the current year budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Lisa Fasano
Reviewed by: Jean Roggenkamp

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 29, 2016

Re: Report of the Executive Committee Meeting of November 21, 2016

RECOMMENDED ACTION

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

BACKGROUND

The Committee met on Monday, November 21, 2016, and received the following reports:

A) Bay Area Regional Collaborative (BARC) Update

B) Update of Remote Participation Protocol for Committee Meetings

C) Clean Air Plan/Regional Climate Protection Strategy Update

D) Ongoing Community Grant Project Status and Report on First Round of Proposed Community Science Partnership Projects for Fiscal Year End (FYE) 2017; and

E) Update on My Air Online Program

Chairperson Eric Mar will provide an oral report of the Committee meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

A) None.

B) Additional budget may be required for the implementation of this technology. Estimates will be forthcoming from the SSO.

C) Resources to develop the 2017 Plan are included in the Fiscal Year Ending 2017 budget.

D) Funding for this project is included in the FYE 2017 budget; and

E) Funding for the vendor contracts to support these activities will be provided from the My Air Online Program (#125) budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Marcy Hiratzka
Reviewed by: Maricela Martinez

Attachment 9A: 11/21/16 – Executive Committee Meeting Agenda #4
Attachment 9B: 11/21/16 – Executive Committee Meeting Agenda #5
Attachment 9C: 11/21/16 – Executive Committee Meeting Agenda #6
Attachment 9D: 11/21/16 – Executive Committee Meeting Agenda #7
Attachment 9E: 11/21/16 – Executive Committee Meeting Agenda #8

AGENDA: 4

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members
of the Executive Committee

From: Jack P. Broadbent
Executive Officer/Air Pollution Control Officer

Date: November 14, 2016

Re: Bay Area Regional Collaborative (BARC) Update

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The Bay Area Regional Collaborative (BARC) consists of Board/Commission representatives of the four regional agencies and provides a forum for discussing issues of regional importance.

DISCUSSION

At the upcoming Executive Committee meeting, the BARC Director, Allison Brooks, will provide an update on the activities of the BARC.

BUDGET CONSIDERATIONS/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Jean Roggenkamp

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members
of the Executive Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 14, 2016

Re: Update of Remote Participation Protocol for Committee Meetings

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

Prior to moving to 375 Beale Street, the Bay Area Air Quality Management District (District) identified the need for video conferencing capabilities for the Beale Street Boardroom and Multipurpose (MPR) room. This capability was envisioned to facilitate remote participation in District meetings by members of the Board of Directors (Board) and the public.

The District and the Shared Services Organization of the Bay Area Headquarters Authority (SSO) met prior to moving to 375 Beale Street and discussed the implementation of Boardroom and MPR video conferencing. It was jointly decided that, due to the complexity of the Boardroom audio-visual implementation, consideration for the videoconferencing technology would occur after move-in, once webcasting and recording features were proven in actual operation.

DISCUSSION

The SSO has engaged with its vendor Integrated Communication Systems (ICS) in order to design and estimate the level of effort to add video conferencing technology to the Boardroom and the MPR.

Representatives of the SSO will present an update to the Committee on the project status.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Additional budget may be required for the implementation of this technology. Estimates will be forthcoming from the SSO.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: <u>John Chiladakis</u>
Reviewed by: <u>Damian Breen</u>

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members of the Executive Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 14, 2016

Re: Clean Air Plan/Regional Climate Protection Strategy Update

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

Staff is updating the Clean Air Plan, the Air District's strategic plan to continue to improve air quality and health. In November 2013, the Board of Directors adopted a Climate Protection Resolution which included a provision directing staff to develop a comprehensive Regional Climate Protection Strategy as part of the Clean Air Plan update, with the objective of encouraging regional and local actions to support the long-range goal of reducing greenhouse gas (GHG) emissions 80% below 1990 levels by year 2050.

DISCUSSION

The Regional Climate Protection Strategy will be incorporated as a key element of the 2017 Clean Air Plan/Regional Climate Protection Strategy (2017 Plan). The 2017 Plan will define an integrated multi-pollutant strategy to further reduce emissions of criteria pollutants, air toxics, and greenhouse gases in order to attain air quality standards, safeguard public health, and protect the global climate.

The 2017 Plan will be based on the framework of economic sectors defined by the Air Resources Board (ARB) for the statewide AB 32 Scoping Plan. In preparing the plan, staff has analyzed Bay Area GHG and air pollutant emissions and projected emission trends, and developed proposed control measures to reduce emissions of GHGs and air pollutants from each economic sector.

Staff has met with stakeholders and has posted draft control measure descriptions for public review, to solicit input on potential control measures proposed for inclusion in the plan. Staff is finalizing the Draft Plan and anticipates releasing the Draft Plan for public review later this year. In addition, recent State legislation (SB 32) establishes a state-wide GHG reduction target for 2030. ARB staff is updating the AB 32 Scoping Plan to reflect policies and programs oriented towards the 2030 target. Staff will brief the Committee on potential control measures proposed for the 2017 Plan, the status of the Scoping Plan update, and the next steps for completing the 2017 Plan.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Resources to develop the 2017 Plan are included in the Fiscal Year Ending 2017 budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Henry Hilken
Reviewed by: Jean Roggenkamp

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members of the Executive Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 14, 2016

Re: Ongoing Community Grant Project Status and Report on First Round of Proposed Community Science Partnership Projects for Fiscal Year End (FYE) 2017

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

On September 19, 2016, the Board of Directors approved the guidelines for the FYE 2017 James Cary Smith Community Grant Program with a specific focus for this funding cycle on Community Science Grants. The FYE 2017 budget includes an allocation of $250,000 for the Community Grant Program which is the second year of funding for this program. The overall James Cary Smith Community Grant Program was developed to expand efforts to reduce air pollution, further collaboration and direct community participation in the protection of our health and the environment.

Last year the Community Grant Program approved 11 projects in six-different counties for a total $261,274 out of the FYE 2016 budget. Most of these projects are well-underway and are generating a lot of enthusiastic response. As per the intent of the program, all of the projects have direct partnerships with a community-based organization or with one or more local high/junior high schools and are presently engaging in activities that range from implementing local air pollution mitigation projects such as targeted tree planting and installing indoor air bio-filters, building community bike events and education initiatives, to conducting surveys and collecting air quality research in neighborhoods around schools (please see Attachment 7A for current status and highlights for each project).

For this year, staff released a call for grant proposals explicitly soliciting "citizen science"/community-based participatory research projects throughout the region in addition to a smaller grant pool targeting funds for supporting K-12 teachers implementing air quality curriculum projects. Staff has publicized and disseminated the grant overview and guidelines to our community stakeholder list and forward outreach material to each of the Board of Directors. Staff also held an informational grant workshop on October 20th for all prospective applicants.

This grant funding is available on a rolling basis until March 31, 2017 or until funds are expended and already staff has received four compelling proposals for projects in East Oakland, San Jose, Richmond and Bayview Hunters Point.

DISCUSSION

Staff believes that the current FYE 2016 Community Grants that have been allocated are on track in achieving the stated program goals and intent including encouraging community-based solutions that can improve health while also helping reduce our global climate impact and focusing resources on localized areas within the region with high concentrations of air pollution.

Although one project (Cool the Earth) asked to withdraw, all remaining grantees have initiated work and are submitting required reporting documents. All projects are expected to be completed and funds expended by June 30, 2017. At the completion of projects, staff will invite grantees to showcase their projects and successes with the Board of Directors.

Meanwhile, following this first grant cycle, with encouragement from the Board of Directors and specific input from internal and external stakeholder groups, staff developed a focused Community Science Grant Program for the FYE 2017 cycle to hone the outreach and highlight the opportunity for applicants to partner with the Air District and bring together researchers and community groups for this new avenue of sponsored air quality science projects.

Staff developed guidelines for the Community Science Grant Program and following Board approval, put out a call for project proposals in early October. The process of selection involves review and scoring of submitted projects followed by vetting and scoping of proposed research design and application by an internal Air District Community Science working group consisting of representatives from Technical Services, Planning, Engineering and Enforcement. A partnership agreement and sponsored-research contract will be executed for suitable projects that meet the Air District's and Community Grant program goals.

To date, staff has reviewed a first-round of four excellent and promising proposals two of which have been scoped for developing a contract. Information on these grants will be presented to the Executive Committee. Staff is also in discussion with several other interested research and community partners throughout the region for potential projects. Staff continues to conduct outreach to invite grant proposals and in particular are doing extensive outreach to teachers and schools.

BUDGET CONSIDERATION/FINANCIAL IMPACT:

Funding for this project is included in the FYE 2017 budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: David Ralston
Reviewed by: Jean Roggenkamp

Attachment 7A: FYE 2016 Community Grant Project Status and Highlights

Attachment 7A - FYE 2016 Community Grant Projects Status and Highlights (as of November 2016)

Applicant and Community Partners	Project Name	(Grant Amount) and Project Description	Location	Status and Highlights
Rose Foundation for Communities and the Environment – Bay Localize/Emilia Zapata Street Academy	**Collaborative Air Quality Leadership Development**	($25,0000). Develop Community Air Quality Leaders by combining education, hands-on mitigation projects, and community outreach. Project includes direct air quality lessons in classroom, hands-on tree-planting project at their school-site and the surrounding neighborhood; and outreach to share knowledge with the broader community.	North Oakland – CARE	Students in the spring quarter Growing Justice class participated in 3 lessons on air pollution, in which they explored correlations between asthma hospitalization rates and proximity to major roadways and truck routes, looked up their home neighborhoods on CalEnviroScreen, and learned about roles trees play in capturing CO_2 and filtering pollution. During May and June, students collaborated with Urban Releaf to remove blacktop in the areas where trees were to be planted, then dug holes and planted 7 trees -- 5 inside of the fence and 2 in front of the school. The partners are now working, with student input, to develop a plan for planting an additional 28 trees in the neighborhood.

Earth Team - Oakland High, Richmond HS	**Zero Carbon Schools/Sustainable Youth Internships**	($24,527.00). Implement 2 Sustainable Youth Zero Carbon Internships with 30 high school students at 2 East Bay schools. Students will educate and engage campus and surrounding communities about air pollution, toxic carcinogens, GHG emissions and its impact on human health and also use SITA curriculum, Transportation Action Project (TAP) Calculator to assess baseline VMT-CO2 emissions informing student-driven mitigation action plans and alternatives for their school.	Richmond, Oakland – CARE	Currently in the campus outreach / recruitment phase at Richmond and Skyline High schools presenting the project objectives to over 500 students per campus and visiting over 20 classes in coordination with teachers participating in the Richmond HS Health Academy and the Skyline Green Energy Academy. The presentations will invite students to apply for an internship position and grantee are now receiving and processing the first applications, and scheduling interviews. Recruiting other project partner's teams (14 per school) to start t project planning including student's receiving initial curriculum instruction and formulating their ideas in the context of the project objectives.

San Francisco Bicycle Coalition Education Fund (with specific community-based organizations)	**Community Bike Builds**	($25,000). Work with San Francisco's most challenged and underserved neighborhoods to provide free bikes (re-using unclaimed bikes from public agencies) and bike safety classes to low-income individuals who want to bike but cannot afford a bicycle. Also: hold Community Bike Builds events; work with participants in advocating for improvements in biking conditions and in SR2S programs.	San Francisco - CARE areas	Provided free bikes and bike safety classes to low-income individuals who want to bike but cannot afford a bicycle. In reporting period, organized and held a bike build in the Bayview and Tenderloin. Participants have completed classes to receive locks, lights, and helmets. In March, partnered with Causa Justa: Just Cause to hold a bike build in the Bayview with 18 attendees (6 youth and 12 adults) who participated in our bike education class and received a bicycle, lock, helmet and lights. In April, partnered with the Vietnamese Youth Development Center to host a bike build in the Tenderloin. This event was well attended with 20 youth participated in bike education class and received bicycles, locks, helmets and lights.

Breathe California of the Bay Area – 2 High Schools in San Jose	**Youth for a Cool Earth**	($25,000). Collaborate with Santa Clara County schools "green" clubs to help youth understand the threat of climate change and motivate personal changes in behavior. Project will train youth as peer leaders to address problems at their schools, homes, and engage additional youth, parents and the general community to encourage lower polluting activities.	Santa Clara/San Jose – CARE	During the current reporting period Breathe California of the Bay Area, made follow-up contact with Lynbrook High School, in San Jose to participate in the Youth for a Cool Earth program. BCBA in collaboration with Silicon Valley Clean Cities Coalition worked to continue its Idle Box Campaign to assist these schools. Base line traffic observation of students entering/exiting the school occurred on September 12th through September 23rd. The traffic observation revealed cars idling increased during certain time periods of the day. Youth for a cool Earth mentor training began on September 26, 2016, and will continue for a 10-week period to train youth as peer leaders for environmental stewardship. This knowledge would allow the students to train other students and their community. 20 Lynbrook High School Students met to discuss Youth4CoolEarth Project

Rails-to-Trails Conservancy/Rich City Rides/Richmond HS, Pogo Park	**Richmond Rides! Celebrating Biking, BART, Buses and Breathing Better**	($25,000). Promote bike/transit connection through fun family bike rides in Richmond and educate the community about the air quality impacts of transportation choices. Goal is to encourage more bicycling and transit use to improve individual and community health and air quality. Grant provides skills and training to overcome barriers to biking, share information about the air quality and health benefits of biking more and driving less.	Richmond/Iron Triangle – CARE	Held two community bike rides in Richmond and along Bay Trail in conjunction with Rich City Rides and held commuter fair and education with community groups and Richmond officials.
Hunters Point Family	**The People's Harvest: Bayview Hunters Point Air Filter garden/trees/plants**	($25,000). Support the Bio-filter Garden Project as an expansion of HPF's community gardens to include tree orchards and plants that provide significant air filtration properties as an air quality enhancement strategy. The project will also produce and distribute over 300 bio-filters to over 300 residents of the BVHP community to improve the air quality within their homes.	Bayview Hunters Point, San Francisco -CARE	To date, 14 youth from Bayview Hunters Point have been recruited and trained in permaculture, landscaping and air quality. Using parts of the environmental job readiness curriculum Roots to Success, participants of the HPF Bio Filter Garden program youth were trained in air quality, while using the history of Bayview for tangible learning. Participants met three times a week, for two to three hours a day over the months of June – August 2016. To date, a plan has been devised to plant 300 air filtering plants in community gardens throughout Bayview Hunters Point.

La Clinica de La Raza, Inc. – Escuela de Promotores/ Freedom Breathers	**Pittsburg Air Quality Community Advocates**	($25,000). Improve the respiratory health of Pittsburg residents through outreach, education, and advocacy by recruiting/ training 8 volunteer Promotores (lay Community Health Workers), developing a Community Action Model; conduct outreach and education at 6 community events; conduct 7 educational presentations to the Pittsburg community; contribute to Global Community Monitor and Pittsburg High School's Freedom Breathers advocacy efforts.	Pittsburg – CARE	CHE Staff recruited 11 adult/senior new and existing Promotores to participate in the PAQCA Project. Training consultant conducted two separate Air Quality 101 training for five staff and 11 Promotores in September. 11 Promotores will receive refresher training in the Escuela de Promotores and CAM in November. 1 CHE Staff will facilitate the refresher training. On October 1st two Promotoras and two La Clínica staff attended the Healthy Livable Pittsburg (HLP) Community Forum. The Promotoras were provided feedback on their concerns about air quality and suggested that air quality is an issue that is included in the HLP Community Action Plan. Additionally, on October 30th, Promotoras and staff will be attending a neighborhood meeting with representatives from the City of Pittsburg to advocate to air quality monitoring in Pittsburg.

Center for Climate Protection – 2 Santa Rosa High Schools	**ECO2school Youth Leadership Development**	($25,000). Help students develop projects that support healthy living, safe commuting, biking, walking, transit ridership, traffic decongestion, and improved air quality by working intensively with a group of youth leaders to quantify and reduce each school's commute carbon footprint. The program includes educational trainings, biking field trips, leadership summits, and incentive programs which are integrated into existing school curriculum and school culture. Reduction activities culminates with an April ECO2school Challenge.	Santa Rosa	Held 6 on site leadership team meetings this school year and held Teacher Champion meetings at all three schools and met with school Administrators at all three schools. At Roseland Univ. Prep (RUP) school, two meetings with the leadership class, one meeting with leadership teachers and one meeting with administrator. There are seven students on the RUP leadership team and two youth advisory board members. At Sonoma Valley: 3 meetings with the Earth Club, one meeting with the club advisor and one meeting with the school principal. There are 33 students in Earth Club, 5 on the ECO2school leadership team and three youth advisory board members. At Maria Carrillo: 1 meeting with the ECO-club on September 28th. There are 6 students in their club.

Breathe California Golden Gate Public Health Partnership - Girls Inc.	**O24u Air Quality Improvement Education Program**	($25,000). Partner with Girls Incorporated of West Contra Costa in an afterschool setting to provide environmental and health education to 75 4th and 5th grade students and their families in an effort to educate and promote environmental literacy specifically around air quality and health effects with "hands-on minds-on" six-module curriculum over 18-36 weeks.	San Pablo/Richmond – CARE	In July, Audrey Abadilla was hired as the O24U Program Coordinator and an MOU was developed for subcontractor Breathe California Sacramento-Emigrant Trails. The Coordinator received training from the subcontractor and the process of tailoring the existing curriculum to better reflect the Bay Area community began. Examples and cited articles were exchanged with local references and photos were edited to better reflect the community participating in the program so the 4th and 5th graders in the program would be more likely to see themselves/their community reflected on the pages of their workbooks. Meetings began with Girls Inc. of West Contra Costa County and an MOU was developed. In September, the Girls Inc. Associate Director of Programs and the O24U Coordinator were fully trained by Breathe California Sacramento. Girls Inc. also hired their site facilitator who began learning the O24U program to build their organization's capacity to offer environmental health education. Curriculum was finalized and the evaluation tools for participants, facilitators, and families were successfully designed to ensure the program captures progress and can measure program objectives.

Strategic Energy Innovations - Castlemont, San Leandro HS, Oakland Tech, Vista Richmond HS	**SEI Air Quality Education & Improvement Program**	($24,647). Develop and implement an Air Quality Education Program engaging 4 CARE high school in citizen science projects through energy conservation and low-impact transportation campaigns. Project leverages existing materials from HabitatMap's AirBeam data collection tool, AirCasting online database for monitoring, STi air pollution curriculum, Vivergy air quality calculator. Students will explore green transportation and energy conservation supported by a $100,000 match from PG&E. Project culminates with a professional conference for students.	San Leandro, Oakland and Richmond – CARE	Progress report not yet submitted
Cool the Earth – 9 High Schools in the Marin and San Francisco	**Engaging Children and Bay Area Communities in Climate Change Solutions Project**	($12,000). Provide the CTE School Program to 12 underserved schools. The free program is a parent/volunteer run K-8 educational program engaging students in the issues of climate change, including both health and climate effects of air pollution. The program educates and motivates students and their families to take actions to reduce carbon emissions.	San Francisco, Marin/San Rafael – CARE	Applicant withdrew proposal due to lack of capacity of organization. Funds redistributed.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members of the Executive Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 14, 2016

Re: Update on My Air Online Program

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

Staff will provide an update on the My Air Online program goals for Fiscal Year End (FYE) 2017, including progress in completing small facility permitting milestones and website enhancements.

DISCUSSION

In the 2016 calendar year, the My Air Online Program have completed the following activities:

- Support for online permitting and mobile inspections of emergency/standby diesel engines;
- Support for online processing for asbestos renovation and demolition jobs;
- Enhanced support for compliance and enforcement operations;
- Migration of small boilers to new online permitting system; and
- New online wood smoke complaint and investigation processing.

Staff plan to complete the following items for the remainder of the FYE 2017:

- Migration of legacy registered sources of air pollution to newer online permitting platform;
- Mobile inspections for asbestos renovation and demolition notifications;
- Online stipulated abatement order agreements for small boilers;
- Enhanced dispatching and mobile investigations for air quality complaints;
- Enforcement action processing; and
- Foundation for complex facility permitting enhancements.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Funding for the vendor contracts to support these activities will be provided from the My Air Online Program (#125) budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Jaime A. Williams
Reviewed by: Damian Breen

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 29, 2016

Re: Public Hearing to Consider Adoption of Proposed Amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants and adoption of a Negative Declaration pursuant to the California Environmental Quality Act (CEQA)

RECOMMENDED ACTION

Recommend the Board of Directors:

- Adopt amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants; and

- Adopt a Negative Declaration pursuant to the California Environmental Quality Act (CEQA)

BACKGROUND

The Air District implements several programs that are designed to identify and reduce public exposure to toxic air contaminants (TACs). The Air District's Permitting Program relies on standardized procedures to assess potential health impacts from new and modified sources. The state Office of Environmental Health Hazard Assessment (OEHHA) develops and periodically updates the Health Risk Assessment (HRA) guidelines, while California Air Resources Board (CARB) and California Air Pollution Control Officers Association (CAPCOA) provide risk management (RM) guidance. In 2015, OEHHA adopted major revisions to the HRA guidelines and CARB/CAPCOA updated the RM guidelines. These revised guidelines reflect improved methods for calculating public health risk and account for children's heightened sensitivity to toxic air contaminants.

DISCUSSION

The Air District's risk management policies and procedures for the Air Toxics Permitting Program are implemented through Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. The Air District is proposing to incorporate the updated HRA and RM guidelines into Regulation 2, Rule 5. Overall, the proposed amendments will increase the stringency of this rule. For most carcinogens, the calculated cancer risk for residents will increase by about 40% compared to the

Air District's current procedures. For carcinogens with multiple exposure pathways, the calculated cancer risk may increase by 2-5 times.

RULE DEVELOPMENT PROCESS

The Air District staff met with stakeholders throughout the rule development process, including providing an opportunity to review and comment on the draft rule before finalizing the proposed amendments. A public hearing notice, the proposed Rule 2-5 language, the staff report, the CEQA Initial Study/Negative Declaration, and the socioeconomic analysis are available on the Air District's website at http://www.baaqmd.gov/rulehearings.

BUDGET CONSIDERATIONS/FINANCIAL IMPACTS

The amendments to Rule 2-5 are projected to result in approximately 100 additional New Source Review Health Risk Assessments per year. Approximately two additional full-time employees will be required from the Engineering Division to conduct these activities in order to meet permit application regulatory timelines.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Jaime Williams
Reviewed by: Damian Breen

Attachments: Final Staff Report

- Appendix A: Proposed Rule Revisions
- Appendix B: Proposed Methodology for Derivation of Toxic Air Contaminant Trigger Levels
- Appendix C: Proposed Revisions to Air District Health Risk Assessment Guidelines
- Appendix D: Socioeconomic Impacts Analysis
- Appendix E: CEQA: Draft Initial Study and Proposed Negative Declaration
- Appendix F: Comments and Responses

Attachment 10A

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

PROPOSED AMENDMENTS TO:

BAAQMD REGULATION 2, RULE 5:
NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

STAFF REPORT
December 2016

Prepared by:

Carol Allen, Supervising AQ Engineer
Robert Hull, Principal AQ Engineer
Daphne Chong, Toxicologist
Sanjeev Kamboj, Engineering Manager

Engineering Division

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EXECUTIVE SUMMARY

This report addresses proposed changes to the Air District's Toxics New Source Review (NSR) Program, including amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants (Regulation 2, Rule 5) and associated procedures. The Air Toxics NSR Program is a health risk-based program, where program requirements are based on results of health risk assessment (HRA). HRA is an analysis that estimates the potential for increased likelihood of health risk for individuals in the affected population that may be exposed to emissions of one or more toxic substances.

The goals of the Air Toxics NSR Program are to:

(1) Evaluate and mitigate potential increases in public health risks resulting from new and modified sources emitting TACs; and

(2) Provide net health risk benefits by improving the level of control when existing sources are modified or replaced.

The primary purpose of this Toxics NSR rule amendment is to incorporate the California Office of Environmental Health Hazard Assessment (OEHHA)'s 2015 Health Risk Assessment Guidelines and the California Air Resources Board/California Air Pollution Control Officer Association (CARB/CAPCOA)'s 2015 Risk Management Guidelines into the Air District's Toxics NSR rule. This rule amendment will also include new and revised health effects values and HRA trigger levels.

The Air District is proposing several rule amendments related to modified sources to improve the transparency of HRA results for these projects and to clarify applicable limits and procedures. Currently, modified sources that began operation prior to the initiation of the Air District's Toxic NSR Program on January 1, 1987 have a different emission calculation procedure than newer modified sources. This procedural difference can result in confusing or misleading HRA results. The Air District is proposing to eliminate this January 1, 1987 emission calculation baseline for older modified sources and use the same emission calculation procedure for all modified sources to prevent any confusion regarding HRA results. Limited data is available to assess the potential impacts of this proposed change. However, it is possible that basing an HRA on total proposed emissions from an older modified source could result in denial of a project that may have other air quality benefits. To prevent this unintended consequence, the Air District is proposing to allow consideration of contemporaneous toxic emission reductions for these projects. Since gasoline dispensing facilities (GDFs) are not likely to have contemporaneous toxic emission reductions, the elimination of the January 1, 1987 baseline could result in the denial of a throughput increase request for a modified gas station that began operating prior to this program baseline date, if the baseline throughput rate is large or residents are nearby.

The Air District is adding an exemption from the HRA requirement for small internal combustion engines, with a rated power output of 50 brake-horsepower (bhp) or less, to align it with Air District Regulation 9, Rule 8: Nitrogen Oxide and Carbon Monoxide from Stationary Internal Combustion Engines, state Airborne Toxic Control Measures (ATCMs), and Air District permitting thresholds.

The Air District is proposing a few additional amendments to Regulation 2, Rule 5 to improve conformity with the 2015 HRA Guidelines or clarify requirements. The current risk management thresholds will remain the same.

The overall effect of the Air District's proposed rule revisions is that cancer risk will increase for many projects even though emissions remain the same. Estimating cancer risk using the new and better scientific information contained in the revised OEHHA and CARB/CAPCOA guidelines will result in higher risk numbers for many toxic air contaminants (TACs). For most TACs, the cancer risk will increase by about 40% for the same emissions level compared to the cancer risk calculated using the Air District's current HRA Guidelines. For a dozen TACs, the cancer risk could increase by up to a factor of five.

The net result of these proposed revisions is that projects will reach HRA and emission control requirements and project risk limits at lower emission rates. The Air District anticipates that the proposed rule amendments will result in about 100 more NSR HRAs per year, and that about 60 more projects per year will need to control TAC emissions to meet this rule's project health limits than would otherwise be required to do so under the current rule.

I. INTRODUCTION

This report was prepared to provide information relevant to the Air District's proposed amendments of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants and the associated proposed amendments to the Air District's Methodology for Derivation of Toxic Air Contaminant Trigger Levels and the Air District's Health Risk Assessment Guidelines.

During development of this rule amendment, the Air District posted a draft version of the proposed revisions to Regulation 2, Rule 5 on the Air District web site on January 13, 2016 and presented the proposed revisions to this rule at a series of Community Open Houses held between January 28, 2016 and February 4, 2016. The Air District accepted comments on the proposed rule revisions through March 9, 2016.

The Air District received a number of inquiries regarding the proposed rule revisions and received two written comments. After considering the comments received on this proposed rule revision and additional staff analysis, the Air District made the following key changes to the initial proposed rule revisions: added net health risk limits for pre-1987 modified sources, retained the trigger level table in the rule, and delayed implementation of the 2015 HRA Guidelines for GDFs. The comments on the initial draft and the Air District's responses to these comments are discussed in more detail in Section X of this report.

The Air District published the revised draft amendments to Regulation 2, Rule 5 on the Air District's web site on October 26, 2016. The Air District accepted comments on these proposed amendments through November 28, 2016. The Air District received four written comments on the proposed Regulation 2, Rule 5 amendments and one written comment on the Air District's proposed HRA Guidelines. These comments and the Air District's responses are discussed in detail in Appendix F.

This staff report analyzes the proposed revisions to Regulation 2, Rule 5 and Table 2-5-1, as identified in Appendix A. The procedures used to calculate the proposed risk screen trigger levels are identified in Appendix B. The proposed revisions to the Air District HRA Guidelines are presented in Appendix C. The Socioeconomic Impacts Analysis is included as Appendix D. The California Environmental Quality Act (CEQA) initial study and proposed negative declaration are included as Appendix E. Comments and responses regarding the above documents are detailed in Appendix F.

II. BACKGROUND INFORMATION

Over the last several decades, public concern about air pollution has expanded from what is typically called "smog" and other criteria air pollutants to include TACs. A pollutant is considered toxic if it has the potential to cause adverse health effects such as cancer, birth defects, respiratory ailments, or other serious illness.

For more than twenty-nine years, the Air District has implemented programs that are designed to identify and reduce the public's exposure to TACs. As shown in Figure 1, Air District and state toxic programs have reduced the average Bay Area cancer risk resulting from exposure to TACs in our air by 83% over the last two decades.

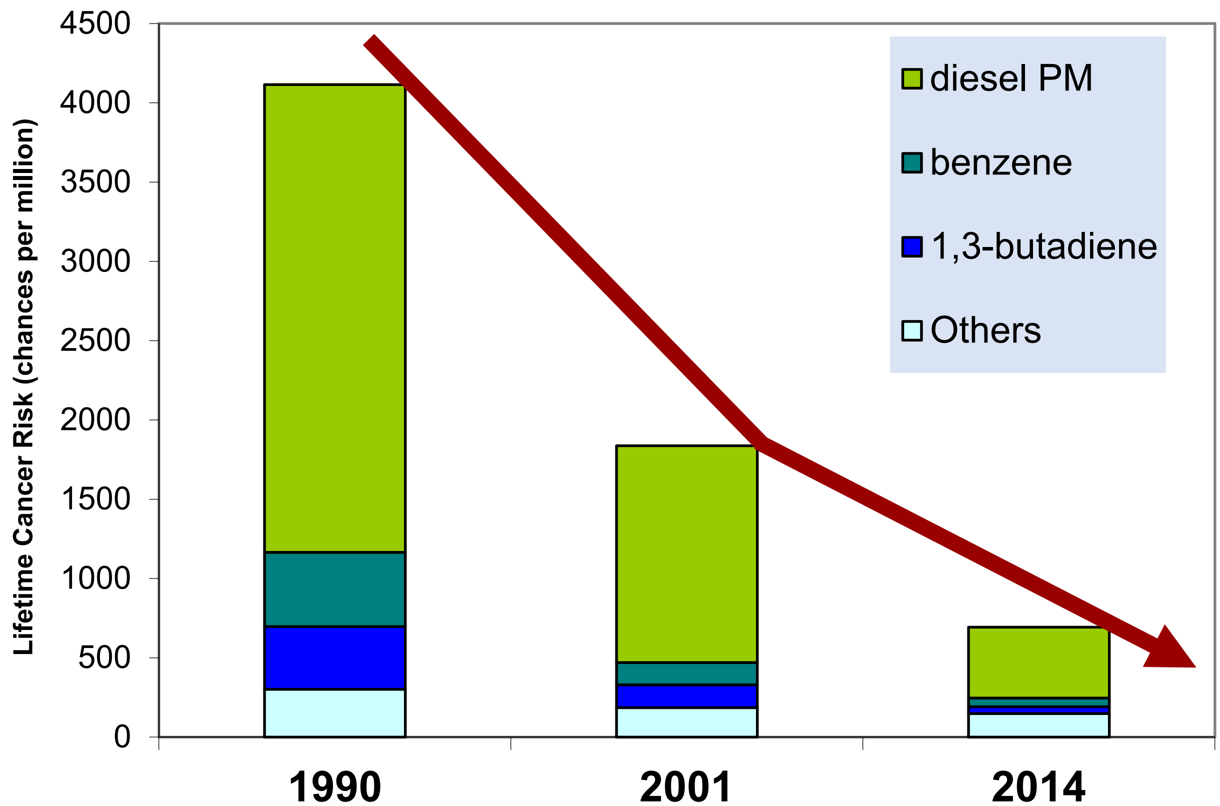

Figure 1. Bay Area Lifetime Residential Cancer Risk* from TAC Exposure

* Cancer risk is based on average ambient air monitoring data and the population wide risk assessment methodology presented in OEHHA's 2015 HRA Guidelines.

The Air District's long-standing Air Toxics Program is directed at reducing TAC emissions from stationary sources. Based on the Air District's TAC emissions inventories, toxicity weighted TAC emissions from Bay Area stationary sources have decreased by at least 87% since 1990 (see Figure 2).

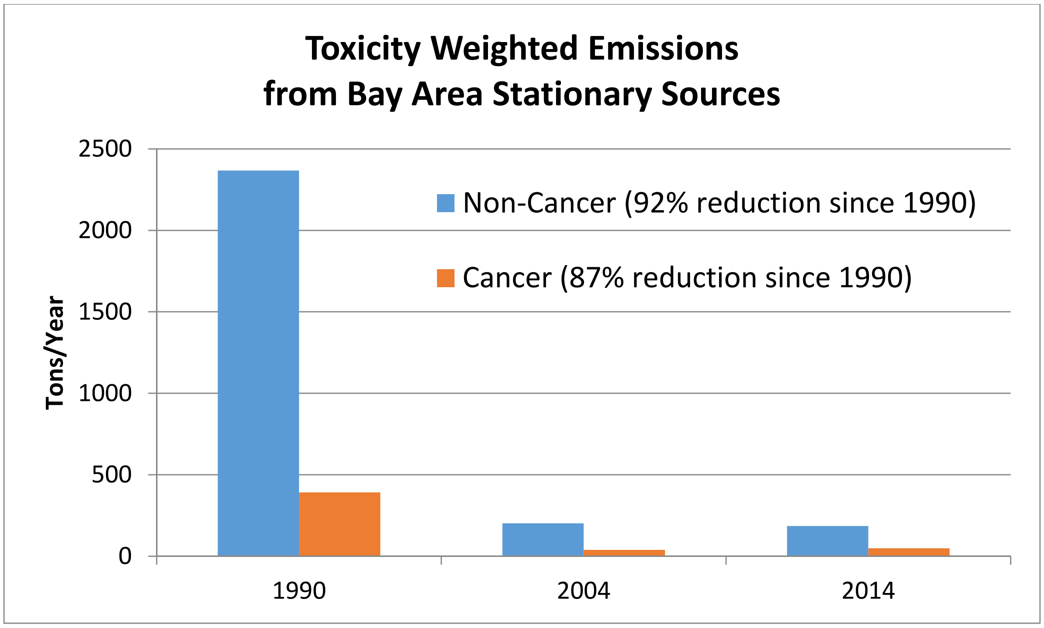

Figure 2. Toxicity Weighted Emissions from Bay Area Stationary Sources

* The emission rates for several common TACs (diesel engine exhaust particulate matter, ethyl benzene, and isopropyl alcohol) were not available for the 1990 emission inventory.

The Air District's Air Toxics Program is successfully continuing this downward trend in cancer risk due to stationary source TAC emissions. As shown in Figure 3, emissions are declining for many of the largest contributors to stationary source cancer risk.

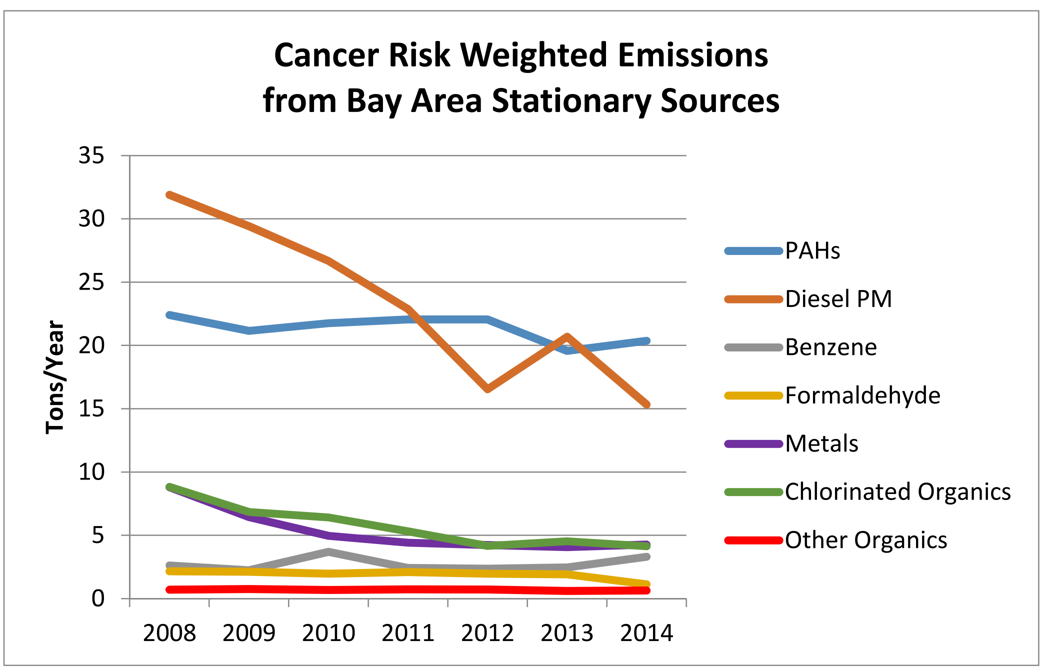

Figure 3. Cancer Risk Weighted Emissions from Bay Area Stationary Sources

The Air District's Air Toxics Program has three main elements that integrate federal and state mandates and local goals:

1) the preconstruction review of new and modified sources of TAC emissions (the Air Toxics NSR program),
2) the assessment and reduction of health risks from existing facilities (the Air Toxics "Hot Spots" program), and
3) the implementation of air pollution control measures for specific categories of TAC sources.

The Air Toxics NSR Program and the Air Toxics Hot Spots Program are health risk based programs. These programs have action and decision thresholds that are based on estimated health risks for the exposed population. To ensure parity with other Air Districts and conformity with state mandates, the Air District follows state-wide guidance regarding HRA methodologies to evaluate public exposures to TACs and to calculate and manage the resulting health risks. Although these programs focus on different types sources (new and modified sources for the Air Toxics NSR Program and existing sources for the Air Toxics Hot Spots Program), both programs rely on the same state-wide HRA guidance: Cal/EPA's OEHHA Health Risk Assessment Guidelines.

OEHHA periodically updates these HRA Guidelines to reflect advances in science. OEHHA recently adopted a major update to the HRA Guidelines that focused on children's health protection: OEHHA's 2015 HRA Guideline Revisions. The Air District is planning to update the Air Toxic NSR and Air Toxic Hot Spots Programs by incorporating OEHHA's 2015 HRA Guideline Revisions into the Air District's HRA procedures for these programs.

This report discusses changes to the Air Toxics NSR Program and amendments to the rule that implements this program: Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. The primary goal of this rule amendment is to incorporate OEHHA's 2015 HRA Guideline Revisions into this rule.

The revisions to the Air Toxic Hot Spots Program will be discussed at a later date.

III. AIR TOXICS NEW SOURCE REVIEW PROGRAM

The Air Toxics NSR Program was established in 1987 at the direction of the Air District's Board of Directors and was initially implemented based on policies and procedures established by the Air District's Air Pollution Control Officer (APCO). In 2005, the Air District updated the Air Toxics NSR Program and codified the Air Toxics NSR policies and procedures in Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants, in the Manual of Procedures, Volume II, Part 4: New and Modified Sources of Toxic Air Contaminants, and in the Bay Area Air Quality Management District (BAAQMD) Health Risk Screening Analysis (HRSA) Guidelines. In the last 2010 rule amendment, the Air District updated Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants to include new and revised health values as well as age-sensitivity factors.[1]

The goal of the Air Toxics NSR Program is to evaluate and mitigate potential increases in public health risks resulting from new and modified sources of TACs based on preconstruction permit review. The program is also intended to reduce existing health risks by requiring updated control requirements when older, more highly polluting, sources are modified or replaced. Regulation 2, Rule 5 contains health risk based thresholds at which a new or modified source must employ Best Available Control Technology for Toxics (TBACT) and health risk limits that each project cannot exceed. The rule also delineates the procedures to be used for calculating TAC emission increases from sources and projects and for evaluating the health impacts that result from these emission increases.

When evaluating heath impacts from new and modified sources, the Air District follows the BAAQMD HRA Guidelines, which generally conform to state Air Toxics Hot Spots HRA guidelines. OEHHA periodically revises the state HRA guidelines and has made a number of changes since the BAAQMD HRA Guidelines were updated in 2010.

The Air Toxics NSR program relies on two primary program components:

(1) risk assessment, which involves estimating risk for a project using a prescribed methodology, and

(2) risk management, which involves taking action on the project based on risk action levels.

The stringency of the program is affected by both the methodology and the action levels. Stringency can be increased either by changes in methodology that result in a higher calculated risk or by reductions in the risk action levels.

1 Age sensitivity factors are cancer risk adjustment factors that account for children's heightened sensitivity to air toxics. OEHHA first identified age sensitivity factors in a June 2009 Technical Support Document for the OEHHA HRA Guidelines. These age sensitivity factors are one of measures OEHHA included in the 2015 HRA Guideline Revisions.

IV. PROPOSED CHANGES TO AIR TOXICS NSR PROGRAM

The Air District is proposing to increase the stringency of the Air Toxics NSR Program by incorporating updated HRA procedures that will result in higher calculated risks for the same level of emissions. The Air District is not proposing any changes to the risk action levels for the Air Toxics NSR Program.

The Air District is proposing to make the following specific revisions to the Air Toxics NSR Program:

- Implement OEHHA's Revised HRA Guidelines (2015), except for GDFs, which will continue to follow the Air District's current HRA Guidelines,
- Implement CARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics (2015),
- Update health effects values and the Air District's acute and chronic emission rate trigger levels for TACs in Table 2-5-1,
- Revise the emission calculation procedures for modified sources that were initially installed before 1987, and add net project risk limits and procedures for projects that include these pre-1987 modified sources,
- Extend the look-back period from two years to three years for related applications in a project,
- Add an exemption from HRA for any alteration of a source that results in no increases in toxicity weighted emissions for that source,
- Add an exemption from HRA for internal combustion engines and gas turbines smaller than 50 bhp, and
- Clarify terminology in Regulation 2-5.

The primary goal of these revisions is to ensure that the Air District's Air Toxics NSR Program conforms to the most recent state-wide risk assessment and risk management guidance. In 2015, OEHHA and CARB adopted major changes to the risk assessment and risk management guidance documents. The Air District's HRA Guidelines need to be revised to include these 2015 guidance document revisions. The Air District's proposed revisions to the BAAQMD HRA Guidelines are contained in Appendix C. These Air District HRA Guidelines adopt the 2015 guidance documents by reference and identify various Air District procedural decisions.

The Air District is planning to delay implementation of the 2015 HRA Guidelines for GDFs, because the Air District's analysis of the potential impacts of these guideline changes on GDFs is not complete, and CARB has recently proposed updated emission factors for GDFs. Also, CARB in coordination with CAPCOA is planning to update the Industrywide Guidelines for Gasoline Dispensing Facilities. Industrywide guidelines create uniform procedures and recommendations for efficiently addressing source categories that have numerous facilities. The Air District will need additional time to evaluate the combined influences of the new emission factors and new HRA guidelines on GDFs and to consider the anticipated updates to the Industrywide Guidelines for GDFs. Therefore, the Air District is proposing to continue using the Air District's current health risk calculation procedures for GDFs, except that GDFs will be subject to the updated health effects values and revised emission calculation procedures for modified sources that are discussed below in Section IV.C. The specific HRA procedures for GDFs are identified in Appendix C.

The Air District's TAC trigger levels in Table 2-5-1 need to be revised to include the 2015 updates to the health risk calculation procedures, which impact the Air District's chronic trigger levels for carcinogens. In addition, OEHHA has updated numerous non-cancer health effects values and identified a new TAC, caprolactam, during 2010-2016. These OEHHA updates need to be included in Table 2-5-1. The columns in Table 2-5-1 have been rearranged to improve functionality for table users. The procedures the Air District used to develop the Table 2-5-1 acute and chronic HRA trigger levels are explained in Appendix B.

The Air District is proposing several rule amendments related to modified sources that will simplify emission calculation procedures, clarify applicability of HRA requirements, and improve transparency of HRA results. In particular, the Air District is proposing to remove a January 1, 1987 emission calculation baseline date for modified sources. HRA's will be based on the total proposed emissions from a project regardless of when a modified source was installed. This change will increase the stringency of the rule for older modified sources. To ensure that this change does not prohibit beneficial projects, the Air District is proposing to clarify an exemption for source alterations and to add net project risk standards and procedures that give the applicant alternative means of complying with this rule's requirements and health risk limits.

Finally, the Air District is proposing revisions to Regulation 2, Rule 5 with the intention of making rule language consistent with other Air District rules and state guidance documents and clarifying text.

A. Proposed HRA Guideline Revisions

As mandated under the Children's Environmental Protection Act of 1999 or SB25, OEHHA has been evaluating a number of revisions to HRA procedures to include consideration of children's health protection. In the last decade, advances in science have shown that early-life exposures to air toxics contribute to an increased lifetime risk of developing cancer, or other adverse health effects, compared to exposures that occur in adulthood.

On March 6, 2015, OEHHA adopted a revised Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments to replace the 2003 Air Toxic Hot Spots Guidance Manual. OEHHA's 2015 HRA Guidelines reflect both children's greater sensitivity to TACs and more refined data related to childhood and adult exposure to air toxics. OEHHA's 2015 HRA Guidelines affect how risk assessments are conducted.

On July 23, 2015, CARB adopted the CARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics. This document provides guidance on managing potential cancer and non-cancer health risks from sources subject to Air Toxics NSR Permitting and Air Toxics Hot Spots Programs. This document includes additional recommendations that affect how risk is calculated for certain types of risk assessments.

The Air District is proposing to incorporate both of these guidance documents into the Air District's Toxic NSR Program. OEHHA's 2015 HRA Guidelines include five key revisions to HRA procedures, which are as follows:

- Age Sensitivity Factors;
- Age-Specific exposure variables;
- Fraction of Time at Home;
- Exposure Duration; and
- Spatial Averaging of Exposure Concentrations

These five key HRA revisions and the Air District's proposals for incorporating these procedures into the Air District's HRA Guidelines are discussed below.

Age Sensitivity Factors

OEHHA's 2015 HRA Guidelines include adjustment factors that account for children's heightened sensitivity to air toxics. These adjustment factors are referred to as age sensitivity factors (ASFs), which are age-specific weighting factors used to reflect children's special sensitivity to carcinogens. The ASFs include a 10-fold multiplier in sensitivity for infants less than age two, a three-fold increase in sensitivity for children ages two to sixteen years old, and a sensitivity factor of one for ages sixteen and older.

The Air District incorporated ASFs into the Air District's most recent amendment of the BAAQMD Air Toxics NSR Program Health Risk Screening Analysis Guidelines and has been using ASFs in toxic NSR HRAs since January 2010. The Air District is proposing to continue using ASFs in cancer risk calculation procedures, as described in OEHHA's 2015 HRA Guidelines. Since the Air District is already using ASFs in toxic NSR HRAs, Bay Area projects will not be affected by this revision to the OEHHA cancer risk calculation procedures.

Age-Specific Exposure Variables

People can be exposed to TACs in a variety of ways (e.g. by breathing in TACs present in the ambient air, by skin exposure to TACs in ambient air, by ingestion of food or water on which TACs have been deposited, etc.) [2] For each of these possible exposure

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[2] While it is possible for people to be exposed to TACs through a number of different exposure pathways,

pathways, a risk assessor needs general population data (such as breathing rates, skin uptake rates, food ingestion rates, etc.) in order to calculate potential health risks. In the 2003 HRA Guidelines, OEHHA recommended exposure variables for three exposure durations and population sets: 9-year exposure duration for students, 40-year exposure duration for workers, and 70-year exposure duration for residents.

For the 2015 HRA Guidelines, OEHHA developed exposure variables for six age groups including the last trimester to birth, birth to < age 2, age 2 < 9, age 2 to < 16, age 16 to < 30, and age 16 to 70 years. These age groups allow for more refined exposure information to be used when estimating exposure and potential health impacts over time.

For cancer risk calculations, OEHHA recommends using the 95th percentile of the daily breathing rates for each of the above age groups when conducting a Tier I point risk estimate of residential cancer risk. However, OEHHA gives the risk assessor flexibility to use more appropriate site-specific data or a stochastic approach as a more refined risk estimate.

When considering appropriate breathing rate assumptions for risk management decisions, CARB recommends using the 95th percentile breathing rate for the most sensitive age groups (less than 2 years old) and using the 80th percentile breathing rates for other age groups (2 years old and up), when calculating the exposure rates for the inhalation pathway.[3] This is referred to as the 95/80 daily breathing rate (DBR) policy. This policy continues the 2003 policy of using at least the 80th percentile DBR for residential locations.

The 95/80 DBR policy is modeled after the OEHHA derived approach for assessing risks for pollutants with multiple exposure pathways. For multi-pathway analyses, OEHHA recommends using high-end exposure parameters for all pathways to determine which pathways are driving the risk. The risk estimate is then refined by using high-end exposure parameters for the two pathways that contribute most to risk and by using average exposure parameters for the remaining pathways. The 95/80 DBR policy is more conservative than the derived approach, because it uses the higher 80th percentile DBR for the non-driving age rate groups instead of an average DBR.

The Air District has evaluated both the OEHHA DBR recommendation (95th percentile for all inhalation age groups) and the CARB 95/80 DBR policy. The CARB 95/80 DBR policy is more consistent with the Air District's current approach (using 80th percentile DBR for residential inhalation exposures, if inhalation is the only cancer risk pathway). The CARB 95/80 DBR is more conservative than the Air District's current approach but less conservative than the OEHHA DBR approach. Based on CARB and CAPCOA analyses of these approaches, the Air District considers the CARB 95/80 DBR policy to be the best

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most TACs only cause adverse health effects when people are exposed via the inhalation pathway. There are only 20-30 "multi-pathway" TACs that have health effects values for non-inhalation pathways in addition to the inhalation pathway. Most of these multi-pathway TACs are metals or heavy long chain hydrocarbons.

[3] CARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics, Appendix D

practice in the implementation of age specific exposure variables. Therefore, the Air District is proposing to use the CARB 95/80 DBR policy for residential exposure calculations, if inhalation is the only cancer risk pathway.

The incorporation of exposure variables for six age groups and the use of the CARB 95/80 DBR policy for inhalation pathways are expected to result in higher cancer risks for the same level of emissions compared to the Air District's current HRA Guidelines and procedures.

Fraction of Time at Home

Under the 2003 Risk Assessment Guidance, residential receptors are assumed to be at their home 24 hours a day, or 100% of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which is typically less than 100% of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to < 16 years, and 0.73 for ages 16 to 70 years. For facilities or projects that have a school nearby, OEHHA recommends that a screening approach first be used to determine the potential health risk near the school. If the school is located in an area where the residential cancer risk is greater than 1 in a million, the risk calculations should use an FAH factor of 1 for the child age groups (3rd Trimester, 0<2 years of age, and 2<16 years of age).

The Air District is planning to incorporate these FAH recommendations into the Air District's HRA calculation procedures. The initial residential cancer risk calculations should use a default FAH of one (1.00) for all child age groups, as shown in the following table. If this initial analysis finds that schools are only located within areas where the residential cancer risk is less than one in a million, the residential cancer risk calculations may be refined by including appropriate FAH factors for each age group.

Table A.1 Air District Fraction of Time at Home Assumptions

Age Group	Default FAH	Refined FAH *
3rd Trimester to < 2 years	1.00	0.85
2 to < 16 years	1.00	0.72
16 to 70 years	0.73	0.73

* These refined FAH assumptions shall only be used if an initial analysis has demonstrated that there are no schools located within areas where the residential cancer risk is one in a million or higher.

The use of FAH factors results in a small reduction in cancer risk for the same level of emissions compared to the Air District's current calculation methodology.

Exposure Duration

Currently, the Air District uses a 70-year lifetime exposure duration for residences and a 40-year exposure duration for workers, in accordance with OEHHA's 2003 Risk Assessment Guidance. Based on updated demographic data, OEHHA is now recommending exposure durations of 30 years for residents and 25 years for workers. The residency data is in-line with EPA approved assumptions for residents, and the worker assumption more accurately represents the current length of employment time. These shorter exposure duration assumptions for residents and workers result in a small reduction in cancer risk compared to the Air District's current risk calculation procedures.

For short-term projects, such as construction or remediation projects, the Air District's current health risk calculation procedure uses a minimum project duration of 9 years for the cancer risk assessment based on 2003 OEHHA guidelines. In the 2015 guidelines, OEHHA recommends:

- no cancer risk assessment for projects lasting less than 2 months,
- use of a 6-month duration for cancer risk assessments involving projects lasting between 2 and 6 months, and
- use of actual project duration for cancer risk assessments on projects lasting longer than 6 months.

However, OEHHA also recommends that the risk manager consider a lower cancer risk threshold for very short term projects, because a higher exposure over a short period of time may pose a greater risk than the same total exposure spread over a much longer period of time.

To ensure that reducing project duration does not result in unanticipated higher cancer impacts due to short-duration high exposure rates, the Air District is proposing to require a minimum 3-year exposure duration assumption for cancer risk assessments on projects lasting 3 years or less. In other words, for projects lasting three years or less, the Air District will assume that the average daily project emissions continue for a minimum of a 3-year period. This 3-year exposure duration assumption ensures that residents will not be exposed to any greater concentrations of TACs than the TAC concentrations allowed by the Air District's current HRA procedures.

Spatial Averaging of Concentrations

OEHHA's revised guidance provides an option for spatially averaging dispersion modeling results for determining a project's potential health risk. Spatial averaging is intended to reflect a person's typical movement within their home or workspace. Spatial averaging is a technique used to estimate the overall impact on a given receptor by averaging the modeled concentrations over a discrete area, instead of using a single point to determine potential cancer and chronic non-cancer health impacts. The area over which concentrations may be averaged is 400 square meters (20 meter by 20 meter area at 5 meter intervals).

The Air District is proposing to add spatial averaging as a potential HRA refinement option. The impacts of spatial averaging depend on the type of release point and distance to receptors. For projects with tall stacks and distant receptors, spatial averaging has little or no impact on the HRA results. While for fugitive near-ground releases with nearby receptors, spatially averaging can reduce the calculated health impact by up to 20%.

While spatial averaging can result in a reduction in health impacts for some projects, the Air District believes that spatial averaging is appropriate, because it is more reflective of actual TAC exposure.

Overall Impacts of HRA Guideline Changes

The vast majority of Air District NSR risk assessments involve TACs that have a single exposure pathway (the inhalation pathway). Examples of common inhalation only TACs are: diesel engine exhaust particulate matter, benzene, formaldehyde, and perchloroethylene. As reported in the CARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics, inhalation cancer risks calculated using the 2015 risk assessment procedures are expected to be 1.5 to 3 times higher than inhalation cancer risks calculated using OEHHA's 2003 Risk Assessment Guidelines for the same emission rate and cancer potency value. Age sensitivity factors are the largest contributor to this projected increase in cancer risk. The Air District has included age sensitivity factors in its Toxics NSR program HRAs since 2010. As a result, the Air District expects that including the remaining guideline changes (age specific exposure variables with the CARB 95/80 DBR policy, fraction of time at home, exposure duration, and spatial averaging) will result in about a 40% increase in inhalation cancer risk for most sources compared to the Air District's current toxics NSR risk assessment procedures.

For HRAs that include TACs with multiple exposure pathways,[4] OEHHA's 2015 HRA procedures may result in additional increases in calculated cancer risk compared to the 2003 HRA procedures. Due to the wide variety of possible multiple exposure pathway projects, it is difficult to predict exactly how large of an impact the 2015 risk calculation procedures will have on future projects. However, the Air District found that using 2015 HRA procedures in HRAs for several projects involving multi-pathway pollutants resulted in cancer risks that were 3-5 times higher than cancer risks determined using current Air District procedures. Less than 5% of the Air District's NSR risk assessments involve multi-pathway pollutants.

B. Proposed TAC Trigger Level Changes

The Air District uses TAC emission rate trigger levels to determine the need for HRA for projects involving new and modified sources. The TAC trigger levels are considered to be reasonable de minimis emission rates (acute and chronic) for use at a project-level. Projects with emissions below the TAC trigger levels are unlikely to cause, or contribute significantly to, adverse health risks. These TAC trigger levels are also used: (1) to establish permit requirements for certain sources that may otherwise qualify for permit exemptions, (2) as part of the applicability of the accelerated permit program, and (3) in determining permit fees.

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[4] TACs with multi-pathway cancer impacts include: arsenic, inorganic arsenic compounds, chromium (hexavalent), inorganic hexavalent chromium compounds, di(2-ethylhexyl) phthalate, hexachloro-cyclohexanes, lead, inorganic lead compounds, 4,4-methylene dianiline and its dichloride, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and dioxin like PCBs.

The proposed TAC trigger levels are calculated using: (1) target health risk levels that are considered de minimis for project-level risks; (2) OEHHA health effect values; (3) generally conservative modeling procedures that establish the extent to which a TAC is transported and dispersed in the atmosphere after it is emitted from the source; and (4) health-protective assumptions regarding the extent of an individual's response to an emitted TAC. The current TAC trigger levels and the OEHHA health effects data on which these trigger levels were based are identified in Table 2-5-1 TAC Trigger Levels in Regulation 2, Rule 5. Table 2-5-1 was last updated in January 2010.

Since 2010, OEHHA has updated non-cancer health effects values for a number of TACs, has added 8-hour reference exposure levels (RELs) for several TACs, and has identified health effects values for a new TAC. In addition, OEHHA's 2015 HRA Guidelines include updates or revisions to a number of the health protective assumptions that the Air District uses to calculate the TAC trigger levels. The Air District is proposing to incorporate OEHHA's new health effects values and new health risk calculation assumptions into the trigger level calculation procedures. The changes to health effect values will impact acute trigger levels and chronic trigger levels for non-carcinogenic compounds. The changes to the health protective assumptions will impact chronic trigger levels for carcinogenic compounds. Appendix B contains a detailed description of the updated procedures that the Air District is using to calculate the acute and chronic trigger levels. The revised trigger levels, health effects data, and toxicity weighting factors will be reflected in Table 2-5-1. The proposed revisions to Table 2-5-1 are identified in Appendix A. The Air District has also rearranged the order of the columns in Table 2-5-1 to improve functionality for table users.

Target Health Risk Levels

For the proposed TAC trigger levels, the Air District is not proposing any changes to the target health risk levels. For chronic health risk, the Air District uses a cancer risk of 1.0 in a million (1.0×10^{-6}) and a non-cancer hazard index of 0.2 as the target health risk levels; these are the risk thresholds at which TBACT is required (Section 2-5-301). For acute health risk, the Air District uses a hazard index of 1.0 as the target health risk level, which is the same as the acute non-cancer hazard index limit for projects (Section 2-5-302.3).

Health Effects Values and Toxicity Weighting Factors

The Air District's current Table 2-5-1 contains OEHHA health effects values that were adopted by OEHHA prior to January 6, 2010. This table also includes Air District toxicity weighting factors that are used for calculating toxicity weighted emissions for modified sources. These toxicity weighting factors are based on the chronic health effects values for the compound and include: CREL weighting factors and cancer potency (CP) weighting factors. The Air District developed these weighting factors assuming multi-pathway exposure where applicable, and continuously operating sources for residential receptor exposure. The Air District's proposed Table 2-5-1 in Appendix A incorporates all health effects values adopted by OEHHA as of March 31, 2016 and any updates to the Air District's toxicity weighting factors due to revisions of either OEHHA guidelines or OEHHA health effect values. The specific changes to Table 2-5-1 are discussed in more detail below.

After the Air District's TAC trigger level table was last revised in 2010, OEHHA added a new non-carcinogenic TAC, caprolactam. Caprolactam is used in the manufacture of synthetic fibers; it is a precursor to Nylon 6. Acute exposures may result in irritation or burning of eyes, nose, or throat, headaches, malaise, or confusion. Chronic exposure may result in inflammation of eyes, nose, or throat. Direct skin contact with the solid form of caprolactam can cause dermatitis.

OEHHA also updated acute or chronic RELs for the following compounds: benzene, 1,3-butadiene, methylene diphenyl diisocyanate, nickel, nickel compounds, selenium, selenium sulfide, and toluene diisocyanates. Previously, the acute RELs for some compounds were based on exposure periods longer than 1 hour, and the Air District had identified these compounds in Footnote 3 to the Air District's TAC trigger level table. OEHHA revised these acute RELs such that all acute RELs are now based on a 1-hour exposure period. The Air District is incorporating all of these REL related revisions into the proposed Table 2-5-1 and is updating the related non-carcinogenic toxicity weighting factors and trigger levels.

In addition to the REL revisions above, OEHHA adopted 8-hour RELs for the following compounds: acetaldehyde, acrolein, arsenic, inorganic arsenic compounds, arsine, benzene, 1,3-butadiene, caprolactam, formaldehyde, manganese, manganese compounds, mercury, inorganic mercury compounds, mercuric chloride, methylene diphenyl diisocyanate, nickel, nickel compounds, and toluene diisocyanates. The Air District does not use these 8-hour RELs to calculate risk assessment trigger levels, but these 8-hour RELs are used in worker exposure assessments. The Air District is identifying the new 8-hour RELs in the proposed revisions to Table 2-5-1.

OEHHA has not revised any inhalation cancer potency factors since 2010, but OEHHA added an oral cancer potency factor for hexavalent chromium in 2011. The Air District is updating the associated toxicity weighting factor and chronic trigger level for hexavalent chromium compounds.

For compounds with multi-pathway carcinogenic health effects (any compounds with an oral cancer potency value), the cancer risk calculation procedures are changing due to the new OEHHA guidelines. These cancer risk calculation procedure revisions also affect the Air District's toxicity weighting factors for such compounds. Therefore, the Air District is proposing to revise CP weighting factors for all carcinogens with multi-pathway exposure routes.

OEHHA updated the Toxicity Equivalency Factors (TEF) for a number of chlorinated dioxins and furans and dioxin-like PCBs. These updates are included in Table 2-5-1 (see footnote 7), and the Air District is removing an obsolete sub-category for PCBs.

Air Dispersion and Receptor Response Assumptions

The Air District's TAC trigger levels are calculated using conservative air dispersion and receptor response assumptions. These calculations include several criteria that are impacted by the OEHHA guideline revisions, such as breathing rate and exposure duration assumptions. The revised Air District HRA trigger levels were calculated using the new default data and procedures for residents that are discussed in detail in Section IV.A. (i.e. 95/80 DBR policy for the age-group specific breathing rates, default FAH values for each age-group, and 30-year exposure duration). The current trigger levels already include consideration of age sensitivity factors. The air dispersion calculation and receptor location assumption did not change.

Overall Impacts of Trigger Level and Health Effect Value Changes

For non-carcinogenic compounds and compounds with acute impacts, the trigger levels will change in proportion to the change in the OEHHA health effect value for that compound. Some compounds have large changes in non-cancer health effects values. For example, the acute REL for benzene will decrease by 98% and the chronic REL for benzene will decrease by 95%. However, for benzene, cancer risk continues to be the dominant chronic health effect. Considering the differences between the acute and chronic trigger levels for benzene, acute impacts are not likely to be a dominant issue for benzene emission projects, such as GDFs. Cancer risk is expected to be the dominant health effect for 1,3 butadiene as well, but acute health impacts could become more significant for projects emitting nickel and nickel compounds.

The proposed TAC trigger levels will decrease by about 30% for most carcinogenic TACs. The Air District reviewed the proposed TAC trigger levels for several common carcinogens and compared them to expected emission rates from small sources. The Air District found that the proposed chronic trigger level for diesel particulate matter is less than the expected emission rate for some emergency standby engines that are smaller than 50 bhp. These small engines (< 50 bhp) are currently exempt from Air District Regulation 9, Rule 8 and from Air District permitting requirements. To prevent unintended consequences for engines smaller than 50 bhp, the Air District is proposing to exempt these small engines from the Regulation 2, Rule 5 HRA requirement.

For a few compounds that have significant carcinogenic impacts from non-inhalation pathways (lead, methylene dianiline, PCBs, and chlorinated dioxins and furans), the TAC trigger level will decrease by about 90%. It is difficult to project how these changes may impact future projects, but projects involving multi-pathway pollutants are not common (less than 5% of the HRAs conducted recently involved multi-pathway pollutants) and emissions of these compounds often result in a small contribution to the maximum project health risk.

C. Proposed Regulation 2, Rule 5 Amendments

The Air District is proposing to amend Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. The rule is organized into six sections as follows: General (section numbers in the 100's), Definitions (200's), Standards (300's), Administrative Requirements (400's), Monitoring and Records (500's), and Manual of Procedures (600's). A copy of the proposed revisions to this rule is provided in Appendix A of this staff report. The proposed revisions to each section of this rule are discussed below.

General Requirements

The General requirements define the applicability of the rule and identify any exemptions from the rule or from specific sections of the rule.

Section 2-5-102: Applicability and Circumvention: The Air District is proposing to move Section 2-5-112 to Section 2-5-102 to align this rule with the organizational structure of other Air District rules. Typically, rule applicability criteria are contained within Section 101-109 of a rule, while Sections 110 and higher contain exemptions. The text of this section has not been modified.

Section 2-5-110: Exemption, Low Emission Levels: The Air District is proposing to clarify that project emissions for a TAC must be less than both the acute and chronic trigger levels for the TAC to qualify for this exemption from this rule. The Air District is adding text to clarify how this exemption should be used in conjunction with Air District permitting criteria and HRA requirements in Regulation 2-1-316.

Section 2-5-112: Applicability and Circumvention: As stated above, The Air District is proposing to move Section 2-5-112 to Section 2-5-102. Section 2-5-112 will be deleted.

Section 2-5-113: Exemption, Small Internal Combustion Engines and Gas Turbines: As discussed in Section IV.B of this report, the emissions from small engines and turbines (less than 50 bhp) may be greater than the proposed trigger levels for certain TACs, such as diesel particulate matter. This could result in many small engines triggering HRA requirements to verify permit exemption applicability. The Air District prefers to focus staff resources on more significant sources of TAC emissions. In addition, these small engines are exempt from state ATCMs and Air District Regulation 9, Rule 8. To ensure consistency with these regulations, the Air District is proposing to exempt small engines from HRA provisions.

Section 2-5-114: Limited Exemption, Modified Source with No Increase in Toxicity Weighted Emissions: The Air District is proposing to add this section to clarify how contemporaneous emission reductions at a modified source are taken into consideration. As described currently in Sections 2-5-216 and 2-5-601.4, the Air District may consider contemporaneous emission reductions at a modified source when calculating emissions for that source or when conducting a risk assessment for a project involving that modified source. The Air District added these provisions for handling contemporaneous emission reductions at a modified source to encourage modifications that would result in lower toxicity weighted emissions for a source. However, the current language is not clear about the specific procedures to follow when a modified source has lower toxicity weighted emissions after a modification.

Therefore, the Air District is proposing to add Section 2-5-114, which will exempt a source from the requirement to undergo HRA, if the emission changes at that source do not result in any increases in toxicity weighted emissions. In essence, a finding of no increase in toxicity weighted emissions means that the source is not a modified source for the purpose of Regulation 2, Rule 5, and the source does not need to be included in the project if the application includes other new or modified sources. The Air District is clarifying the related emission calculation procedures for the pre-modification and post-modification cases in Section 2-5-601.3.

This exemption is a limited exemption because other sections of Regulation 2, Rule 5 may apply to the source based on earlier permitting activities for that source. For example, if a source was subject to TBACT upon initial permitting, and later undergoes a change that results in a decrease in toxicity weighted emissions, the source would continue to be subject to TBACT, unless the applicant demonstrates that the post-modification source would no longer trigger TBACT pursuant to Regulation 2-5-301.

Section 2-5-115: Limited Exemption, Contemporaneous Health Risk Reduction Projects: This exemption is related to the Air District's proposal to remove the January 1, 1987 emission calculation baseline for modified sources, which is explained in detail below in the discussion for Section 2-5-303. This limited exemption will allow a qualifying contemporaneous health risk reduction project to meet the net health risk limits in Section 2-5-303 instead of the project risk limits in Section 2-5-302. The risk limits are the same in both cases, but a "net project" health risk may include consideration of contemporaneous health risk reductions from shut-downs or alterations of sources that are not included in the determination of "project" health risk.

Definitions

This section of the rule contains definitions for terms used in this rule. These definitions are necessary to clarify the Air District's emissions calculations and risk assessment procedures. The Air District is proposing to modify a number of definitions to ensure conformity with the 2015 risk assessment and risk management guidelines. The Air District is also proposing new and revised definitions to clarify and streamline calculation procedures for modified sources.

Section 2-5-206: Cancer Risk: The Air District is proposing to revise this definition to be more consistent with OEHHA's 2015 risk assessment procedures. Cancer Risk may be determined for a variety of exposure durations, depending on the type of receptor (resident, worker, student, etc.).

Section 2-5-211: Health Risk Screening Analysis: The Air District is proposing to change the term and acronym "Health Risk Screening Analysis (HRSA)" to "Health Risk Assessment (HRA)" for consistency with OEHHA's terminology. The new term and acronym are used throughout the rule in Sections: 212, 217, 218, 221, 401, 402, and 603.

Section 2-5-212: Maximally Exposed Individual, or MEI: The Air District is proposing to change the acronym HRSA to HRA for consistency with OEHHA's terminology.

Section 2-5-216: Project: The Air District is proposing to extend the related permit application look-back period from two years to three years, because projects may take longer than two years to complete. The purpose of this revision is to further discourage circumvention of HRA requirements.

Currently, Section 2-5-216 identifies a January 1, 1987 baseline date for determining emission increases for a modified source that was initially installed prior to January 1, 1987. For these projects, the HRA is based on only a portion of the emissions from the modified source (the post-1987 emission increase) rather than the total proposed emissions from the modified source. For new sources and for all modified sources that were initially installed after January 1, 1987, the HRA is based on the total proposed emissions from the new or modified source. This difference in emission calculation procedure for certain modified sources could result in confusing or misleading HRA results. The Air District is proposing to resolve this issue by eliminating the January 1, 1987 baseline date. The procedures will now require that the project HRA be based on the total proposed emissions from all new or modified sources in the project, regardless of when the source was first installed. This simplifies the emission calculation procedure and ensures that the HRA results are readily understandable.

As discussed above for Section 2-5-114, the Air District is proposing to clarify that HRA requirements do not apply to a source that is undergoing a change that results in no increase in toxicity weighted emissions. This limited exemption is now identified in Section 2-5-114 and the redundant language in Sections 216 has been removed.

Section 2-5-217: Project Risk: The Air District is proposing to change the acronym HRSA to HRA for consistency with OEHHA's terminology. The Air District is also revising text to reflect that the project risk will now represent to total proposed emissions from all sources in the project and not just the post-1987 emission increases for a pre-1987 modified source.

Section 2-5-218: Receptor Location: The Air District is proposing to change the acronym HRSA to HRA for consistency with OEHHA's terminology.

Section 2-5-219: Reference Exposure Level, or REL: The Air District is making editorial revisions.

Section 2-5-221: Source Risk: The Air District is eliminating text related to emission increases for modified sources, because the HRA will now be based on the total proposed emissions from any modified source due to the elimination of the January 1, 1987 emission calculation baseline. The Air District is also proposing to change the acronym HRSA to HRA for consistency with OEHHA's terminology.

Section 2-5-222: Toxic Air Contaminant, or TAC: The Air District is making editorial revisions.

Section 2-5-223: Trigger Level: The Air District is making editorial revisions.

Section 2-5-228: Contemporaneous Health Risk Reduction Project: The Air District is adding this definition to explain this new term. The discussion for Section 2-5-303 explains the need for this new term.

Section 2-5-229: Net Project Risk: The Air District is adding this definition to explain this new term. The discussion for Section 2-5-303 explains the need for this new term.

Standards

This section of the rule contains the health risk standards that apply to all new sources, all modified sources, and all projects. The standards are summarized below. The Air District is not proposing any revisions to these standards.

Section 2-5-301: Best Available Control Technology for Toxics (TBACT) Requirement: The Air District is making an editorial revision to this section.

This section identifies the source risk thresholds (1.0 in a million cancer risk and 0.2 chronic hazard index) at which TBACT is required. If a source results in a health risk that is greater than either of these TBACT thresholds, the source is required to employ TBACT. The Air District identifies TBACT requirements for common source types in the Air District's BACT/TBACT Workbook, which is available on line at: http://www.baaqmd.gov/permits/permitting-manuals/bact-tbact-workbook.

Section 2-5-302: Project Risk Requirement: The Air District is making an editorial revision to this section.

This section establishes health risk limits for the combined impacts from all new or modified sources in a project. The project health risk limits are: cancer risk of 10.0 in a million, chronic hazard index of 1.0, and acute hazard index of 1.0. As discussed in Section 2-5-216, a project includes all new or modified sources in a single permit application and may also include new or modified sources in previous permit applications, if the projects are related.

Although the Air District is not proposing any revisions to the above standards, the other proposed rule revisions will make this rule more stringent, because the calculated health risk will be higher using the proposed procedures compared to the current procedures.

Section 2-5-115 will allow a limited exemption from Section 2-5-302 for a very small number of projects that involve modified sources installed before January 1, 1987 (pre-1987 sources). These projects will need to meet the applicability and procedural criteria in Section 2-5-406 and the net project risk limits in Section 2-5-303. The project risk limits and net project risk limits are the same, but a net project risk may include consideration of contemporaneous toxic emission reductions.

Section 2-5-303: Net Project Risk Requirement: The Air District is adding this section to allow consideration of contemporaneous risk reductions for a small number of projects that involve pre-1987 modified sources. These projects will need to meet the applicability and procedural criteria in Section 2-5-406.

This section establishes net health risk limits for the combined impacts of new and modified sources and contemporaneous source shut-downs or alterations that result in toxic emission reductions. The net project health risk limits are the same as the Section 2-5-302 project risk limits and are: cancer risk of 10.0 in a million, chronic hazard index of 1.0, and acute hazard index of 1.0.

The Air District receives very few applications involving modifications to pre-1987 sources. Based on a review of the few HRAs for projects involving pre-1987 sources, it is possible that the proposed change in the emission calculation procedure for a pre-1987 source could cause a project to fail to meet the Section 2-5-302 project risk limits. The likelihood of this outcome is not high. For sites other than GDFs, the observed health impacts for such sources have either been very low or the modified source has been required to employ TBACT, which limits the potential health impacts. There have been no GDF HRAs involving a pre-1987 facility in recent years.

As allowed currently, a facility can avoid the HRA requirement for a modified source by demonstrating that the project will result in no increases in toxicity weighted emissions for that source. In addition, the Air District has created another means of meeting the same risk thresholds: the net project risk limits. These net project risk limits provide another way of meeting the NSR thresholds by including contemporaneous risk reduction in the net project. The proposed Section 2-5-406 criteria for using this net project risk provision will ensure that it does not allow backsliding and will only be used under a narrow set of circumstances.

The Air District expects that the impacts of removing the 1987 baseline will be balanced out by the impacts of adding net project risk provisions, such that overall, these proposed rule changes will have no impact on permitting decisions for most facilities.

The one potential exception to this conclusion is GDFs. It is possible that a pre-1987 gas station could have a high pre-baseline throughput rate. If such a site requests a throughput increase under these proposed revisions, it is possible that this GDF's health risk could exceed 10 in a million cancer risk due to the previously grandfathered portion of the throughput limit. Since the gas stations that are most likely to exceed a project health risk limit are already using TBACT, it may not be possible for a gas station to reduce the current risk below the 10 in a million project cancer risk limit. Also, since gas stations do not usually include any other sources that could generate contemporaneous health risk reductions, these net project risk limits are unlikely to be employed. Therefore, it is possible that the Air District would need to deny a request for a throughput increase in such a case. While this outcome is possible, the Air District feels that this is not a likely or common outcome, because the Air District is currently processing about 10 HRAs per year for new or modified gas stations and was not able to find a pre-1987 gas station among any of the recent applications.

Administrative Requirements

This section of the rule identifies various administrative requirements that are necessary for the Air District to determine compliance with this rule. These administrative requirements include various guidelines and other publications related to this rule that the Air District must periodically update.

Sections 2-5-401: Health Risk Screening Analysis Requirements: The Air District is proposing to change the term “Health Risk Screening Analysis (HRSA)” to “Health Risk Assessment (HRA)” for consistency with OEHHA’s terminology.

Sections 2-5-402: Health Risk Screening Analysis Guidelines: The Air District is proposing to change the term “Health Risk Screening Analysis (HRSA)” to “Health Risk Assessment (HRA)” for consistency with OEHHA’s terminology.

Sections 2-5-406: Applicability Criteria and Administrative Procedures for Contemporaneous Health Risk Reduction Projects: The Air District is adding this section as a companion to Sections 2-5-115 and 2-5-303.

This section limits the projects that may use net project risk limits to projects involving pre-1987 modified sources. Furthermore, to ensure that this provision does not allow any backsliding of requirements, the applicant must demonstrate that the pre-1987 baseline emissions from the proposed modified source are causing the proposed project to exceed the project risk limits. This will ensure that any new sources associated with this project or the emission increases from the modified source will be limited to the same risk thresholds as they would have been under the current provisions.

The administrative procedures in this section are necessary to ensure that the Air District has sufficient information to calculate contemporaneous TAC emission reductions and to evaluate the pre-project health risks from any source shut-downs or alterations. The key goal of these procedures is to ensure that the health risk reductions achieved by contemporaneous source emission reductions are actually benefitting the receptors that will be impacted the most by the proposed project. Thus, the net health risk for each receptor must meet the net project risk limits.

Monitoring and Records

This section of the rule identifies monitoring and record keeping requirements. The current rule indicates that the Air District may impose any reasonable monitoring or record keeping requirements deemed necessary to ensure compliance with this rule. The Air District is not proposing any changes to this section of the rule.

Manual of Procedures

This section of the rule identifies various procedures that must be followed when demonstrating compliance with the standards in this rule. The Air District is proposing revisions to these sections to streamline and improve emission calculation procedures for modified sources.

Section 2-5-601: Emission Calculation Procedures: As discussed for Section 2-5-216, the Air District is proposing to eliminate the January 1, 1987 baseline for modified source emission calculations. The Air District is revising Section 2-5-601 to reflect this change.

The current procedures for a modified source involve calculating the total post-1987 emission increases for a modified source. Permitted, potential or actual TAC emission levels at the January 1, 1987 baseline date can be difficult to identify and verify. In addition, a modified source may be subject to National Emission Standards for Hazardous Air Pollutants (NESHAPs), ATCMs, or Air District rules that would require an additional assessment of an adjusted baseline TAC emission rate.

In Sections 601.3 and 601.4, the Air District is proposing to streamline emission calculation procedures for modified sources by removing the January 1, 1987 baseline date and assessing the source and project health risks on the total post-modification emission rate from the modified source. TAC emission calculation procedures for modified sources will now be the same as for new sources. These changes will ensure that HRA results for a source and a project are unambiguous and clearly assess the total impacts from all sources in the project, regardless of when a source was initially installed. This will also eliminate the need to calculate pre-modification or baseline TAC emissions for most modified sources, unless the applicant is requesting a Section 114 exemption.

The Air District is also proposing to clarify the toxicity weighted emission calculation procedures related to Sections 2-5-114 and 2-5-604.

Overall, the Air District's health risk based compliance assessments will be more comprehensive and more understandable, when the toxic NSR HRA is based on the total post-modification emission rate for all modified sources.

Section 2-5-603: Health Risk Screening Analysis Procedures: The Air District is proposing to change the term "Health Risk Screening Analysis (HRSA)" to "Health Risk Assessment (HRA)" for consistency with OEHHA's terminology.

Section 2-5-604: Calculation Procedures for Toxicity Weighted Emissions: The Air District is making editorial revisions to this section.

Table 2-5-1 Toxic Air Contaminant Trigger Levels

As discussed in Section IV.B of this report, the Air District will remove the current Table 2-5-1 and replace it with the proposed Table 2-5-1. The new Table 2-5-1 includes updated TAC trigger levels, toxicity weighting factors, and health effects values. The Air District has also rearranged the column locations to improve functionality. For example, most people who use this table are looking for the acute and chronic trigger levels for a particular compound. Therefore, these columns are now presented immediately after the compound description information rather than after all the health effects data.

V. IMPACTS OF AIR TOXICS NSR PROGRAM CHANGES

The Air District's proposals to update the Air Toxics NSR Program will increase the stringency of this program. Although the Air District is not proposing any changes to the toxic NSR risk management thresholds, implementing the 2015 OEHHA risk assessment guidelines will result in lower risk screen trigger levels for most of the carcinogenic TACs and will result in higher cancer risks for the same level of TAC emissions. As a result, more NSR projects will be subject to HRA requirements, more NSR projects will trigger TBACT, and more NSR projects will require revisions or limitations to meet the Air District's project risk limits. The Air District's proposed changes to the Air Toxics NSR Program will reduce the amount of TAC emissions allowed for new projects and will reduce TAC emissions from existing sources undergoing modification.

The Air District conducts about 300 HRAs per year for a wide variety of new and modified sources. Common source types that require HRAs include: diesel-fired internal combustion engines, other types of combustion operations, and gasoline stations. The Air District also conducts NSR HRAs for remediation operations, cement plants, concrete batch plants, asphalt plants, petroleum refineries, coating and solvent operations, tanks and loading operations, landfills, waste water treatment plants, metal melting plants, coffee roasters, and other types of industrial facilities.

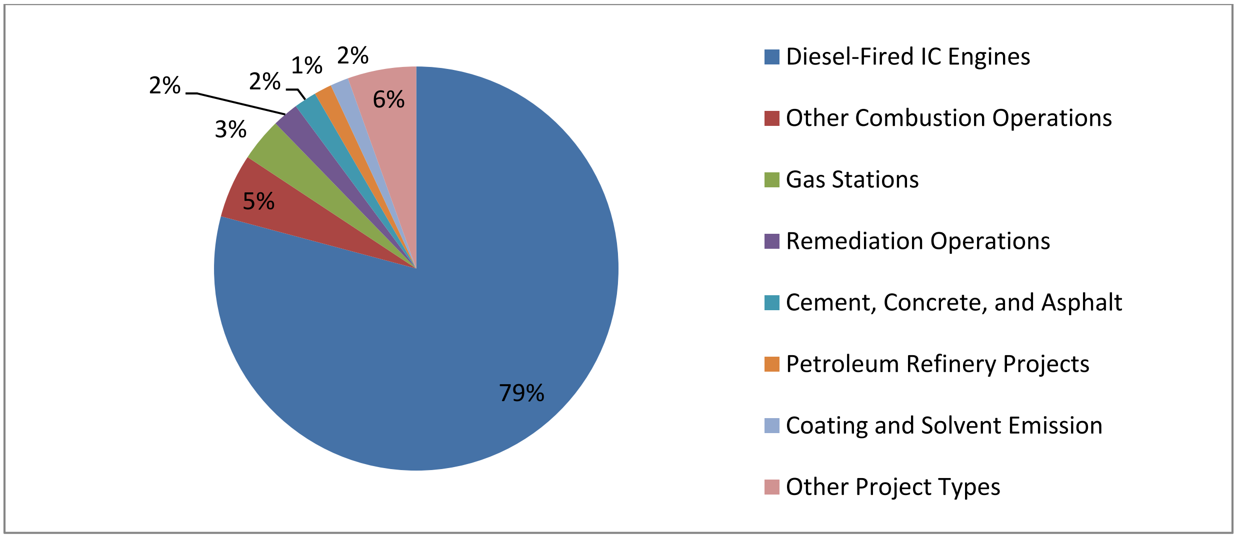

Figure 4. Types of Toxic NSR Projects that Triggered HRAs during 2010-2015.

As shown above, about 80% of the toxic NSR HRAs that the Air District conducted in 2010-2015 involved diesel-fired IC engines. The Air District's HRA trigger level for diesel engine exhaust particulate matter is currently 0.34 pounds per year. At this trigger level, most diesel fired engine projects, including small emergency standby engines, are currently subject to Air District HRA requirements pursuant to Regulation 2, Rule 5.[5] Although the Air District is proposing to reduce the diesel engine exhaust particulate matter threshold to 0.26 pounds per year, this proposed trigger level reduction is not expected to increase the number of diesel engine projects subject to HRA requirements because almost all diesel engine projects are currently subject to HRA requirements and the Air District is proposing to exempt very small engines (less than 50 bhp) from the HRA requirement. In fact, the number of diesel fired IC engine projects subject to HRA requirements may decrease in the future as low emission Tier 4 engine projects become more common.[6]

The Air District conducts about 60 HRAs per year for toxic NSR projects involving non-diesel engine combustion operations, gas stations, remediation operations, petroleum refinery projects, and other project types. As discussed in Section IV.B. of this report, the Air District is proposing to reduce the HRA trigger levels for most carcinogens by about 30% and to reduce the HRA trigger levels for a few multi-pathway carcinogens by about 90%. These HRA trigger level reductions will increase the number of toxic NSR projects that are subject Air District HRA requirements. The Air District expects that an additional 100 projects per year may require HRAs as a result of the proposed trigger level reductions. The estimated number of HRA increases per year by project type are: 15 per

5 A 50 bhp diesel-fired emergency standby engine meeting Air District TBACT requirements and operating for no more than 20 hours per year for reliability related testing would trigger Air District HRA requirements under the current HRA trigger level for diesel PM (0.34 pounds per year).

6 A Tier 4 diesel-fired emergency standby engine (< 150 bhp) and operating for no more than 50 hours per year for reliability related activities would not trigger an HRA at the proposed diesel PM trigger level of 0.26 pounds per year.

year for non-diesel engine combustion operations, 40 per year for gas stations, 10 per year for remediation operations, 10 per year for petroleum refineries, and 25 per year for other project types.

Based on a review of recent Air District HRA results, most projects subject to HRA requirements and using the 2015 risk calculation procedures will comply with project risk limits without any additional project revisions, because most toxic NSR projects have health impacts that are far below the Regulation 2, Rule 5 project risk limits. For example, a diesel-fired engine powering an emergency generator that meets TBACT and has a project cancer risk of 7 in a million using AERMOD dispersion modeling procedures and current Air District risk calculation procedures would have a project cancer risk of 9.8 in a million or less using the proposed risk calculation procedures. Therefore, this engine project would comply with the Regulation 2, Rule 5 project risk limit of 10 in a million cancer risk when using the proposed new cancer risk calculation procedures without any project changes. At least two-thirds of the toxic NSR projects that the Air District has evaluated since 2010 had a cancer risk less than 7 in a million.

The Air District expects that the proposed rule changes will increase the average number of Toxic NSR HRAs from 300 per year to 400 per year. About one third of these HRA projects may need to undergo additional HRA refinements. About 100 projects per year require HRA refinements currently compared to about 130 HRA refinements per year for the new provisions. Currently, about 20 projects per year require some type of risk reduction action to meet TBACT requirements or project risk limits. The Air District anticipates that the rule revisions will increase the number of projects requiring risk reduction to about 80 projects per year. Thus, the rule revisions will require risk reduction measures for about 60 more projects per year.

Risk reduction measures include methods that reduce toxic emissions from the source as well as methods that reduce receptor exposure to those toxic emissions. The most common and least expensive toxic emission reduction methods include limiting throughput rates and source operating times. Abatement devices and enclosures may also be used to reduce TAC emissions. For example, diesel particulate filters can be added to engines to reduce diesel particulate matter. Carbon adsorbers reduce organic TAC emissions such as benzene and perchloroethylene. Oxidation catalysts may be used on combustion devices to reduce formaldehyde emissions. Enclosures and baghouses may be used to capture and control particulate matter containing toxic metals.

Reducing receptor exposure to emissions can be accomplished in a variety of ways. Relocating a source farther away from a receptor and increasing stack heights will reduce receptor exposure concentrations by allowing more time or distance for dispersion of the pollutants in the atmosphere. Enclosing a fugitive emission source and venting it through a stack or changing stack orientations can also encourage atmospheric dispersion and reduce TAC concentrations at the receptor location. Changing the time of day that a source is operating to avoid receptor exposure (such as prohibiting diesel engine operations near schools during times when children are at school) is another possible exposure reduction measure.

Based on data collected for recent permit applications that triggered HRA, the Air District has estimated the number and types of projects that may trigger risk reduction measures due to the proposed rule revisions. The Air District has also identified the most likely risk reduction measures for each of these project types. The Air District's projections for the types and number of projects that may trigger risk reductions and the types of possible risk reduction measures for these projects are summarized in Figure 5.

Figure 5: Additional Projects Triggering Risk Reduction and Potential Risk Reduction Measures

Types of Projects	Projected Total Number of Projects Per Year (1)	Limit Throughput Rate or Operating Time	Diesel Particulate Filters	Oxidation Catalysts	Enclosure and Vent to Baghouses	Carbon Adsorbers	Thermal or Catalytic Oxidizers	Other Risk Reduction Measures
Diesel Engines – emergency	45	37	4					4 – increase stack height
Diesel Engines – fire pump	1		1					
Diesel Engines – portable/prime	2		2					
Gas Engines – power plant	1	possible		1				increase stack height or revise source location
Crematory – pet or human	1	1 or …						increase stack height or revise source location
Other Combustion	1	1 or …						increase stack height or revise source location
Gas Stations – new/modified	1	1						For new stations, possibly revise source locations
Remediation – SVE	3	possible				possible	3	If proposed project already has oxidizers, use other possible control measures or increase stack height or change source location
Cement, Concrete, and Asphalt	2	possible			2			revise source location
Coating and Solvent	1	possible				possible	1	increase stack height
Landfill Modifications	1							1 – Revise TAC concentration limits for landfill gas
Solid Material Handling	1				1			
Total	60	40	7	1	3		4	5

(1) Some of these project types have an annual average occurrence of less than 1, but are shown here as 1 to highlight all potentially impacted industries.

GDF applications are included in the Air District projections in Figure 5. Most GDF applications involve dispenser replacements or other equipment improvements that do not involve any TAC emission increases. Based on recent application data, about 5% of the gas station applications (10 projects per year) involved new or modified gas stations with TAC emission increases that were subject to HRA requirements. The Air District estimates that the proposed TAC trigger level changes could increase the number of new or modified gas stations that are subject to HRA requirements up to about 50 projects per year.

Although more GDFs will be required to undergo HRAs due to the trigger level changes, the Air District does not expect any significant changes to GDF permitting decisions, because GDFs will continue to be subject to the current health risk calculation procedures. For the additional projects triggering HRAs, about 40% are expected to be new stations with proposed throughput rates of 0.5-1.0 million gallons/year. These new low throughput rate stations are expected to have TBACT controls and are likely to meet project risk limits with no project changes. An additional 24 applications/year may involve modified GDFs that trigger an HRA, and 6% of these, or 1 application/year, are likely to require a lower throughput rate than was initially requested, based on current statistics regarding throughput increase requests for modified GDFs. The elimination of the January 1, 1987 baseline date for modified sources could potentially impact these GDF applications as well. If a GDF has a large pre-1987 throughput limit, including the total proposed emissions for a modification request could result in a GDF exceeding a project risk limit based on the facility's currently permitted throughput rate. Since GDFs are employing TBACT and rarely include other types of sources at the site, contemporaneous TAC emission reductions are not likely to be possible for GDFs. In this case, the Air District may need to deny a throughput increase for the proposed project. However, most of the additional modified stations triggering HRAs are expected to be low throughput level stations. Also, none of the GDF applications evaluated since 2010 involved pre-1987 GDFs. Therefore, it is unlikely that a modification of a pre-1987 station will occur that would also have a large enough throughput rate and a high enough project risk to result in denial of a throughput increase request.

In summary, the proposed revisions to the Air Toxics NSR Program will:

- Increase the stringency of this program,
- Allow less toxic emission increases for new or modified sources than would be allowed by the current program,
- Increase the number of new or modified projects that will be subject to HRA requirements from about 300 projects per year currently to about 400 projects per year,
- Increase the number of new or modified projects that will be required to implement risk reduction measures by about 60 projects per year.

VI. ECONOMIC IMPACTS

The California Health and Safety Code generally requires two different economic analyses for proposed regulations by an air district. The first (H&S Code §40728.5) is a socioeconomic analysis of the adverse impacts of compliance with the proposed regulation on affected industries and business. The second analysis (H&S Code §40920.6) is an incremental cost effectiveness analysis when multiple compliance approaches have been identified by an air district. Figure 6 in Section VI.A of this report lists the estimated costs of compliance with each element of the proposed Toxics NSR Program Revisions that has a significant cost. Section VI.B of this report discusses the required socioeconomic analysis that is based on the costs in Section VI.A. Section VI.C of this report discusses the incremental cost analysis.

A. Cost of Compliance

Figure 6. Compliance Costs for Proposed Revisions to Air Toxics NSR Program

Type of Control	Typical Control Costs	Maximum Control Cost
Limit Throughput or Operating Hours (1)	$ 0/year	Potential for Reduced Profitability
Diesel Particulate Filters (1)	$ 3,500/year – $11,400/year	$63,681/year
Oxidation Catalysts (1)	$14,500/year	$116,400/year
Enclosures and Baghouses (2)	$7,000/year	
Carbon Adsorbers (2)	$40,000/year	
Increased Stack Height (1)	$1481/year	
TAC Testing (1)	$2310/year	

(1) BAAQMD data based on specific projects and draft control measure research (2016)
(2) South Coast Air Quality Management District, Revised Draft Socioeconomic Assessment for Proposed Rules 212, 1401, 1401.1, and 1402 (May 2015)

B. Socioeconomic Analysis

Section 40728.5 of the California Health and Safety Code requires an air district to assess the socioeconomic impacts of the adoption, amendment or repeal of a rule if the rule is one that "will significantly affect air quality or emissions limitations." BAE Urban Economics of San Francisco, California has prepared a socioeconomic analysis of the proposed revisions to the Toxics NSR Program and Regulation 2, Rule 5. This analysis is based on the costs of compliance with the proposed rule discussed in Section VI.A, and is attached to this report as Appendix D.

The socioeconomic analysis concludes that – on average – the proposed Air Toxics NSR Program and Rule 2-5 revisions would not result in significant economic impacts. However, these revisions could potentially result in significant economic impacts for three individual industries. The industry type and the assumed control technology on which this finding was based are presented below in Figure 7. Economic impacts are deemed significant if the compliance costs exceed 10% of the profits for a specific industry type. For this analysis, BAE assumed that projects would use the most expensive compliance option. For each of the industries listed below, less expensive compliance options are available.

Figure 7. Industries with Potentially Significant Economic Impacts

Affected Industry	Potential Control Technology (1)	Compliance Costs as % of Profits
small hotels and motels (excluding casino hotels)	diesel particulate filters on emergency standby engines	16.77%
small electric power generation facilities	oxidation catalysts on gas fired engines	11.93%
metal coating, engraving, and allied services	carbon adsorbers on coating operations	16.91%

(1) Less expensive control technologies are available.

Assuming the business would close rather than implement the above controls or modify the project to use less expensive controls, annual lost sales from these industries would be $34.7 million plus a loss of 156 jobs. Including potential indirect and induced impacts on the region results in a total regional impact of $57.6 million in annual sales losses and 284 job losses. The IMPLAN model estimates that the gross regional product from the nine counties in the Bay Area is approximately $675 billion annually. The total direct, indirect, and induced impacts from these three potentially affected industries is equal to 0.09% of gross regional product for the Bay Area region.

In addition, the following small businesses may have a significant economic impact:

- NAICS 6111, Educational Services
- NAICS 712, Museums, Historical Sites, and Similar Institutions
- NAICS 622, Hospitals
- NAICS 721110, Hotels (except Casino Hotels) and Motels
- NAICS 562910, Remediation Services
- NAICS 3273, Cement and Concrete Product Manufacturing
- NAICS 332812, Metal Coating, Engraving, and Allied Services to Manufacturers
- NAICS 562920, Materials Recovery Facilities

In conclusion, the proposed Toxic NSR Program and Rule 2-5 revisions will not have any significant economic impacts on the region as a whole, but economic impacts may be significant for three industry types and eight small business types. This analysis was based on worst-case assumptions, such as use of the most expensive control technology and closure of the business in response to rule requirements. The Air District notes that less expensive control options are available and that business will typically choose project modification rather than business closure. While significant socioeconomic impacts are possible for the industry types and small business noted above, significant socioeconomic impacts are not a likely outcome.

C. Incremental Cost Effectiveness

Section 40920.6 of the California Health and Safety Code requires an air district to perform an incremental cost analysis for any proposed Best Available Retrofit Control Technology (BARCT) rule or for a rule that is part of an Alternative Emission Reduction Strategy as described in Section 40914 of the Health and Safety Code. This analysis is omitted here because the proposed rule revisions do not include either of these elements.

VII. REGULATORY IMPACTS

Section 40727.2 of the California Health and Safety Code requires an air district, in adopting, amending, or repealing an air district regulation, to identify existing federal and air district air pollution control requirements for the equipment or source type affected by a proposed change in air district rules. The air district must then note any differences between these existing requirements and the requirements imposed by the proposed change.

There are currently no federal or state NSR regulations specific to TACs. State ATCMs and federal NESHAPS regulate some of the same types of stationary sources (e.g., diesel engines, gasoline stations) as the types of stationary sources that are commonly subject to Air District Toxic NSR. However, the Air District would apply these state and federal standards during the permit evaluation. Regulation 2-5-301 requires TBACT at certain risk levels; TBACT would be at least as stringent as state and federal requirements. Indeed, CARB has often stated that ATCM standards are TBACT and the Air District generally agrees but occasionally establishes TBACT for particular sources that are more stringent than ATCM standards. Regulation 2-5-302 and the proposed Section 2-5-303 establish health risk based limits for NSR projects. There are no federal or state health risk based limits that apply on a project level basis. The Air District has established public notification levels and mandatory risk reduction levels through the California Air Toxics "Hot Spots" Act of 1987, but the risk reduction levels in this program apply on a facility-wide basis. In cases where a project represents the entire facility's toxic emissions, the Rule 2-5 project risk limits are at least as stringent as the "Hot Spots" requirements.

VIII. ENVIRONMENTAL IMPACTS

Pursuant to the California Environmental Quality Act (CEQA), the Air District has had an initial study prepared by Environmental Audit, Inc. of Placentia, California for the proposed revisions to the Air Toxics NSR Program and Rule 2-5. The initial study concludes that there are no potential significant adverse environmental impacts associated with the proposed program and rule revisions. A negative declaration will be proposed for adoption by the Air District Board of Directors and is included in Appendix E of this report. The initial study and negative declaration will be circulated for public comment prior to the public hearing for this rule.

IX. AIR DISTRICT COST RECOVERY

The Air District has the authority to assess fees to regulated entities for the purpose of recovering the reasonable costs of implementing and enforcing applicable regulatory requirements. On March 7, 2012, the Air District's Board of Directors adopted a Cost Recovery Policy that specifies that newly adopted regulatory measures should include fees that are designed to recover increased regulatory program activity costs associated with the measure (unless the Board of Directors determines that a portion of those costs should be covered by tax revenue).

In accordance with the adopted Cost Recovery Policy, the Air District assesses risk screening fees for new and modified sources that are required to undergo HRAs pursuant to Regulation 2, Rule 5. The risk screening fees in Regulation 3: Fees, Schedules B-K have recently been updated (effective July 1, 2016). The Air District does not anticipate a need to make any additional adjustments to risk screening fees at this time.

X. RULE DEVELOPMENT AND PUBLIC CONSULTATION PROCESS

During development of this rule amendment, the Air District posted a draft version of the proposed revisions to Regulation 2, Rule 5 on the Air District web site on January 13, 2016 and presented the proposed revisions to this rule at a series of Community Open Houses held in Redwood City on January 28, 2016, in San Jose on February 2, 2014, and in Richmond on February 4, 2016. The Air District accepted comments on the proposed rule revisions through March 9, 2016.

The Air District received a number of inquiries regarding the proposed rule revisions and received two written comments. The commenters expressed concerns about the following Air District proposals: (1) removal of the trigger level table from the regulation, (2) elimination of the January 1, 1987 baseline from the emission calculation procedure for modified sources that initially began operating prior to January 1, 1987, and (3) revision of the definition of worker receptor. The commenters also identified concerns about the potential impacts of these proposed rule revisions on GDFs and engines smaller than 50 bhp, and the commenters suggested additional definition revisions to improve conformance with OEHHA HRA Guidelines and CARB/CAPCOA Risk Management Guidelines.

After considering the comments received on this proposed rule revision and additional staff analysis, the Air District made the following changes to the initial proposed rule revisions:

(1) retained the trigger level table in the rule as Table 2-5-1,

(2) added alternative net health risk limits for pre-1987 modified sources,

(3) removed the proposed revision to the worker receptor definition,

(4) delayed implementation of the 2015 HRA guidelines for GDFs,

(5) added a limited exemption from HRA requirements for engines smaller than 50 bhp,

(6) clarified several exemptions, definitions, and procedures.

Sections IV.B and IV.C of the report explain the Air District's rationale for each of these changes.

The Air District published the revised draft amendments to Regulation 2, Rule 5 on the Air District's web site on October 26, 2016. The Air District accepted comments on these proposed amendments through November 28, 2016. The Air District received four written comments on the proposed Regulation 2, Rule 5 amendments and one written comment on the Air District's proposed HRA Guidelines. These comments and the Air District's responses are discussed in detail in Appendix F.

In addition, one commenter requested clarification about implementation dates for the revised rule. The proposed rule revisions will become effective on January 1, 2017 if adopted by the Air District Board of Directors at the scheduled hearing date of December 7, 2016. Permit applications that have been declared complete prior to this January 1, 2017 effective date will be handled in accordance with the current rule and procedures. Permit applications that are declared complete after this effective date will be handled in accordance with the revised rule and procedures.

XI. CONCLUSION

Pursuant to Section 40727 of the California Health and Safety Code, the proposed new rule must meet findings of necessity, authority, clarity, consistency, non-duplication, and reference. The proposed amendments to the Air Toxics NSR Program and Regulation 2, Rule 5 are:

- Necessary to ensure conformance with statewide HRA and risk management guidance and to improve transparency of the Air District's HRA results for individual projects;

- Authorized under Sections 40000, 40001, 40702, 40725 through 40728, and 44391 of the California Health and Safety Code;
- Written or displayed so that their meaning can be easily understood by the persons directly affected by them;
- Consistent with other Air District rules, and not in conflict with state or federal law;
- Non-duplicative of other statutes, rules or regulations. To the extent duplication exists, such duplication is appropriate for execution of powers and duties granted to, and imposed upon, the Air District; and
- Implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 40000, 40702, and 44391.

The proposed program and rule amendments have met all legal noticing requirements, have been discussed with the regulated community, and reflect consideration of the input and comments of affected and interested parties. Air District staff recommends adoption of the proposed amendments to Regulation 2, Rule 5.

ACRONYM GLOSSARY

APCO – Air Pollution Control Officer

ASF – Age Sensitivity Factor

ATCM – Airborne Toxic Control Measure

BAAQMD – Bay Area Air Quality Management District (or the Air District)

BACT – Best Available Control Technology

BARCT – Best Available Retrofit Control Technology

bhp – brake-horsepower

CAPCOA – California Air Pollution Control Officers Association

CARB – California Air Resources Board

CAS – Chemical Abstract Service

CEQA – California Environmental Quality Act

CP – Cancer Potency

CPF – Cancer Potency Factor

CREL – Chronic Reference Exposure Level

DBR – Daily Breathing Rate

EPA – Environmental Protection Agency

FAH – Fraction of Time at Home

GDF – Gasoline Dispensing Facility

H&S Code – California Health and Safety Code

HI – Hazard Index

HQ – Hazard Quotient

HRA – Health Risk Assessment

HRSA – Health Risk Screening Analysis

MACT – Maximum Achievable Control Technology

MEI – Maximally Exposed Individual

NAICS – North American Industry Classification System

NESHAP – National Emission Standards for Hazardous Air Pollutants

NSR – New Source Review

OEHHA – Office of Environmental Health Hazard Assessment

PAH – Polycyclic Aromatic Hydrocarbons

PCB – Polychlorinated Biphenyls

PCDD – Polychlorinated Dibenzo-p-Dioxins

PCDF – Polychlorinated Dibenzofurans

PEF – Potency Equivalency Factors

PM – Particulate Matter

REL – Reference Exposure Level

TAC – Toxic Air Contaminant

TBACT – Best Available Control Technology for Toxics

TEF – Toxic Equivalency Factor

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

PROPOSED AMENDMENTS TO:

BAAQMD REGULATION 2, RULE 5:
NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

Staff Report
December 2016

APPENDIX A

Proposed Rule Revisions

REGULATION 2
PERMITS
RULE 5
NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

INDEX

2-5-400 ADMINISTRATIVE REQUIREMENTS

2-5-500 MONITORING AND RECORDS

2-5-600 MANUAL OF PROCEDURES

REGULATION 2
PERMITS
RULE 5
NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

(Adopted June 15, 2005)

2-5-100 GENERAL

2-5-101 Description: The purpose of this rule is to provide for the review of new and modified sources of toxic air contaminant (TAC) emissions in order to evaluate potential public exposure and health risk, to mitigate potentially significant health risks resulting from these exposures, and to provide net health risk benefits by improving the level of control when existing sources are modified or replaced. The rule applies to a new or modified source of toxic air contaminants that is required to have an authority to construct or permit to operate pursuant to Regulation 2, Rule 1. New and modified sources with Hazardous Air Pollutant emissions may also be subject to the Maximum Achievable Control Technology (MACT) requirement of Regulation 2, Rule 2, Section 317.

2-5-102 Applicability and Circumvention: This rule applies to the following:

102.1 A new or modified source of toxic air contaminants for which an application is submitted on or after July 1, 2005;

102.2 A source of toxic air contaminants constructed or modified after January 1, 1987 for which no authority to construct or permit to operate has been issued by the District and for which the District Rules and Regulations and Risk Management Policy in effect at the time of construction or modification required an authority to construct or permit to operate.

2-5-110 Exemption, Low Emission Levels: A project (and each new or modified source included in this project) shall not be subject to this rule if, for each toxic air contaminant, total project emissions are below the acute and chronic trigger levels listed in Table 2-5-1 Toxic Air Contaminant Trigger Levels. For the purposes of Regulation 2-1-316, ~~A~~a source shall not be subject to the ~~provisions~~ Section 2-5-401 HRA requirements of this rule if, for each toxic air contaminant, the ~~increase in~~ emissions from the ~~project is~~ source are below the acute and chronic trigger levels listed in Table 2-5-1.

2-5-111 Limited Exemption, Emergency Standby Engines: This rule shall not apply to toxic air contaminant emissions occurring from emergency use of emergency standby engines (as defined in Regulation 9, Rule 8, Section 231 or the applicable CARB ATCM); or from initial start-up testing; or from emission testing of emergency standby engines required by the APCO.

(Amended January 6, 2010)

2-5-112 ~~**Applicability and Circumvention:** This rule applies to the following:~~

~~112.1 A new or modified source of toxic air contaminants for which an application is submitted on or after July 1, 2005;~~

~~112.2 A source of toxic air contaminants constructed or modified after January 1, 1987 for which no authority to construct or permit to operate has been issued by the District and for which the District Rules and Regulations and Risk Management Policy in effect at the time of construction or modification required an authority to construct or permit to operate.~~**Deleted**

2-5-113 Exemption, Small Internal Combustion Engines and Gas Turbines: Internal combustion engines and gas turbines with a maximum output rating less than or equal to 50 horsepower shall not be subject to this rule.

2-5-114 Limited Exemption, Modified Source with No Increase in Toxicity Weighted Emissions: The provisions of Section 2-5-401 shall not apply to a modified source, if the post-modification toxicity weighted emissions are less than or equal to the pre-modification toxicity weighted emissions. Emissions from modified sources shall be calculated in accordance with Section 2-5-601.3.

2-5-115 Limited Exemption, Contemporaneous Health Risk Reduction Projects: Contemporaneous Health Risk Reduction Projects are exempt from the provisions of Section 2-5-302, provided such projects comply with the requirements of Sections 2-5-303 and 2-5-406.

2-5-200 DEFINITIONS

2-5-201 Acute Hazard Index, or Acute HI: Acute hazard index is the sum of the individual acute hazard quotients for toxic air contaminants identified as affecting the same target organ or organ system.

2-5-202 Acute Hazard Quotient, or Acute HQ: Acute hazard quotient is the ratio of the estimated short-term average concentration of the toxic air contaminant to its acute reference exposure level (estimated for inhalation exposure).

2-5-203 Airborne Toxic Control Measure, or ATCM: A recommended method and, where appropriate, a range of methods, established by the California Air Resources Board (CARB) pursuant to the Tanner Act, California Health and Safety Code beginning at Section 39650, that reduces, avoids, or eliminates the emissions of a toxic air contaminant.

2-5-204 Air Toxics Hot Spots Program: The Air Toxics "Hot Spots" Information and Assessment Act of 1987, California Health and Safety Code beginning at Section 44300.

2-5-205 Best Available Control Technology for Toxics, or TBACT: For any new or modified source of toxic air contaminants, except cargo carriers, the most stringent of the following emission controls, provided that under no circumstances shall the controls be less stringent than the emission control required by any applicable provision of federal, State or District laws, rules, regulations or requirements:

205.1 The most effective emission control device or technique which has been successfully utilized for the type of equipment comprising such a source; or

205.2 The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or

205.3 Any control device or technique or any emission limitation that the APCO has determined to be technologically feasible for the type of equipment comprising such a source, while taking into consideration the cost of achieving emission reductions, any non-air quality health and environmental impacts, and energy requirements; or

205.4 The most stringent emission control for a source type or category specified as MACT by U.S. EPA, or specified in an ATCM by CARB.

2-5-206 Cancer Risk: An estimate of the ~~probability~~ chance that an individual ~~will~~ may develop cancer as a result of ~~lifetime~~ exposure to emitted carcinogens at a given receptor location, and considering, where appropriate, Age Sensitivity Factors to account for inherent increased susceptibility to carcinogens during infancy and childhood.

(Amended January 6, 2010)

2-5-207 Carcinogen: For the purpose of this rule, a carcinogen is any compound for which Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) has established a cancer potency factor for use in the Air Toxics Hot Spots Program.

2-5-208 Chronic Hazard Index, or Chronic HI: Chronic hazard index is the sum of the individual chronic hazard quotients for toxic air contaminants identified as affecting the same target organ or organ system.

2-5-209 Chronic Hazard Quotient, or Chronic HQ: Chronic hazard quotient is the ratio of the estimated annual average exposure of the toxic air contaminant to its chronic reference exposure level (estimated for inhalation and non-inhalation exposures).

2-5-210 Health Risk: The potential for adverse human health effects resulting from exposure to emissions of toxic air contaminants and ranging from relatively mild temporary conditions, such as eye or throat irritation, shortness of breath, or headaches, to permanent and serious conditions, such as birth defects, cancer or damage to lungs, nerves, liver, heart, or other organs. Measures of health risk include cancer risk, chronic hazard index, and acute hazard index.

2-5-211 Health Risk Assessment~~Screening Analysis~~, or HR~~S~~A: An analysis that estimates the potential for increased likelihood of health risk for individuals in the affected population that may be exposed to emissions of one or more toxic air contaminants, determined in accordance with Section 2-5-603.

2-5-212 Maximally Exposed Individual, or MEI: A person that may be located at the receptor location where the highest exposure to toxic air contaminants emitted from a given source or project is predicted, as shown by an APCO-approved HR~~S~~A. MEI locations are typically determined for maximum cancer risk, chronic hazard index and acute hazard index based on exposure to residential, worker, and student receptors.

(Amended January 6, 2010)

2-5-213 Maximum Achievable Control Technology, or MACT: An emission standard promulgated by U.S. EPA pursuant to Section 112(d) of the Clean Air Act.

2-5-214 Modified Source of Toxic Air Contaminants: An existing source that undergoes a physical change, change in method of operation, or increase in throughput or production that results or may result in any of the following:

214.1 An increase in the daily or annual emission level of any toxic air contaminant, or the production rate or capacity that is used to estimate toxic air contaminant emission levels, above emission or production levels approved by the District in any authority to construct.

214.2 An increase in the daily or annual emission level of any toxic air contaminant, or the production rate or capacity that is used to estimate toxic air contaminant emission levels, above levels contained in a permit condition in any current permit to operate or major facility review permit.

214.3 For a source that has never been issued a District authority to construct and that does not have conditions limiting daily or annual toxic air contaminant emissions, an increase in the daily or annual emission level of any toxic air contaminant, or the production rate or capacity that is used to estimate the emission level, above the lower of the authorized capacity as established pursuant to Section 2-5-214.3.1 or the functional capacity as established pursuant to 2-5-214.3.2:

3.1 The authorized capacity is the highest of the following:

3.1.1 The highest attainable design capacity, as shown in pre-construction design drawings, including process design drawings and vendor specifications.

3.1.2 The capacity listed in the District permit to operate.

3.1.3 The highest documented actual levels attained by the source prior to July 1, 2005.

3.2 The functional capacity is the capacity of the source as limited by the capacity of any upstream or downstream process that acts as a bottleneck (a grandfathered source with an emission increase due to debottlenecking is considered to be modified).

For the purposes of applying Section 2-5-214.3, only increases in annual emission levels shall be considered for storage vessels.

214.4 The emission of any toxic air contaminant not previously emitted in a quantity that would result in a cancer risk greater than 1.0 in a million (10^{-6}) or a chronic hazard index greater than 0.20.

For the purposes of applying this definition, a daily capacity may be converted to an annual capacity or limit by multiplication by 365 days/year.

2-5-215 New Source of Toxic Air Contaminants: A source of toxic air contaminant emissions, except a source that loses a permit exemption or exclusion in accordance with Regulations 2-1-424 or 2-1-425, that is one or more of the following:

215.1 A source constructed or proposed to be constructed that never had a valid District authority to construct or permit to operate.

215.2 A source that has not been in operation for a period of one year or more and that has not held a valid District permit to operate during this period of non-operation.

215.3 A relocation of an existing source, except for a portable source, to a non-contiguous property.

215.4 A replacement of a source, including an identical replacement of a source, regardless when the original source was constructed.

215.5 A replacement of an identifiable source within a group of sources permitted together under a single source number for the purpose of District permitting convenience.

215.6 A "rebricking" of a glass furnace where changes to the furnace design result in a change in heat generation or absorption.

2-5-216 **Project:** Any source, or group of sources, at a facility that: (a) is part of a proposed construction or modification, (b) is subject to the requirements of Regulation 2-1-301 or 302, and (c) emits one or more toxic air contaminants. All new or modified sources of TACs included in a single permit application will be considered as a project, except that a modified source that meets the requirements of Section 2-5-114 may be excluded from the project. In addition, in order to discourage circumvention that might be achieved by breaking a project into smaller pieces and submitting more than one permit application over a period of time, a project shall include those new or modified sources of TACs at a facility that have been permitted within the ~~two~~three-year period immediately preceding the date a complete application is received, unless the applicant demonstrates to the satisfaction of the APCO that construction or modification of the sources included in the current application was neither (1) a reasonably foreseeable consequence of the previous project, nor (2) a critical element or integral part of the previous project.~~ For modified sources, any consecutive modifications of a source (e.g., increasing a source's permitted throughput), occurring after January 1, 1987, shall be considered together as a project. Any contemporaneous emission reduction proposed for a modified source, as set forth in Section 2-5-601.4, shall be considered as part of a project.~~

(Amended January 6, 2010)

2-5-217 **Project Risk:** The health risk resulting from the ~~increase in~~ emissions of toxic air contaminants from a given project, as indicated by an HR~~S~~A for the MEI.

2-5-218 **Receptor Location:** A location where an individual may live (residential receptor) or work (worker receptor) or otherwise reasonably be expected to be exposed (e.g., student receptor) to toxic air contaminants for the particular chronic or acute exposures being evaluated in an HR~~S~~A. Locations include (a) locations outside of the property boundary of the facility being evaluated and (b) locations inside the property boundary where a person may reside (e.g., at military base housing, prisons, or universities). The APCO shall consider the potential for public exposure in determining appropriate receptor locations.

(Amended January 6, 2010)

2-5-219 **Reference Exposure Level, or REL:** The air concentration or exposure level ~~(~~for a specified exposure duration~~)~~ at or below which adverse non-cancer health effects are not anticipated to occur in the general human population.

2-5-220 **Residential Receptor:** Any receptor location where an individual may reside for a period of six months or more out of a year.

2-5-221 **Source Risk:** The health risk resulting from~~: (a)~~ the emissions of all toxic air contaminants from a new or modified source of toxic air contaminants~~, or (b) the increase in emissions of all toxic air contaminants from a modified source of toxic air contaminants~~, as indicated by an HR~~S~~A for the MEI.

2-5-222 **Toxic Air Contaminant, or TAC:** An air pollutant that 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. For the purposes of this rule, TACs consist of the substances listed in Table 2-5-1 Toxic Air Contaminant Trigger Levels.

2-5-223 **Trigger Level:** The emission threshold level for each TAC, as identified ~~listed~~ in Table 2-5-1 Toxic Air Contaminant Trigger Levels, below which the resulting health risks are not expected to cause, or contribute significantly to, adverse health effects.

2-5-224 **Worker Receptor:** Any receptor location that is an occupational setting or place where an individual may work and that is located outside of the boundary of the facility being evaluated.

2-5-225 **K-12 School:** Any public or private school used for purposes of the education of more than 12 children at the school in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes. The term may include any building or structure, playground, athletic field, or other area of school property, but does not include unimproved school property.

(Adopted January 6, 2010)

2-5-226 Student Receptor: A location of a child at a K-12 school.

(Adopted January 6, 2010)

2-5-227 Priority Community: An area, designated by the APCO, where levels of toxic air contaminants are higher than other areas and where people may be particularly vulnerable and may bear disproportionately higher adverse health effects.

(Adopted January 6, 2010)

2-5-228 Contemporaneous Health Risk Reduction Project: A project that includes new or modified sources of toxic air contaminants and that also includes contemporaneous shut-downs or alterations of other existing permitted sources at the same facility that result in contemporaneous reductions of toxic air contaminant emissions.

2-5-229 Net Project Risk: The net change in health risk at a receptor location resulting from the emissions of toxic air contaminants from new or modified sources and the reductions in emissions of toxic air contaminants due to contemporaneous shut-downs or alterations of existing permitted equipment.

2-5-300 STANDARDS

2-5-301 Best Available Control Technology for Toxics (TBACT) Requirement: The applicant shall apply TBACT to any new or modified source of TACs where the source risk is a cancer risk greater than 1.0 in one million (10^{-6} or 1.0E-6), and/or a chronic hazard index greater than 0.20.

2-5-302 Project Risk Requirement: The APCO shall deny an Authority to Construct or Permit to Operate for any new or modified source of TACs if the project risk exceeds any of the following project risk limits:

302.1 a cancer risk of 10.0 in one million (10^{-5} or 1.0E-5);

302.2 a chronic hazard index of 1.0;

302.3 an acute hazard index of 1.0.

2-5-303 Net Project Risk Requirement: The APCO shall deny an Authority to Construct or Permit to Operate for any new or modified source of TACs if the net project risk at any receptor exceeds any of the following net project risk limits:

302.1 a cancer risk of 10.0 in one million (10^{-5} or 1.0E-5);

302.2 a chronic hazard index of 1.0;

302.3 an acute hazard index of 1.0.

2-5-400 ADMINISTRATIVE REQUIREMENTS

2-5-401 Health Risk Assessment (HRA)~~Screening Analysis~~ Requirements: An application for an Authority to Construct or Permit to Operate for any project subject to this rule shall contain an HR~~S~~A conducted in accordance with Section 2-5-603 or the information necessary for the APCO to conduct an HR~~S~~A. The APCO shall prepare an HR~~S~~A where the applicant submits none. The APCO shall notify the applicant if the results of an HR~~S~~A completed by the APCO indicate that the project, as proposed, would not meet the requirements of this rule. The applicant shall be given the opportunity to perform a more refined HR~~S~~A, modify the project, or submit any required plans or information, as necessary to comply with the requirements of this rule.

2-5-402 Health Risk Assessment~~Screening Analysis~~ Guidelines: The APCO shall publish Health Risk Assessment~~Screening Analysis~~ Guidelines that specify the procedures to be followed for estimating health risks including acute hazard index, chronic hazard index, and cancer risk. These guidelines will generally conform to the Health Risk Assessment Guidelines adopted by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) for use in the Air Toxics Hot Spots Program. The Health Risk Assessment~~Screening Analysis~~ Guidelines and Table 2-5-1 will be periodically updated, typically within one year of any significant revision to OEHHA's

Health Risk Assessment Guidelines, including any new or revised health effects value.

2-5-403 BACT/TBACT Workbook: The APCO shall publish and periodically update a BACT/TBACT Workbook specifying the requirements for commonly permitted sources. TBACT will be determined for a source by using the workbook as a guidance document or, on a case-by-case basis, using the most stringent definition of Section 2-5-205.

2-5-404 Designation of Priority Communities: The APCO shall publish and periodically update a list of the areas that have been designated as priority communities along with the selection criteria and analyses used in designating these communities.

(Adopted January 6, 2010)

2-5-405 Cumulative Impact Summary for Priority Communities: The APCO shall publish and periodically update a cumulative impact summary report that describes the cumulative impacts of toxicity weighted emission increases and reductions in each priority community occurring after January 1, 2010.

(Adopted January 6, 2010)

2-5-406 Applicability Criteria and Administrative Procedures for Contemporaneous Health Risk Reduction Projects: An applicant that is requesting to use the Section 2-5-115 Limited Exemption for Contemporaneous Health Risk Reduction Projects shall demonstrate to the satisfaction of the APCO that the project meets all of the applicability criteria in Section 2-5-406.1. The applicant shall also comply with all of the procedural requirements in Section 2-5-406.2.

406.1 Contemporaneous health risk reduction projects are limited to projects that include a modified source of toxic air contaminants that meets the following criteria:

1.1 The modified source was installed and operating at the facility prior to January 1, 1987.

1.2 The modified source currently has a valid District operating permit and has maintained a valid District operating permit since the source was first permitted by the District.

1.3 The modified source does not qualify for the Regulation 2-5-114 Limited Exemption for sources with no increases in toxicity weighted emissions.

1.4 The modified source is causing the project to exceed the project risk limits of Section 2-5-302 due to the elimination of the January 1, 1987 baseline for modified sources.

406.2 An application for a contemporaneous health risk reduction project shall contain the following:

2.1 A written request to use the Regulation 2-5-115 Limited Exemption for Contemporaneous Health Risk Reduction Projects.

2.2 A demonstration that the project includes a modified source of toxic air contaminants that meets all of the Section 2-5-406.1 applicability criteria.

2.3 Identification of all sources, source locations, stack parameters or other air dispersion modeling input information for the sources that will be shut-down or altered to reduce toxic air contaminant emissions.

2.4 Throughput rates, sources test data, emission factors, and any other information necessary to characterize the current actual baseline TAC emission rates for each source that will be shut-down or altered to generate TAC emission reductions with emission reductions calculated in accordance with Section 2-5-602.

2.5 A certification that the TAC emission reductions calculated above will be contemporaneous because the emission reductions will be completed within no later than 90 days after the initial start-up date for any new or modified sources in the project.

2.6 A post-project health risk assessment for the project that includes an HRA for the new and modified sources in the project and that demonstrates that the modified source has met Section 2-5-406.1.4, and identification of each receptor location that is resulting in a project risk above the Section 2-5-302 thresholds.

2.7 A pre-project health risk assessment for the sources that will shut-down or altered based on the baseline TAC emissions calculated pursuant to section 2-5-602 that includes each receptor location with project risk excesses.

2.8 A comparison of the post-project and pre-project health risks for each receptor location, which did not comply with the Section 2-5-302 project risk limits, that demonstrates compliance with the net project risk limits in Section 2-5-303 for each of these receptor locations.

2-5-500 MONITORING AND RECORDS

2-5-501 Monitoring Requirements: The APCO may impose any reasonable monitoring or record keeping requirements deemed necessary to ensure compliance with this rule.

2-5-600 MANUAL OF PROCEDURES

2-5-601 Emission Calculation Procedures: The APCO shall determine annual TAC emissions (expressed as pounds per year), to be used for comparison with chronic trigger levels and in estimating cancer risk and chronic hazard index, and one-hour TAC emissions (expressed as pounds per hour), to be used for comparison with acute trigger levels and in estimating acute hazard index as follows:

601.1 Emission calculations shall include emissions resulting from routine operation of a source or emissions that are reasonably predictable, including, but not limited to continuous and intermittent releases and predictable process upsets or leaks, subject to enforceable limiting conditions.

601.2 Emission calculations for a new source shall be based on the maximum emitting potential of the new source or the maximum permitted emission level of the new source, approved by the APCO, subject to enforceable limiting conditions.

601.3 Emission calculations for a modified source shall be based on:

3.1 For post-modification ~~one-hour~~ emissions, the maximum emitting potential of the modified source or the maximum permitted emission level of the modified source, approved by the APCO, subject to enforceable limiting conditions.

3.2 ~~For annual emissions, the total emission increases resulting from all modifications of a source occurring after January 1, 1987. Emission increases shall be determined by subtracting the adjusted baseline emission rate, as calculated using the methodology in Section 2-5-602, from the new maximum permitted emission level of the modified source, approved by the APCO, subject to enforceable limiting conditions.~~ For pre-modification emissions, the adjusted baseline emission rate for each TAC, as calculated using the methodology in Section 2-5-602.

3.3 For the purposes of Section 2-5-114, toxicity weighted emissions shall be calculated for each case, post-modification and pre-modification, in accordance with Section 2-5-604.

601.4 Emission calculations for a project shall be performed by summing the emissions ~~increases~~ from all new sources of TACs and the post-modification emissions from all modified sources of TACs that are considered part of the project pursuant to Section 2-5-216. ~~For a modified source within the project, the APCO may consider contemporaneous reductions of other emissions from the modified source when estimating the project risk (e.g., a modified source may have a decrease in benzene emissions that would mitigate an increase in toluene emissions).~~

(Amended January 6, 2010)

2-5-602 Baseline Emission Calculation Procedures: The following methodology shall be used to calculate baseline emissions for modified sources of TACs:

602.1 For a source that has, contained in a permit condition, an emission cap or emission rate limit, the baseline throughput and baseline emission rate (expressed in the units of mass of emissions per unit of throughput) shall be based on the levels allowed by the permit condition.

602.2 For sources without an emission cap or emission rate limit, baseline throughput and emission rate shall be determined as follows:

2.1 The baseline period consists of the 3-year period immediately preceding the date that the application is complete (or shorter period if the source is less than 3 years old or longer period if the applicant demonstrates to the District's satisfaction that a longer period is appropriate when considering such factors as operational problems and economic conditions). The applicant must have sufficient verifiable records of the source's operation or credible engineering analyses that substantiate to the District's satisfaction the emission rate and throughput during the entire baseline period.

2.2 Baseline throughput is either the:

2.2.1 Actual average throughput during the baseline period, if throughput is not limited by permit condition; or

2.2.2 Maximum throughput as allowed by permit conditions on the date the application is complete.

2.3 Baseline emission rate (expressed in the units of mass of emissions per unit of throughput) is the average actual emission rate during the baseline period. Periods where the actual emission rate exceeded regulatory or permitted limits shall be excluded from the average.

602.3 The adjusted baseline emission rate shall be determined by adjusting the baseline emission rate downward, if necessary, to comply with the most stringent emission rate or emission limit from a MACT, ATCM, or District rule or regulation that is applicable to the type of source being evaluated and that is in effect, has been adopted by U.S. EPA, CARB, or the District, or is contained in the most recently adopted Clean Air Plan for the District.

602.4 The adjusted baseline emissions shall be the adjusted baseline emission rate multiplied by the baseline throughput.

2-5-603 Health Risk Assessment~~Screening Analysis~~ Procedures: Each HR~~S~~A shall be prepared following the District's Health Risk Assessment~~Screening Analysis~~ Guidelines.

2-5-604 Calculation Procedures for Toxicity Weighted Emissions: Emission increases and reductions shall be determined on a toxicity weighted basis for carcinogens and noncarcinogens. The annual-average emission rate of each carcinogen shall be multiplied by its Cancer Potency (CP) Weighting Factor; the products shall be summed to calculate the total weighted carcinogenic emission rate. The annual-average emission rate of each noncarcinogen shall be divided by its Chronic Reference Exposure Level (CREL) Weighting Factor; the quotients shall be summed to calculate the total weighted noncarcinogenic emission rate. ~~(~~CP and CREL Weighting Factors are ~~listed~~ identified in Table 2-5-1.~~)~~

(Adopted January 6, 2010)

Table 2-5-1 Toxic Air Contaminant Trigger Levels

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2, 3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9 ~~10~~]	CP Weighting Factor [9 ~~10~~]	Acute Inhalation REL [10] (µg/m³)	Chronic Inhalation REL [10] (µg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)$^{-1}$	Oral Cancer Potency Factor [10] (mg/kg-day)$^{-1}$
Acetaldehyde	75-07-0	1.0E+00	~~3.8E+01~~ 2.9E+01	1.4E+02	1.0E-02	4.7E+02	1.4E+02 3.0E+02 (8-Hour)		1.0E-02	
Acetamide	60-35-5		~~5.4E+00~~ 4.1E+00		7.0E-02				7.0E-02	
Acrolein	107-02-8	5.5E-03	1.4E+01	3.5E-01		2.5E+00	3.5E-01 7.0E-01 (8-Hour)			
Acrylamide	79-06-1		~~8.4E-02~~ 6.4E-02		4.5E+00				4.5E+00	
Acrylic acid	79-10-7	1.3E+01				6.0E+03				
Acrylonitrile	107-13-1		~~3.8E-01~~ 2.9E-01	5.0E+00	1.0E+00		5.0E+00		1.0E+00	
Allyl chloride	107-05-1		~~1.8E+01~~ 1.4E+01		2.1E-02				2.1E-02	
Aminoanthraquinone, 2-	117-79-3		~~1.1E+01~~ 8.7E+00		3.3E-02				3.3E-02	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [~~9~~10]	CP Weighting Factor [~~9~~10]	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)⁻¹	Oral Cancer Potency Factor [10] (mg/kg-day)⁻¹
Ammonia	7664-41-7	7.1E+00	7.7E+03	2.0E+02		3.2E+03	2.0E+02			
Aniline	62-53-3		~~6.6E+01~~ 5.0E+01		5.7E-03				5.7E-03	
Arsenic and compounds (inorganic) [~~3,~~ 4]	7440-38-2	4.4E-04	~~7.2E-03~~ 1.6E-03	~~4.0E-04~~ 1.4E-04	~~5.4E+01~~ 1.8E+02	2.0E-01	1.5E-02 1.5E-02 (8-Hour)	3.5E-06	1.2E+01	1.5E+00
Arsine	7784-42-1	~~4.4E-04~~ 4.6E-04	~~5.8E-01~~ 6.0E-01	~~4.0E-04~~ 1.4E-02		2.0E-01	1.5E-02 1.5E-02 (8-Hour)			
Asbestos [5]	1332-21-4		~~1.7E-03~~ 1.3E-03		2.2E+02				2.2E+02	
Benzene [~~3~~]	71-43-2	~~2.9E+00~~ 6.0E-02	~~3.8E+00~~ 2.9E+00	~~6.0E+01~~ 3.0E+00	1.0E-01	~~1.3E+03~~ 2.7E+01	~~6.0E+01~~ 3.0E+00 3.0E+00 (8-Hour)		1.0E-01	
Benzidine (and its salts)	92-87-5		~~7.6E-04~~ 5.7E-04		5.0E+02				5.0E+02	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9~~10~~]	CP Weighting Factor [9~~10~~]	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)$^{-1}$	Oral Cancer Potency Factor [10] (mg/kg-day)$^{-1}$
benzidine based dyes			~~7.6E-04~~ 5.7E-04		5.0E+02				5.0E+02	
direct black 38	1937-37-7		~~7.6E-04~~ 5.7E-04		5.0E+02				5.0E+02	
direct blue 6	2602-46-2		~~7.6E-04~~ 5.7E-04		5.0E+02				5.0E+02	
direct brown 95 (technical grade)	16071-86-6		~~7.6E-04~~ 5.7E-04		5.0E+02				5.0E+02	
Benzyl chloride	100-44-7	5.3E-01	~~2.2E+00~~ 1.7E+00		1.7E-01	2.4E+02			1.7E-01	
Beryllium and compounds [4]	7440-41-7		~~4.7E-02~~ 3.4E-02	7.0E-03	8.4E+00		7.0E-03	2.0E-03	8.4E+00	
Bis (2-chloroethyl) ether (Dichloroethyl ether)	111-44-4		~~1.5E-01~~ 1.1E-01		2.5E+00				2.5E+00	
Bis (chloromethyl) ether	542-88-1		~~8.2E-03~~ 6.2E-03		4.6E+01				4.6E+01	
Butadiene, 1,3-	106-99-0	1.5E+00	~~6.3E-01~~ 4.8E-01	~~2.0E+01~~ 2.0E+00	6.0E-01	6.6E+02	~~2.0E+01~~ 2.0E+00 9.0E+00 (8-Hour)		6.0E-01	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2, 3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9] ~~[10]~~	CP Weighting Factor [9] ~~[10]~~	Acute Inhalation REL [10] (µg/m³)	Chronic Inhalation REL [10] (µg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)⁻¹	Oral Cancer Potency Factor [10] (mg/kg-day)⁻¹
Cadmium and compounds [4]	7440-43-9		~~2.6E-02~~ 1.9E-02	~~1.8E-02~~ 1.0E-02	1.5E+01		2.0E-02	5.0E-04	1.5E+01	
Caprolactam	105-60-2	1.1E-01	8.5E+01	2.2E+00		5.0E+01	2.2E+00 7.0E+00 (8-Hour)			
Carbon disulfide ~~[3]~~	75-15-0	1.4E+01	3.1E+04	8.0E+02		6.2E+03	8.0E+02			
Carbon tetrachloride ~~[3]~~ (Tetrachloromethane)	56-23-5	4.2E+00	~~2.5E+00~~ 1.9E+00	4.0E+01	1.5E-01	1.9E+03	4.0E+01		1.5E-01	
Chlorinated paraffins	108171-26-2		~~4.2E+00~~ 3.2E+00		8.9E-02				8.9E-02	
Chlorine	7782-50-5	4.6E-01	7.7E+00	2.0E-01		2.1E+02	2.0E-01			
Chlorine dioxide	10049-04-4		2.3E+01	6.0E-01			6.0E-01			
Chloro-o-phenylenediamine, 4-	95-83-0		~~2.4E+01~~ 1.8E+01		1.6E-02				1.6E-02	
Chlorobenzene	108-90-7		3.9E+04	1.0E+03			1.0E+03			
Chloroform ~~[3]~~	67-66-3	3.3E-01	~~2.0E+01~~ 1.5E+01	3.0E+02	1.9E-02	1.5E+02	3.0E+02		1.9E-02	
Chloropicrin	76-06-2	6.4E-02	1.5E+01	4.0E-01		2.9E+01	4.0E-01			
Chloro-o-toluidine, p-	95-69-2		~~1.4E+00~~ 1.1E+00		2.7E-01				2.7E-01	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [~~9~~10]	CP Weighting Factor [~~9~~10]	Acute Inhalation REL [10] (µg/m³)	Chronic Inhalation REL [10] (µg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)$^{-1}$	Oral Cancer Potency Factor [10] (mg/kg-day)$^{-1}$
Chromium, (hexavalent, 6+) [4]	18540-29-9		~~7.7E-04~~ 5.1E-04	2.0E-01	~~5.1E+02~~ 5.6E+02		2.0E-01	2.0E-02	5.1E+02	5.0E-01
barium chromate [4]	10294-40-3		~~7.7E-04~~ 2.5E-03	~~2.0E-01~~ 4.1E-02	~~5.1E+02~~ 1.2E+02		2.0E-01	2.0E-02	5.1E+02	5.0E-01
calcium chromate [4]	13765-19-0		~~7.7E-04~~ 1.5E-03	~~2.0E-01~~ 6.7E-02	~~5.1E+02~~ 1.9E+02		2.0E-01	2.0E-02	5.1E+02	5.0E-01
lead chromate [4]	7758-97-6		~~7.7E-04~~ 3.2E-03	~~2.0E-01~~ 3.2E-02	~~5.1E+02~~ 9.1E+01		2.0E-01	2.0E-02	5.1E+02	5.0E-01
sodium dichromate [4]	10588-01-9		~~7.7E-04~~ 1.3E-03	~~2.0E-01~~ 7.9E-02	~~5.1E+02~~ 2.2E+02		2.0E-01	2.0E-02	5.1E+02	5.0E-01
strontium chromate [4]	7789-06-2		~~7.7E-04~~ 2.0E-03	~~2.0E-01~~ 5.1E-02	~~5.1E+02~~ 1.4E+02		2.0E-01	2.0E-02	5.1E+02	5.0E-01
Chromium trioxide (as chromic acid mist) [4]	1333-82-0		~~7.7E-04~~ 9.7E-04	~~2.0E-03~~ 1.0E-03	~~5.1E+02~~ 2.9E+02		2.0E-03	2.0E-02	5.1E+02	5.0E-01
Copper and compounds	7440-50-8	2.2E-01				1.0E+02				
Cresidine, p-	120-71-8		~~2.5E+00~~ 1.9E+00		1.5E-01				1.5E-01	
Cresols (m-, o-, p-)	1319-77-3		2.3E+04	6.0E+02			6.0E+02			
Cupferron	135-20-6		~~1.7E+00~~ 1.3E+00		2.2E-01				2.2E-01	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2, 3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9 ~~10~~]	CP Weighting Factor [9 ~~10~~]	Acute Inhalation REL [10] (µg/m³)	Chronic Inhalation REL [10] (µg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$	Oral Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$
Cyanide and compounds (inorganic)	57-12-5	7.5E-01	3.5E+02	9.0E+00		3.4E+02	9.0E+00			
hydrogen cyanide (hydrocyanic acid)	74-90-8	7.5E-01	3.5E+02	9.0E+00		3.4E+02	9.0E+00			
Diaminoanisole, 2,4-	615-05-4		~~1.6E+01~~ 1.2E+01		2.3E-02				2.3E-02	
Diaminotoluene, 2,4-	95-80-7		~~9.5E-02~~ 7.2E-02		4.0E+00				4.0E+00	
Dibromo-3-chloropropane, 1,2- (DBCP)	96-12-8		~~5.4E-02~~ 4.1E-02		7.0E+00				7.0E+00	
Dichlorobenzene, 1,4-	106-46-7		~~9.5E+00~~ 7.2E+00	8.0E+02	4.0E-02		8.0E+02		4.0E-02	
Dichlorobenzidine, 3,3-	91-94-1		~~3.2E-01~~ 2.4E-01		1.2E+00				1.2E+00	
Dichloroethane, 1,1- (Ethylidene dichloride)	75-34-3		~~6.6E+01~~ 5.0E+01		5.7E-03				5.7E-03	
Dichloroethylene, 1,1- [see vinylidene chloride]										
Diesel exhaust particulate matter [6]			~~3.4E-01~~ 2.6E-01	5.0E+00	1.1E+00		5.0E+00		1.1E+00	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9]~~[10]~~	CP Weighting Factor [9]~~[10]~~	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)⁻¹	Oral Cancer Potency Factor [10] (mg/kg-day)⁻¹
Diethanolamine	111-42-2		1.2E+02	3.0E+00			3.0E+00			
Di(2-ethylhexyl)phthalate (DEHP) [4]	117-81-7		~~4.1E+01~~ 2.9E+01		~~9.3E-03~~ 1.0E-02				8.4E-03	8.4E-03
Dimethylaminoazobenzene, p-	60-11-7		~~8.2E-02~~ 6.2E-02		4.6E+00				4.6E+00	
Dimethyl formamide, N,N-	68-12-2		3.1E+03	8.0E+01			8.0E+01			
Dinitrotoluene, 2,4-	121-14-2		~~1.2E+00~~ 9.2E-01		3.1E-01				3.1E-01	
Dioxane, 1,4- (1,4-diethylene dioxide)	123-91-1	6.6E+00	~~1.4E+01~~ 1.1E+01	3.0E+03	2.7E-02	3.0E+03	3.0E+03		2.7E-02	
Epichlorohydrin (1-chloro-2,3-epoxypropane)	106-89-8	2.9E+00	~~4.7E+00~~ 3.6E+00	3.0E+00	8.0E-02	1.3E+03	3.0E+00		8.0E-02	
Epoxybutane, 1,2-	106-88-7		7.7E+02	2.0E+01			2.0E+01			
Ethyl benzene	100-41-4		~~4.3E+01~~ 3.3E+01	2.0E+03	8.7E-03		2.0E+03		8.7E-03	
Ethyl chloride (chloroethane)	75-00-3		1.2E+06	3.0E+04			3.0E+04			
Ethylene dibromide (1,2-dibromoethane)	106-93-4		~~1.5E+00~~ 1.1E+00	8.0E-01	2.5E-01		8.0E-01		2.5E-01	
Ethylene dichloride (1,2-dichloroethane)	107-06-2		~~5.3E+00~~ 4.0E+00	4.0E+02	7.2E-02		4.0E+02		7.2E-02	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2, 3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9]~~[10]~~	CP Weighting Factor [9]~~[10]~~	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)⁻¹	Oral Cancer Potency Factor [10] (mg/kg-day)⁻¹
Ethylene glycol	107-21-1		1.5E+04	4.0E+02			4.0E+02			
Ethylene glycol butyl ether – EGBE [see Glycol ethers]										
Ethylene oxide (1,2-epoxyethane)	75-21-8		~~1.2E+00~~ 9.2E-01	3.0E+01	3.1E-01		3.0E+01		3.1E-01	
Ethylene thiourea	96-45-7		~~8.4E+00~~ 6.4E+00		4.5E-02				4.5E-02	
Fluorides [4]		5.3E-01	~~5.0E+02~~ 5.7E+01	~~1.3E+01~~ 1.5E+00		2.4E+02	1.3E+01	4.0E-02		
hydrogen fluoride (hydrofluoric acid) [4]	7664-39-3	5.3E-01	~~5.4E+02~~ 5.8E+01	~~1.4E+01~~ 1.5E+00		2.4E+02	1.4E+01	4.0E-02		
Formaldehyde	50-00-0	1.2E-01	~~1.8E+01~~ 1.4E+01	9.0E+00	2.1E-02	5.5E+01	9.0E+00 9.0E+00 (8-Hour)		2.1E-02	
Glutaraldehyde	111-30-8		3.1E+00	8.0E-02			8.0E-02			

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2, 3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9] ~~[10]~~	CP Weighting Factor [9] ~~[10]~~	Acute Inhalation REL [10] (µg/m³)	Chronic Inhalation REL [10] (µg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$	Oral Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$
Glycol ethers										
ethylene glycol butyl ether – EGBE (2-butoxy ethanol; butyl cellosolve)	111-76-2	3.1E+01				1.4E+04				
ethylene glycol ethyl ether – EGEE (2-ethoxy ethanol; cellosolve) ~~[3]~~	110-80-5	8.2E-01	2.7E+03	7.0E+01		3.7E+02	7.0E+01			
ethylene glycol ethyl ether acetate – EGEEA (2-ethoxyethyl acetate; cellosolve acetate) ~~[3]~~	111-15-9	3.1E-01	1.2E+04	3.0E+02		1.4E+02	3.0E+02			
ethylene glycol methyl ether – EGME (2-methoxy ethanol; methyl cellosolve) ~~[3]~~	109-86-4	2.1E-01	2.3E+03	6.0E+01		9.3E+01	6.0E+01			
ethylene glycol methyl ether acetate – EGMEA (2-methoxyethyl acetate; methyl cellosolve acetate)	110-49-6		3.5E+03	9.0E+01			9.0E+01			
Hexachlorobenzene	118-74-1		~~2.1E-01~~ 1.6E-01		1.8E+00				1.8E+00	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9~~10~~]	CP Weighting Factor [9~~10~~]	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$	Oral Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$
Hexachlorocyclohexanes (mixed or technical grade) [4]	608-73-1		6.9E-02 3.3E-02		5.7E+00 8.6E+00				4.0E+00	4.0E+00
Hexachlorocyclohexane, alpha- [4]	319-84-6		6.9E-02 3.3E-02		~~5.7E+00~~ 8.6E+00				4.0E+00	4.0E+00
Hexachlorocyclohexane, beta- [4]	319-85-7		~~6.9E-02~~ 3.3E-02		~~5.7E+00~~ 8.6E+00				4.0E+00	4.0E+00
Hexachlorocyclohexane, gamma- (lindane) [4]	58-89-9		~~2.5E-01~~ 1.2E-01		~~1.6E+00~~ 2.4E+00				1.1E+00	1.1E+00
Hexane, n-	110-54-3		2.7E+05	7.0E+03			7.0E+03			
Hydrazine	302-01-2		~~2.2E-02~~ 1.7E-02	2.0E-01	1.7E+01		2.0E-01		1.7E+01	
Hydrochloric acid (hydrogen chloride)	7647-01-0	4.6E+00	3.5E+02	9.0E+00		2.1E+03	9.0E+00			
Hydrogen cyanide (hydrocyanic acid) [see cyanide & compounds]										
Hydrogen fluoride (hydrofluoric acid) [see fluorides & compounds]										
Hydrogen selenide [see selenium compounds]										

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9]~~[10]~~	CP Weighting Factor [9]~~[10]~~	Acute Inhalation REL [10] (µg/m³)	Chronic Inhalation REL [10] (µg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)⁻¹	Oral Cancer Potency Factor [10] (mg/kg-day)⁻¹
Hydrogen sulfide	7783-06-4	9.3E-02	3.9E+02	1.0E+01		4.2E+01	1.0E+01			
Isophorone	78-59-1		7.7E+04	2.0E+03			2.0E+03			
Isopropyl alcohol (isopropanol)	67-63-0	7.1E+00	2.7E+05	7.0E+03		3.2E+03	7.0E+03			
Lead and compounds (inorganic) [4]	7439-92-1		~~3.2E+00~~ 2.9E-01		~~1.2E-01~~ 9.8E-01				4.2E-02	8.5E-03
lead acetate [4]	301-04-2		~~3.2E+00~~ 4.6E-01		~~1.2E-01~~ 6.2E-01				4.2E-02	8.5E-03
lead phosphate [4]	7446-27-7		~~3.2E+00~~ 3.8E-01		~~1.2E-01~~ 7.5E-01				4.2E-02	8.5E-03
lead subacetate [4]	1335-32-6		3.2E+00 3.8E-01		~~1.2E-01~~ 7.5E-01				4.2E-02	8.5E-03
Lindane [see hexachlorocyclohexane, gamma]										
Maleic anhydride	108-31-6		2.7E+01	7.0E-01			7.0E-01			
Manganese and compounds	7439-96-5		3.5E+00	9.0E-02			9.0E-02 1.7E-01 (8-Hour)			
Mercury and compounds	7439-97-6	1.3E-03	~~2.7E-01~~	~~7.1E-03~~		6.0E-01	3.0E-02	1.6E-04		

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9]~~[10]~~	CP Weighting Factor [9]~~[10]~~	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)$^{-1}$	Oral Cancer Potency Factor [10] (mg/kg-day)$^{-1}$
(inorganic) [4]			2.1E-01	5.4E-03			6.0E-02 (8-Hour)			
mercuric chloride [4]	7487-94-7	~~1.3E-03~~ 1.8E-03	~~2.7E-01~~ 2.8E-01	~~7.1E-03~~ 4.0E-03		6.0E-01	3.0E-02 6.0E-02 (8-Hour)	1.6E-04		
Methanol (methyl alcohol)	67-56-1	6.2E+01	1.5E+05	4.0E+03		2.8E+04	4.0E+03			
Methyl bromide (bromomethane)	74-83-9	8.6E+00	1.9E+02	5.0E+00		3.9E+03	5.0E+00			
Methyl chloroform (1,1,1-trichloroethane)	71-55-6	1.5E+02	3.9E+04	1.0E+03		6.8E+04	1.0E+03			
Methyl ethyl ketone (MEK) (2-butanone)	78-93-3	2.9E+01				1.3E+04				
Methyl isocyanate	624-83-9		3.9E+01	1.0E+00			1.0E+00			
Methyl tertiary-butyl ether (MTBE)	1634-04-4		~~2.1E+02~~ 1.6E+02	8.0E+03	1.8E-03		8.0E+03		1.8E-03	
Methylene bis (2-chloroaniline), 4,4'- (MOCA)	101-14-4		~~2.5E-01~~ 1.9E-01		1.5E+00				1.5E+00	
Methylene chloride (dichloromethane)	75-09-2	3.1E+01	~~1.1E+02~~ 8.2E+01	4.0E+02	3.5E-03	1.4E+04	4.0E+02		3.5E-03	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2, 3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9~~10~~]	CP Weighting Factor [9~~10~~]	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)$^{-1}$	Oral Cancer Potency Factor [10] (mg/kg-day)$^{-1}$
Methylene dianiline, 4,4'- (and its dichloride) [4]	101-77-9		~~2.4E-01~~ 2.6E-02	2.0E+01	~~1.6E+00~~ 1.1E+01		2.0E+01		1.6E+00	1.6E+00
Methylene diphenyl isocyanate	101-68-8		2.7E+01	7.0E-01			7.0E-01			
Michler's ketone (4,4 bis (dimethylamino) benzophenone)	90-94-8		~~4.4E-01~~ 3.3E-01		8.6E-01				8.6E-01	
Naphthalene [see polycyclic aromatic hydrocarbons]										
Nickel and compounds [4] *(values also apply to:)*	7440-02-0	~~1.3E-02~~ 3.1E-05	~~4.3E-01~~ 3.1E-01	~~5.0E-02~~ 1.4E-02	9.1E-01	~~6.0E+00~~ 2.0E-01	~~5.0E-02~~ 1.4E-02 6.0E-02 (8-Hour)	~~5.0E-02~~ 1.1E-02	9.1E-01	
nickel acetate [4]	373-02-4	~~1.3E-02~~ 9.3E-05	~~4.3E-01~~ 9.5E-01	~~5.0E-02~~ 4.7E-03	9.1E-01	~~6.0E+00~~ 2.0E-01	~~5.0E-02~~ 1.4E-02 6.0E-02 (8-Hour)	~~5.0E-02~~ 1.1E-02	9.1E-01	
nickel carbonate [4]	3333-39-3	~~1.3E-02~~ 6.3E-05	~~4.3E-01~~ 6.4E-01	~~5.0E-02~~ 6.9E-03	9.1E-01	~~6.0E+00~~ 2.0E-01	~~5.0E-02~~ 1.4E-02 6.0E-02 (8-Hour)	~~5.0E-02~~ 1.1E-02	9.1E-01	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [~~9~~10]	CP Weighting Factor [~~9~~10]	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)⁻¹	Oral Cancer Potency Factor [10] (mg/kg-day)⁻¹
nickel carbonyl [4]	13463-39-3	~~1.3E-02~~ 9.0E-05	~~4.3E-01~~ 9.1E-01	~~5.0E-02~~ 4.8E-03	9.1E-01	~~6.0E+00~~ 2.0E-01	~~5.0E-02~~ 1.4E-02 6.0E-02 (8-Hour)	~~5.0E-02~~ 1.1E-02	9.1E-01	
nickel hydroxide [4]	12054-48-7	~~1.3E-02~~ 4.9E-05	~~4.3E-01~~ 5.0E-01	~~5.0E-02~~ 8.9E-03	9.1E-01	~~6.0E+00~~ 2.0E-01	~~5.0E-02~~ 1.4E-02 6.0E-02 (8-Hour)	~~5.0E-02~~ 1.1E-02	9.1E-01	
nickelocene [4]	1271-28-9	~~1.3E-02~~ 6.3E-05	~~4.3E-01~~ 6.4E-01	~~5.0E-02~~ 6.9E-03	9.1E-01	~~6.0E+00~~ 2.0E-01	~~5.0E-02~~ 1.4E-02 6.0E-02 (8-Hour)	~~5.0E-02~~ 1.1E-02	9.1E-01	
nickel oxide [4]	1313-99-1	~~1.3E-02~~ 5.6E-05	~~4.3E-01~~ 4.0E-01	~~1.0E-01~~ 7.9E-02	9.1E-01	~~6.0E+00~~ 2.0E-01	~~1.0E-01~~ 1.4E-02 6.0E-02 (8-Hour)	~~5.0E-02~~ 1.1E-02	9.1E-01	
nickel refinery dust from the pyrometallurgical process [4]		~~1.3E-02~~ 3.1E-05	~~4.3E-01~~ 3.1E-01	~~5.0E-02~~ 1.4E-02	9.1E-01	~~6.0E+00~~ 2.0E-01	~~5.0E-02~~ 1.4E-02 6.0E-02 (8-Hour)	~~5.0E-02~~ 1.1E-02	9.1E-01	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [~~9~~10]	CP Weighting Factor [~~9~~10]	Acute Inhalation REL [10] (µg/m³)	Chronic Inhalation REL [10] (µg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$	Oral Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$
nickel subsulfide [4]	12035-72-2	~~1.3E-02~~ 1.3E-04	~~4.3E-01~~ 1.3E+00	~~5.0E-02~~ 3.4E-03	9.1E-01	~~6.0E+00~~ 2.0E-01	~~5.0E-02~~ 1.4E-02 6.0E-02 (8-Hour)	~~5.0E-02~~ 1.1E-02	9.1E-01	
Nitric acid	7697-37-2	1.9E-01				8.6E+01				
Nitrosodi-n-butylamine, N-	924-16-3		~~3.4E-02~~ 2.6E-02		1.1E+01				1.1E+01	
Nitrosodi-n-propylamine, N-	621-64-7		~~5.4E-02~~ 4.1E-02		7.0E+00				7.0E+00	
Nitrosodiethylamine, N-	55-18-5		~~1.1E-02~~ 8.0E-03		3.6E+01				3.6E+01	
Nitrosodimethylamine, N-	62-75-9		~~2.4E-02~~ 1.8E-02		1.6E+01				1.6E+01	
Nitrosodiphenylamine, N-	86-30-6		~~4.2E+01~~ 3.2E+01		9.0E-03				9.0E-03	
Nitroso-n-methylethylamine, N-	10595-95-6		~~1.7E-02~~ 1.3E-02		2.2E+01				2.2E+01	
Nitrosomorpholine, N-	59-89-2		~~5.6E-02~~ 4.3E-02		6.7E+00				6.7E+00	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2, 3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9] ~~[10]~~	CP Weighting Factor [9] ~~[10]~~	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$	Oral Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$
Nitrosopiperidine, N-	100-75-4		~~4.0E-02~~ 3.0E-02		9.4E+00				9.4E+00	
Nitrosopyrrolidine, N-	930-55-2		~~1.8E-01~~ 1.4E-01		2.1E+00				2.1E+00	
Nitrosodiphenylamine, p-	156-10-5		~~1.7E+01~~ 1.3E+01		2.2E-02				2.2E-02	
Ozone	10028-15-6	4.0E-01				1.8E+02				
Pentachlorophenol	87-86-5		~~2.1E+01~~ 1.6E+01		1.8E-02				1.8E-02	
Perchloroethylene (tetrachloroethylene)	127-18-4	4.4E+01	~~1.8E+01~~ 1.4E+01	3.5E+01	2.1E-02	2.0E+04	3.5E+01		2.1E-02	
Phenol	108-95-2	1.3E+01	7.7E+03	2.0E+02		5.8E+03	2.0E+02			
Phosgene	75-44-5	8.8E-03				4.0E+00				
Phosphine	7803-51-2		3.1E+01	8.0E-01			8.0E-01			
Phosphoric acid	7664-38-2		2.7E+02	7.0E+00			7.0E+00			
Phthalic anhydride	85-44-9		7.7E+02	2.0E+01			2.0E+01			
~~PCBs (polychlorinated biphenyls) [low risk] [4, 7]~~	~~1336-36-3~~		~~4.7E-01~~					~~2.0E-05~~	~~7.0E-02~~	~~7.0E-02~~
PCBs (polychlorinated biphenyls) ~~[high risk]~~ [4,] ~~[7]~~ [4]	1336-36-3		~~1.7E-02~~ 3.9E-03		~~2.7E+01~~ 7.4E+01			~~2.0E-05~~	2.0E+00	2.0E+00

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2, 3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9~~10~~]	CP Weighting Factor [9~~10~~]	Acute Inhalation REL [10] $(\mu g/m^3)$	Chronic Inhalation REL [10] $(\mu g/m^3)$	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)$^{-1}$	Oral Cancer Potency Factor [10] (mg/kg-day)$^{-1}$
Polychlorinated dibenzo-p-dioxins (PCDDs), poly-chlorinated dibenzofurans (PCDFs), and dioxin-like polychlorinated biphenyls (PCBs) (as 2,3,7,8-PCDD equivalent) [4, 7~~8~~]	See Footnote ~~8~~7		~~3.4E-07~~ 4.4E-08	~~3.8E-06~~ 7.6E-08	~~1.3E+06~~ 6.5E+06		4.0E-05	1.0E-08	1.3E+05	1.3E+05
Polycyclic aromatic hydrocarbons (PAH) (as B(a)P-equivalent) [4, 8~~9~~]	See Footnote ~~9~~8		~~6.9E-03~~ 3.3E-03		~~6.4E+01~~ 8.6E+01				3.9E+00	1.2E+01
Naphthalene	91-20-3		~~3.2E+00~~ 2.4E+00	9.0E+00	1.2E-01		9.0E+00		1.2E-01	
Potassium bromate	7758-01-2		~~7.7E-1~~ 5.8E-01	1.7E+00	4.9E-01		1.7E+00		4.9E-01	
Propane sultone, 1,3-	1120-71-4		~~1.6E-01~~ 1.2E-01		2.4E+00				2.4E+00	
Propylene (propene)	115-07-1		1.2E+05	3.0E+03			3.0E+03			
Propylene glycol monomethyl ether	107-98-2		2.7E+05	7.0E+03			7.0E+03			
Propylene oxide	75-56-9	6.8E+00	~~2.9E+01~~ 2.2E+01	3.0E+01	1.3E-02	3.1E+03	3.0E+01		1.3E-02	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9~~10~~]	CP Weighting Factor [9~~10~~]	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)⁻¹	Oral Cancer Potency Factor [10] (mg/kg-day)⁻¹
Selenium and compounds [4]	7782-49-2		~~7.7E+02~~ 8.0E+00	~~2.0E+01~~ 2.1E-01			2.0E+01	5.0E-03		
hydrogen selenide	7783-07-5	1.1E-02				5.0E+00				
selenium sulfide [4]	7446-34-6		~~7.7E+02~~ 1.5E+01	~~2.0E+01~~ 1.1E-01			2.0E+01	5.0E-03		
Silica (crystalline, respirable)	7631-86-9		1.2E+02	3.0E+00			3.0E+00			
Sodium hydroxide	1310-73-2	1.8E-02				8.0E+00				
Styrene	100-42-5	4.6E+01	3.5E+04	9.0E+02		2.1E+04	9.0E+02			
Sulfates		2.6E-01				1.2E+02				
Sulfuric acid and oleum	7664-93-9	2.6E-01	3.9E+01	1.0E+00		1.2E+02	1.0E+00			
Sulfuric acid	7664-93-9	2.6E-01	3.9E+01	1.0E+00		1.2E+02	1.0E+00			
sulfur trioxide	7446-11-9	2.6E-01	3.9E+01	1.0E+00		1.2E+02	1.0E+00			
Oleum	8014-95-7	2.6E-01	3.9E+01	1.0E+00		1.2E+02	1.0E+00			
Tetrachloroethane, 1,1,2,2-	79-34-5		~~1.9E+00~~ 1.4E+00		2.0E-01				2.0E-01	
Thioacetamide	62-55-5		~~6.2E-02~~ 4.7E-02		6.1E+00				6.1E+00	
Toluene	108-88-3	8.2E+01	1.2E+04	3.0E+02		3.7E+04	3.0E+02			
Toluene diisocyantates	26471-62-5		2.7E+00	7.0E-02	3.9E-02		7.0E-02		3.9E-02	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9~~10~~]	CP Weighting Factor [9~~10~~]	Acute Inhalation REL [10] (μg/m³)	Chronic Inhalation REL [10] (μg/m³)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] (mg/kg-day)$^{-1}$	Oral Cancer Potency Factor [10] (mg/kg-day)$^{-1}$
toluene-2,4-diisocyanate	584-84-9		2.7E+00	7.0E-02	3.9E-02		7.0E-02		3.9E-02	
toluene-2,6-diisocyanate	91-08-7		2.7E+00	7.0E-02	3.9E-02		7.0E-02		3.9E-02	
Trichloroethane, 1,1,1 (see methyl chloroform)										
Trichloroethane, 1,1,2- (vinyl trichloride)	79-00-5		~~6.6E+00~~ 5.0E+00		5.7E-02				5.7E-02	
Trichloroethylene	79-01-6		~~5.4E+01~~ 4.1E+01	6.0E+02	7.0E-03		6.0E+02		7.0E-03	
Trichlorophenol, 2,4,6-	88-06-2		~~5.4E+00~~ 4.1E+00		7.0E-02				7.0E-02	
Triethylamine	121-44-8	6.2E+00	7.7E+03	2.0E+02		2.8E+03	2.0E+02			
Urethane (ethyl carbamate)	51-79-6		~~3.8E-01~~ 2.9E-01		1.0E+00				1.0E+00	
Vanadium Compounds										
vanadium (fume or dust)	7440-62-2	6.6E-02				3.0E+01				
vanadium pentoxide	1314-62-1	6.6E-02				3.0E+01				
Vinyl acetate	108-05-4		7.7E+03	2.0E+02			2.0E+02			
Vinyl chloride (chloroethylene)	75-01-4	4.0E+02	~~1.4E+00~~ 1.1E+00		2.7E-01	1.8E+05			2.7E-01	

Chemical	CAS Number [1]	Acute (1-hr. max.) Trigger Level [2,3] (lb/hour)	Chronic Trigger Level [2] (lb/year)	CREL Weighting Factor [9]~~[10]~~	CP Weighting Factor [9]~~[10]~~	Acute Inhalation REL [10] ($\mu g/m^3$)	Chronic Inhalation REL [10] ($\mu g/m^3$)	Chronic Oral REL [10] (mg/kg-day)	Inhalation Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$	Oral Cancer Potency Factor [10] $(mg/kg\text{-}day)^{-1}$
Vinylidene chloride (1,1-dichloroethylene)	75-35-4		2.7E+03	7.0E+01			7.0E+01			
Xylenes (mixed isomers)	1330-20-7	4.9E+01	2.7E+04	7.0E+02		2.2E+04	7.0E+02			
m-xylene	108-38-3	4.9E+01	2.7E+04	7.0E+02		2.2E+04	7.0E+02			
o-xylene	95-47-6	4.9E+01	2.7E+04	7.0E+02		2.2E+04	7.0E+02			
p-xylene	106-42-3	4.9E+01	2.7E+04	7.0E+02		2.2E+04	7.0E+02			

(Amended ~~January 6, 2010~~)

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1 **Chemical Abstract Number (CAS):**
CAS numbers are not available for many chemical groupings and mixtures.

2 **Trigger Levels:**
All trigger levels are presented in scientific notation (i.e., exponential form based on powers of the based number 10.) For example: 4.9E+01 is equivalent to $4.9X10^1$, or 49; 6.6E-02 is equivalent to $6.6X10^{-2}$, or 0.066; and 5.8E+00 is equivalent to $5.8X10^0$, or 5.8.

3 **Averaging Period for Non-Cancer Acute Trigger Levels:**
The averaging period for non-cancer acute trigger levels is ~~generally~~ a one-hour exposure. ~~However, some are based on several hours of exposure. The screening levels for the following substances should be compared to estimated emissions occurring over a time period other than maximum one-hour emissions (e.g., a 4-hour trigger level should be compared to the maximum 4-hour average concentration estimated from the maximum emissions occurring in a 4-hour period). However, for conservative screening purposes, a maximum one-hour emission level can be compare to all acute trigger levels.~~
~~**4-hour:** arsenic and inorganic arsenic compounds~~
~~**6-hour:** benzene, carbon disulfide, ethylene glycol ethyl ether, ethylene glycol ethyl ether acetate, ethylene glycol methyl ether~~
~~**7-hour:** carbon tetrachloride, chloroform~~

4 **Chemicals for Which Multi-Pathway Risks are Assessed:**
Trigger levels are adjusted to include the impact from default non-inhalation pathways.

5 **Asbestos:**
The units for the inhalation cancer potency factor for asbestos are (100 PCM fibers/m^3)$^{-1}$. A conversion factor of 100 fibers/0.003 μg can be multiplied by a receptor concentration of asbestos expressed in μg/m^3. Unless other information necessary to estimate the concentration (fibers/m^3) of asbestos at receptors of interest is available, an inhalation cancer potency factor of 220 (mg/kg-day)$^{-1}$ is available.

6 **Diesel Exhaust Particulate Matter:**
Diesel exhaust particulate matter should be used as a surrogate for all TAC emissions from diesel-fueled compression-ignition internal combustion engines. However, diesel exhaust particulate matter should not be used for other types of diesel-fueled combustion equipment, such as boilers or turbines. For equipment other than diesel-fueled compression-ignition internal combustion engines, emissions should be determined for individual TACs and compared to the appropriate trigger level for each TAC.

~~7~~ ~~**Polychlorinated Biphenyls:**~~
~~**Low Risk:** Use in cases where congeners with more than four chlorines comprise less than one-half percent of total polychlorinated biphenyls.~~
~~**High Risk:** Use in cases where congeners with more than four chlorines do not comprise less than one-half percent of total polychlorinated biphenyls.~~

~~8~~7 **Polychlorinated Dibenzo-p-Dioxins (PCDDs), Polychlorinated Dibenzofurans (PCDFs), and Dioxin-like Polychlorinated Biphenyls (PCBs):**
These substances are PCDDs, PCDFs, and dioxin-like PCBs for which OEHHA has adopted the World Health Organization (WHO$_{97}$) Toxicity Equivalency Factor (TEF) scheme for evaluating cancer risk due to exposure to samples containing mixtures of PCDDs, PCDFs, and dioxin-like PCBs. PCDDs, PCDFs, and dioxin-like PCBs should be evaluated as PCDD-equivalent. This evaluation process consists of multiplying individual PCDD-, PCDF-, and dioxin-like PCB-specific emission levels with their corresponding TEFs listed below. The sum of these products is the PCDD-equivalent and should be compared to the PCDD-equivalent trigger level.

PCDD	CAS Number	TEF
2,3,7,8-tetrachlorodibenzo-p-dioxin	1746-01-6	1.0
1,2,3,7,8-pentachlorodibenzo-p-dioxin	40321-76-4	1.0
1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	39227-28-6	0.1
1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	57653-85-7	0.1
1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	19408-74-3	0.1
1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	35822-46-9	0.01
1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	3268-87-9	~~0.0001~~0.0003

PCDF	CAS Number	TEF
2,3,7,8-tetrachlorodibenzofuran	5120-73-19	0.1

1,2,3,7,8-pentachlorodibenzofuran	57117-41-6	~~0.05~~0.03
2,3,4,7,8-pentachlorodibenzofuran	57117-31-4	~~0.5~~0.3
1,2,3,4,7,8-hexachlorodibenzofuran	70648-26-9	0.1
1,2,3,6,7,8-hexachlorodibenzofuran	57117-44-9	0.1
1,2,3,7,8,9-hexachlorodibenzofuran	72918-21-9	0.1
2,3,4,6,7,8-hexachlorodibenzofuran	60851-34-5	0.1
1,2,3,4,6,7,8-heptachlorodibenzofuran	67562-39-4	0.01
1,2,3,4,7,8,9-heptachlorodibenzofuran	55673-89-7	0.01
1,2,3,4,6,7,8,9-octachlorodibenzofuran	39001-02-0	~~0.0001~~0.0003

Dioxin-like PCBs (coplanar PCBs)	CAS Number	TEF
PCB 77 (3,3'4,4'-tetrachlorobiphenyl)	32598-13-3	0.0001
PCB 81 (3,4,4',5-tetrachlorobiphenyl)	70362-50-4	~~0.0001~~0.0003
PCB 105 (2,3,3'4,4'-pentachlorobiphenyl)	32598-14-4	~~0.0001~~0.00003
PCB 114 (2,3,4,4'5-pentachlorobiphenyl)	74472-37-0	~~0.0005~~0.00003
PCB 118 (2,3',4,4',5-pentachlorobiphenyl)	31508-00-6	~~0.0001~~0.00003
PCB 123 (2',3,4,4',5-pentachlorobiphenyl)	65510-44-3	~~0.0001~~0.00003
PCB 126 (3,3',4,4',5-pentachlorobiphenyl)	57465-28-8	0.1
PCB 156 (2,3,3',4,4',5-hexachlorobiphenyl)	38380-08-4	~~0.0005~~0.00003
PCB 157 (2,3,3',4,4',5'-hexachlorobiphenyl)	69782-90-7	~~0.0005~~0.00003
PCB 167 (2,3',4,4',5,5'-hexachlorobiphenyl)	52663-72-6	~~0.00001~~0.00003
PCB 169 (3,3',4,4',5,5'-hexachlorobiphenyl)	32774-16-6	~~0.01~~0.03
PCB 170 (2,2',3,3',4,4',5-heptachlorobiphenyl)	35065-30-6	0
PCB 180 (2,2',3,4,4',5,5'-heptachlorobiphenyl)	35065-29-3	0
PCB 189 (2,3,3',4,4',5,5'-heptachlorobiphenyl)	39635-31-9	~~0.0001~~0.00003

~~9~~8 **Polycyclic Aromatic Hydrocarbons (PAHs):**

These substances are PAH-derivatives that have OEHHA-developed Potency Equivalency Factors (PEFs). PAHs should be evaluated as benzo(a)pyrene-equivalents. This evaluation process consists of multiplying individual PAH-specific emission levels with their corresponding PEFs listed below. The sum of these products is the benzo(a)pyrene-equivalent level and should be compared to the benzo(a)pyrene equivalent trigger level.

PAH or derivative	CAS Number	PEF
benz(a)anthracene	56-55-3	0.1
benzo(b)fluoranthene	205-99-2	0.1
benzo(j)fluoranthene	205-82-3	0.1
benzo(k)fluoranthene	207-08-9	0.1

benzo(a)pyrene	50-32-8	1.0
chrysene	218-01-9	0.01
dibenz(a,j)acridine	224-42-0	0.1
dibenz(a,h)acridine	226-36-8	0.1
dibenz(a,h)anthracene	53-70-3	1.05
7H-dibenzo(c,g)carbazole	194-59-2	1.0
dibenzo(a,e)pyrene	192-65-4	1.0
dibenzo(a,h)pyrene	189-64-0	10
dibenzo(a,i)pyrene	189-55-9	10
dibenzo(a,l)pyrene	191-30-0	10
7,12-dimethylbenz(a)anthracene	57-97-6	64
indeno(1,2,3-cd)pyrene	193-39-5	0.1
5-methylchrysene	3697-24-3	1.0
3-methylcholanthrene	56-49-5	5.7
5-nitroacenaphthene	602-87-9	0.03
1-nitropyrene	5522-43-0	0.1
4-nitropyrene	57835-92-4	0.1
1,6-dinitropyrene	42397-64-8	10
1,8-dinitropyrene	42397-65-9	1.0
6-nitrocrysene	7496-02-8	10
2-nitrofluorene	607-57-8	0.01

~~10~~9 **CREL (chronic Reference Exposure Level) and CP (Cancer Potency) Weighting Factors:** These factors are to be used for purposes of calculating toxicity weighted emissions. Factors were developed assuming multi-pathway exposure where applicable, and continuously operating sources for residential receptor exposure.

10 Health Effects Values: All reference exposure levels (RELs) and cancer potency factors (CPFs) are the health effects values for the California Air Toxics Hot Spots Program that have been approved by the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) as of March 31, 2016.

(Amended ~~January 6, 2010~~)

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~**Table 2-5-1 Toxic Air Contaminant Trigger Levels**~~

Chemical	CAS Number [1]	Acute Inhalation REL (µg/m³)	Chronic Inhalation REL (µg/m³)	Chronic Oral REL (mg/kg-day)	CREL Weighting Factor[10]	Inhalation Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	Oral Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	CP Weighting Factor[10]	Acute (1-hr. max.) Trigger Level [2] (lb/hour)	Chronic Trigger Level [2] (lb/year)
Acetaldehyde	75-07-0	4.7E+02	1.4E+02		1.4E+02	1.0E-02		1.0E-02	1.0E+00	3.8E+01
Acetamide	60-35-5					7.0E-02		7.0E-02		5.4E+00
Acrolein	107-02-8	2.5E+00	3.5E-01		3.5E-01				5.5E-03	1.4E+01
Acrylamide	79-06-1					4.5E+00		4.5E+00		8.4E-02
Acrylic acid	79-10-7	6.0E+03							1.3E+01	
Acrylonitrile	107-13-1		5.0E+00		5.0E+00	1.0E+00		1.0E+00		3.8E-01
Allyl chloride	107-05-1					2.1E-02		2.1E-02		1.8E+01
Aminoanthraquinone, 2-	117-79-3					3.3E-02		3.3E-02		1.1E+01
Ammonia	7664-41-7	3.2E+03	2.0E+02		2.0E+02				7.1E+00	7.7E+03
Aniline	62-53-3					5.7E-03		5.7E-03		6.6E+01
Arsenic and compounds (inorganic) [3, 4]	7440-38-2	2.0E-01	1.5E-02	3.5E-06	4.0E-04	1.2E+01	1.5E+00	5.4E+01	4.4E-04	7.2E-03
Arsine	7784-42-1	2.0E-01	1.5E-02		4.0E-04				4.4E-04	5.8E-01
Asbestos [5]	1332-21-4					2.2E+02		2.2E+02		1.7E-03
Benzene [3]	71-43-2	1.3E+03	6.0E+01		6.0E+01	1.0E-01		1.0E-01	2.9E+00	3.8E+00
Benzidine (and its salts)	92-87-5					5.0E+02		5.0E+02		7.6E-04
benzidine based dyes						5.0E+02		5.0E+02		7.6E-04
direct black 38	1937-37-7					5.0E+02		5.0E+02		7.6E-04
direct blue 6	2602-46-2					5.0E+02		5.0E+02		7.6E-04
direct brown 95 (technical grade)	16071-86-6					5.0E+02		5.0E+02		7.6E-04
Benzyl chloride	100-44-7	2.4E+02				1.7E-01		1.7E-01	5.3E-01	2.2E+00
Beryllium and compounds [4]	7440-41-7		7.0E-03	2.0E-03	7.0E-03	8.4E+00		8.4E+00		4.7E-02
Bis (2-chloroethyl) ether (Dichloroethyl ether)	111-44-4					2.5E+00		2.5E+00		1.5E-01
Bis (chloromethyl) ether	542-88-1					4.6E+01		4.6E+01		8.2E-03
Butadiene, 1,3-	106-99-0		2.0E+01		2.0E+01	6.0E-01		6.0E-01		6.3E-01
Cadmium and compounds [4]	7440-43-9		2.0E-02	5.0E-04	1.8E-02	1.5E+01		1.5E+01		2.6E-02

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~Table 2-5-1 Toxic Air Contaminant Trigger Levels~~

~~Chemical~~	~~CAS Number~~ [1]	~~Acute Inhalation REL (µg/m³)~~	~~Chronic Inhalation REL (µg/m³)~~	~~Chronic Oral REL (mg/kg-day)~~	~~CREL Weighting Factor~~ [10]	~~Inhalation Cancer Potency Factor (mg/kg-day)-1~~	~~Oral Cancer Potency Factor (mg/kg-day)-1~~	~~CP Weighting Factor~~ [10]	~~Acute (1-hr. max.) Trigger Level~~ [2] ~~(lb/hour)~~	~~Chronic Trigger Level~~ [2] ~~(lb/year)~~
~~Carbon disulfide~~ [3]	~~75-15-0~~	~~6.2E+03~~	~~8.0E+02~~		~~8.0E+02~~				~~1.4E+01~~	~~3.1E+04~~
~~Carbon tetrachloride~~ [3] ~~(Tetrachloromethane)~~	~~56-23-5~~	~~1.9E+03~~	~~4.0E+01~~		~~4.0E+01~~	~~1.5E-01~~		~~1.5E-01~~	~~4.2E+00~~	~~2.5E+00~~
~~Chlorinated paraffins~~	~~108171-26-2~~					~~8.9E-02~~		~~8.9E-02~~		~~4.2E+00~~
~~Chlorine~~	~~7782-50-5~~	~~2.1E+02~~	~~2.0E-01~~		~~2.0E-01~~				~~4.6E-01~~	~~7.7E+00~~
~~Chlorine dioxide~~	~~10049-04-4~~		~~6.0E-01~~		~~6.0E-01~~					~~2.3E+01~~
~~Chloro-o-phenylenediamine, 4-~~	~~95-83-0~~					~~1.6E-02~~		~~1.6E-02~~		~~2.4E+01~~
~~Chlorobenzene~~	~~108-90-7~~		~~1.0E+03~~		~~1.0E+03~~					~~3.9E+04~~
~~Chloroform~~ [3]	~~67-66-3~~	~~1.5E+02~~	~~3.0E+02~~		~~3.0E+02~~	~~1.9E-02~~		~~1.9E-02~~	~~3.3E-01~~	~~2.0E+01~~
~~Chloropicrin~~	~~76-06-2~~	~~2.9E+01~~	~~4.0E-01~~		~~4.0E-01~~				~~6.4E-02~~	~~1.5E+01~~
~~Chloro-o-toluidine, p-~~	~~95-69-2~~					~~2.7E-01~~		~~2.7E-01~~		~~1.4E+00~~
~~Chromium, (hexavalent, 6+)~~ [4]	~~18540-29-9~~		~~2.0E-01~~	~~2.0E-02~~	~~2.0E-01~~	~~5.1E+02~~		~~5.1E+02~~		~~7.7E-04~~
~~barium chromate~~ [4]	~~10294-40-3~~		~~2.0E-01~~	~~2.0E-02~~	~~2.0E-01~~	~~5.1E+02~~		~~5.1E+02~~		~~7.7E-04~~
~~calcium chromate~~ [4]	~~13765-19-0~~		~~2.0E-01~~	~~2.0E-02~~	~~2.0E-01~~	~~5.1E+02~~		~~5.1E+02~~		~~7.7E-04~~
~~lead chromate~~ [4]	~~7758-97-6~~		~~2.0E-01~~	~~2.0E-02~~	~~2.0E-01~~	~~5.1E+02~~		~~5.1E+02~~		~~7.7E-04~~
~~sodium dichromate~~ [4]	~~10588-01-9~~		~~2.0E-01~~	~~2.0E-02~~	~~2.0E-01~~	~~5.1E+02~~		~~5.1E+02~~		~~7.7E-04~~
~~strontium chromate~~ [4]	~~7789-06-2~~		~~2.0E-01~~	~~2.0E-02~~	~~2.0E-01~~	~~5.1E+02~~		~~5.1E+02~~		~~7.7E-04~~
~~Chromium trioxide (as chromic acid mist)~~ [4]	~~1333-82-0~~		~~2.0E-03~~	~~2.0E-02~~	~~2.0E-03~~	~~5.1E+02~~		~~5.1E+02~~		~~7.7E-04~~
~~Copper and compounds~~	~~7440-50-8~~	~~1.0E+02~~							~~2.2E-01~~	
~~Cresidine, p-~~	~~120-71-8~~					~~1.5E-01~~		~~1.5E-01~~		~~2.5E+00~~
~~Cresols (m-, o-, p-)~~	~~1319-77-3~~		~~6.0E+02~~		~~6.0E+02~~					~~2.3E+04~~
~~Cupferron~~	~~135-20-6~~					~~2.2E-01~~		~~2.2E-01~~		~~1.7E+00~~
~~Cyanide and compounds (inorganic)~~	~~57-12-5~~	~~3.4E+02~~	~~9.0E+00~~		~~9.0E+00~~				~~7.5E-01~~	~~3.5E+02~~
~~hydrogen cyanide (hydrocyanic acid)~~	~~74-90-8~~	~~3.4E+02~~	~~9.0E+00~~		~~9.0E+00~~				~~7.5E-01~~	~~3.5E+02~~
~~Diaminoanisole, 2,4-~~	~~615-05-4~~					~~2.3E-02~~		~~2.3E-02~~		~~1.6E+01~~

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~**Table 2-5-1 Toxic Air Contaminant Trigger Levels**~~

~~Chemical~~	~~CAS Number~~ [1]	~~Acute Inhalation REL (µg/m^3)~~	~~Chronic Inhalation REL (µg/m^3)~~	~~Chronic Oral REL (mg/kg-day)~~	~~CREL Weighting Factor~~ [10]	~~Inhalation Cancer Potency Factor (mg/kg-day)$^{-1}$~~	~~Oral Cancer Potency Factor (mg/kg-day)$^{-1}$~~	~~CP Weighting Factor~~ [10]	~~Acute (1-hr. max.) Trigger Level~~ [2] ~~(lb/hour)~~	~~Chronic Trigger Level~~ [2] ~~(lb/year)~~
~~Diaminotoluene, 2,4-~~	~~95-80-7~~					~~4.0E+00~~		~~4.0E+00~~		~~9.5E-02~~
~~Dibromo-3-chloropropane, 1,2- (DBCP)~~	~~96-12-8~~					~~7.0E+00~~		~~7.0E+00~~		~~5.4E-02~~
~~Dichlorobenzene, 1,4-~~	~~106-46-7~~		~~8.0E+02~~		~~8.0E+02~~	~~4.0E-02~~		~~4.0E-02~~		~~9.5E+00~~
~~Dichlorobenzidine, 3,3-~~	~~91-94-1~~					~~1.2E+00~~		~~1.2E+00~~		~~3.2E-01~~
~~Dichloroethane, 1,1- (Ethylidene dichloride)~~	~~75-34-3~~					~~5.7E-03~~		~~5.7E-03~~		~~6.6E+01~~
~~Dichloroethylene, 1,1- [see vinylidene chloride]~~										
~~Diesel exhaust particulate matter~~ [6]			~~5.0E+00~~		~~5.0E+00~~	~~1.1E+00~~		~~1.1E+00~~		~~3.4E-01~~
~~Diethanolamine~~	~~111-42-2~~		~~3.0E+00~~		~~3.0E+00~~					~~1.2E+02~~
~~Di(2-ethylhexyl)phthalate (DEHP)~~ [4]	~~117-81-7~~					~~8.4E-03~~	~~8.4E-03~~	~~9.3E-03~~		~~4.1E+01~~
~~Dimethylaminoazobenzene, p-~~	~~60-11-7~~					~~4.6E+00~~		~~4.6E+00~~		~~8.2E-02~~
~~Dimethyl formamide, N,N-~~	~~68-12-2~~		~~8.0E+01~~		~~8.0E+01~~					~~3.1E+03~~
~~Dinitrotoluene, 2,4-~~	~~121-14-2~~					~~3.1E-01~~		~~3.1E-01~~		~~1.2E+00~~
~~Dioxane, 1,4- (1,4-diethylene dioxide)~~	~~123-91-1~~	~~3.0E+03~~	~~3.0E+03~~		~~3.0E+03~~	~~2.7E-02~~		~~2.7E-02~~	~~6.6E+00~~	~~1.4E+01~~
~~Epichlorohydrin (1-chloro-2,3-epoxypropane)~~	~~106-89-8~~	~~1.3E+03~~	~~3.0E+00~~		~~3.0E+00~~	~~8.0E-02~~		~~8.0E-02~~	~~2.9E+00~~	~~4.7E+00~~
~~Epoxybutane, 1,2-~~	~~106-88-7~~		~~2.0E+01~~		~~2.0E+01~~					~~7.7E+02~~
~~Ethyl benzene~~	~~100-41-4~~		~~2.0E+03~~		~~2.0E+03~~	~~8.7E-03~~		~~8.7E-03~~		~~4.3E+01~~
~~Ethyl chloride (chloroethane)~~	~~75-00-3~~		~~3.0E+04~~		~~3.0E+04~~					~~1.2E+06~~
~~Ethylene dibromide (1,2-dibromoethane)~~	~~106-93-4~~		~~8.0E-01~~		~~8.0E-01~~	~~2.5E-01~~		~~2.5E-01~~		~~1.5E+00~~
~~Ethylene dichloride (1,2-dichloroethane)~~	~~107-06-2~~		~~4.0E+02~~		~~4.0E+02~~	~~7.2E-02~~		~~7.2E-02~~		~~5.3E+00~~
~~Ethylene glycol~~	~~107-21-1~~		~~4.0E+02~~		~~4.0E+02~~					~~1.5E+04~~
~~Ethylene glycol butyl ether – EGBE [see Glycol ethers]~~										

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~**Table 2-5-1 Toxic Air Contaminant Trigger Levels**~~

Chemical	CAS Number[1]	Acute Inhalation REL ($\mu g/m^3$)	Chronic Inhalation REL ($\mu g/m^3$)	Chronic Oral REL (mg/kg-day)	CREL Weighting Factor[10]	Inhalation Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	Oral Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	CP Weighting Factor[10]	Acute (1-hr. max.) Trigger Level[2] (lb/hour)	Chronic Trigger Level[2] (lb/year)
Ethylene oxide (1,2-epoxyethane)	75-21-8		3.0E+01		3.0E+01	3.1E-01		3.1E-01		1.2E+00
Ethylene thiourea	96-45-7					4.5E-02		4.5E-02		8.4E+00
Fluorides		2.4E+02	1.3E+01	4.0E-02	1.3E+01				5.3E-01	5.0E+02
hydrogen fluoride (hydrofluoric acid)	7664-39-3	2.4E+02	1.4E+01	4.0E-02	1.4E+01				5.3E-01	5.4E+02
Formaldehyde	50-00-0	5.5E+01	9.0E+00		9.0E+00	2.1E-02		2.1E-02	1.2E-01	1.8E+01
Glutaraldehyde	111-30-8		8.0E-02		8.0E-02					3.1E+00
Glycol ethers										
ethylene glycol butyl ether – EGBE (2-butoxy ethanol; butyl cellosolve)	111-76-2	1.4E+04							3.1E+01	
ethylene glycol ethyl ether – EGEE (2-ethoxy ethanol; cellosolve)[3]	110-80-5	3.7E+02	7.0E+01		7.0E+01				8.2E-01	2.7E+03
ethylene glycol ethyl ether acetate – EGEEA (2-ethoxyethyl acetate; cellosolve acetate)[3]	111-15-9	1.4E+02	3.0E+02		3.0E+02				3.1E-01	1.2E+04
ethylene glycol methyl ether – EGME (2-methoxy ethanol; methyl cellosolve)[3]	109-86-4	9.3E+01	6.0E+01		6.0E+01				2.1E-01	2.3E+03
ethylene glycol methyl ether acetate – EGMEA (2-methoxyethyl acetate; methyl cellosolve acetate)	110-49-6		9.0E+01		9.0E+01					3.5E+03
Hexachlorobenzene	118-74-1					1.8E+00		1.8E+00		2.1E-01
Hexachlorocyclohexanes (mixed or technical grade)[4]	608-73-1					4.0E+00	4.0E+00	5.7E+00		6.9E-02
Hexachlorocyclohexane, alpha-[4]	319-84-6					4.0E+00	4.0E+00	5.7E+00		6.9E-02
Hexachlorocyclohexane, beta-[4]	319-85-7					4.0E+00	4.0E+00	5.7E+00		6.9E-02

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

Table 2-5-1 Toxic Air Contaminant Trigger Levels

Chemical	CAS Number [1]	Acute Inhalation REL (µg/m³)	Chronic Inhalation REL (µg/m³)	Chronic Oral REL (mg/kg-day)	CREL Weighting Factor[10]	Inhalation Cancer Potency Factor (mg/kg-day)⁻¹	Oral Cancer Potency Factor (mg/kg-day)⁻¹	CP Weighting Factor[10]	Acute (1-hr. max.) Trigger Level [2] (lb/hour)	Chronic Trigger Level [2] (lb/year)
Hexachlorocyclohexane, gamma- (lindane) [4]	58-89-9					1.1E+00	1.1E+00	1.6E+00		2.5E-01
Hexane, n-	110-54-3		7.0E+03		7.0E+03					2.7E+05
Hydrazine	302-01-2		2.0E-01		2.0E-01	1.7E+01		1.7E+01		2.2E-02
Hydrochloric acid (hydrogen chloride)	7647-01-0	2.1E+03	9.0E+00		9.0E+00				4.6E+00	3.5E+02
Hydrogen cyanide (hydrocyanic acid) [see cyanide & compounds]										
Hydrogen fluoride (hydrofluoric acid) [see fluorides & compounds]										
Hydrogen selenide [see selenium compounds]										
Hydrogen sulfide	7783-06-4	4.2E+01	1.0E+01		1.0E+01				9.3E-02	3.9E+02
Isophorone	78-59-1		2.0E+03		2.0E+03					7.7E+04
Isopropyl alcohol (isopropanol)	67-63-0	3.2E+03	7.0E+03		7.0E+03				7.1E+00	2.7E+05
Lead and compounds (inorganic) [4]	7439-92-1					4.2E-02	8.5E-03	1.2E-01		3.2E+00
lead acetate [4]	301-04-2					4.2E-02	8.5E-03	1.2E-01		3.2E+00
lead phosphate [4]	7446-27-7					4.2E-02	8.5E-03	1.2E-01		3.2E+00
lead subacetate [4]	1335-32-6					4.2E-02	8.5E-03	1.2E-01		3.2E+00
Lindane [see hexachlorocyclohexane, gamma]										
Maleic anhydride	108-31-6		7.0E-01		7.0E-01					2.7E+01
Manganese and compounds	7439-96-5		9.0E-02		9.0E-02					3.5E+00
Mercury and compounds (inorganic) [4]	7439-97-6	6.0E-01	3.0E-02	1.6E-04	7.1E-03				1.3E-03	2.7E-01
mercuric chloride [4]	7487-94-7	6.0E-01	3.0E-02	1.6E-04	7.1E-03				1.3E-03	2.7E-01
Methanol (methyl alcohol)	67-56-1	2.8E+04	4.0E+03		4.0E+03				6.2E+01	1.5E+05
Methyl bromide (bromomethane)	74-83-9	3.9E+03	5.0E+00		5.0E+00				8.6E+00	1.9E+02
Methyl chloroform (1,1,1-trichloroethane)	71-55-6	6.8E+04	1.0E+03		1.0E+03				1.5E+02	3.9E+04

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~**Table 2-5-1 Toxic Air Contaminant Trigger Levels**~~

Chemical	CAS Number [1]	Acute Inhalation REL ($\mu g/m^3$)	Chronic Inhalation REL ($\mu g/m^3$)	Chronic Oral REL (mg/kg-day)	CREL Weighting Factor[10]	Inhalation Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	Oral Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	CP Weighting Factor[10]	Acute (1-hr. max.) Trigger Level [2] (lb/hour)	Chronic Trigger Level [2] (lb/year)
Methyl ethyl ketone (MEK) (2-butanone)	78-93-3	1.3E+04							2.9E+01	
Methyl isocyanate	624-83-9		1.0E+00		1.0E+00					3.9E+01
Methyl tertiary-butyl ether (MTBE)	1634-04-4		8.0E+03		8.0E+03	1.8E-03		1.8E-03		2.1E+02
Methylene bis (2-chloroaniline), 4,4'- (MOCA)	101-14-4					1.5E+00		1.5E+00		2.5E-01
Methylene chloride (dichloromethane)	75-09-2	1.4E+04	4.0E+02		4.0E+02	3.5E-03		3.5E-03	3.1E+01	1.1E+02
Methylene dianiline, 4,4'- (and its dichloride) [4]	101-77-9		2.0E+01		2.0E+01	1.6E+00	1.6E+00	1.6E+00		2.4E-01
Methylene diphenyl isocyanate	101-68-8		7.0E-01		7.0E-01					2.7E+01
Michler's ketone (4,4 bis (dimethylamino) benzophenone)	90-94-8					8.6E-01		8.6E-01		4.4E-01
Naphthalene [see polycylcic aromatic hydrocarbons]										
Nickel and compounds [4] *(values also apply to:)*	7440-02-0	6.0E+00	5.0E-02	5.0E-02	5.0E-02	9.1E-01		9.1E-01	1.3E-02	4.3E-01
nickel acetate [4]	373-02-4	6.0E+00	5.0E-02	5.0E-02	5.0E-02	9.1E-01		9.1E-01	1.3E-02	4.3E-01
nickel carbonate [4]	3333-39-3	6.0E+00	5.0E-02	5.0E-02	5.0E-02	9.1E-01		9.1E-01	1.3E-02	4.3E-01
nickel carbonyl [4]	13463-39-3	6.0E+00	5.0E-02	5.0E-02	5.0E-02	9.1E-01		9.1E-01	1.3E-02	4.3E-01
nickel hydroxide [4]	12054-48-7	6.0E+00	5.0E-02	5.0E-02	5.0E-02	9.1E-01		9.1E-01	1.3E-02	4.3E-01
Nickelocene [4]	1271-28-9	6.0E+00	5.0E-02	5.0E-02	5.0E-02	9.1E-01		9.1E-01	1.3E-02	4.3E-01
nickel oxide [4]	1313-99-1	6.0E+00	1.0E-01	5.0E-02	1.0E-01	9.1E-01		9.1E-01	1.3E-02	4.3E-01
nickel refinery dust from the pyrometallurgical process [4]		6.0E+00	5.0E-02	5.0E-02	5.0E-02	9.1E-01		9.1E-01	1.3E-02	4.3E-01
nickel subsulfide [4]	12035-72-2	6.0E+00	5.0E-02	5.0E-02	5.0E-02	9.1E-01		9.1E-01	1.3E-02	4.3E-01
Nitric acid	7697-37-2	8.6E+01							1.9E-01	
Nitrosodi-n-butylamine, N-	924-16-3					1.1E+01		1.1E+01		3.4E-02
Nitrosodi-n-propylamine, N-	621-64-7					7.0E+00		7.0E+00		5.4E-02

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~Table 2-5-1 Toxic Air Contaminant Trigger Levels~~

~~Chemical~~	~~CAS Number~~ [1]	~~Acute Inhalation REL ($\mu g/m^3$)~~	~~Chronic Inhalation REL ($\mu g/m^3$)~~	~~Chronic Oral REL (mg/kg-day)~~	~~CREL Weighting Factor~~[10]	~~Inhalation Cancer Potency Factor (mg/kg-day)$^{-1}$~~	~~Oral Cancer Potency Factor (mg/kg-day)$^{-1}$~~	~~CP Weighting Factor~~[10]	~~Acute (1-hr. max.) Trigger Level~~ [2] ~~(lb/hour)~~	~~Chronic Trigger Level~~ [2] ~~(lb/year)~~
~~Nitrosodiethylamine, N-~~	~~55-18-5~~					~~3.6E+01~~		~~3.6E+01~~		~~1.1E-02~~
~~Nitrosodimethylamine, N-~~	~~62-75-9~~					~~1.6E+01~~		~~1.6E+01~~		~~2.4E-02~~
~~Nitrosodiphenylamine, N-~~	~~86-30-6~~					~~9.0E-03~~		~~9.0E-03~~		~~4.2E+01~~
~~Nitroso-n-methylethylamine, N-~~	~~10595-95-6~~					~~2.2E+01~~		~~2.2E+01~~		~~1.7E-02~~
~~Nitrosomorpholine, N-~~	~~59-89-2~~					~~6.7E+00~~		~~6.7E+00~~		~~5.6E-02~~
~~Nitrosopiperidine, N-~~	~~100-75-4~~					~~9.4E+00~~		~~9.4E+00~~		~~4.0E-02~~
~~Nitrosopyrrolidine, N-~~	~~930-55-2~~					~~2.1E+00~~		~~2.1E+00~~		~~1.8E-01~~
~~Nitrosodiphenylamine, p-~~	~~156-10-5~~					~~2.2E-02~~		~~2.2E-02~~		~~1.7E+01~~
~~Ozone~~	~~10028-15-6~~	~~1.8E+02~~							~~4.0E-01~~	
~~Pentachlorophenol~~	~~87-86-5~~					~~1.8E-02~~		~~1.8E-02~~		~~2.1E+01~~
~~Perchloroethylene (tetrachloroethylene)~~	~~127-18-4~~	~~2.0E+04~~	~~3.5E+01~~		~~3.5E+01~~	~~2.1E-02~~		~~2.1E-02~~	~~4.4E+01~~	~~1.8E+01~~
~~Phenol~~	~~108-95-2~~	~~5.8E+03~~	~~2.0E+02~~		~~2.0E+02~~				~~1.3E+01~~	~~7.7E+03~~
~~Phosgene~~	~~75-44-5~~	~~4.0E+00~~							~~8.8E-03~~	
~~Phosphine~~	~~7803-51-2~~		~~8.0E-01~~		~~8.0E-01~~					~~3.1E+01~~
~~Phosphoric acid~~	~~7664-38-2~~		~~7.0E+00~~		~~7.0E+00~~					~~2.7E+02~~
~~Phthalic anhydride~~	~~85-44-9~~		~~2.0E+01~~		~~2.0E+01~~					~~7.7E+02~~
~~PCBs (polychlorinated biphenyls) [low risk]~~ [4,7]	~~1336-36-3~~			~~2.0E-05~~		~~7.0E-02~~	~~7.0E-02~~			~~4.7E-01~~
~~PCBs (polychlorinated biphenyls) [high risk]~~ [4,7]	~~1336-36-3~~			~~2.0E-05~~		~~2.0E+00~~	~~2.0E+00~~	~~2.7E+01~~		~~1.7E-02~~
~~Polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and dioxin-like polychlorinated biphenyls (PCBs) (as 2,3,7,8-PCDD equivalent)~~ [4,8]	~~See Footnote 8~~		~~4.0E-05~~	~~1.0E-08~~	~~3.8E-06~~	~~1.3E+05~~	~~1.3E+05~~	~~1.3E+06~~		~~3.4E-07~~
~~Polycyclic aromatic hydrocarbon (PAH) (as B(a)P-equivalent)~~ [4,9]	~~See Footnote 9~~					~~3.9E+00~~	~~1.2E+01~~	~~6.4E+01~~		~~6.9E-03~~

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~**Table 2-5-1 Toxic Air Contaminant Trigger Levels**~~

~~Chemical~~	~~CAS Number~~[1]	~~Acute Inhalation REL (µg/m^3)~~	~~Chronic Inhalation REL (µg/m^3)~~	~~Chronic Oral REL (mg/kg-day)~~	~~CREL Weighting Factor~~[10]	~~Inhalation Cancer Potency Factor (mg/kg-day)$^{-1}$~~	~~Oral Cancer Potency Factor (mg/kg-day)$^{-1}$~~	~~CP Weighting Factor~~[10]	~~Acute (1-hr. max.) Trigger Level~~[2] ~~(lb/hour)~~	~~Chronic Trigger Level~~[2] ~~(lb/year)~~
~~Naphthalene~~	~~91-20-3~~		~~9.0E+00~~		~~9.0E+00~~	~~1.2E-01~~		~~1.2E-01~~		~~3.2E+00~~
~~Potassium bromate~~	~~7758-01-2~~		~~1.7E+00~~		~~1.7E+00~~	~~4.9E-01~~		~~4.9E-01~~		~~7.7E-1~~
~~Propane sultone, 1,3-~~	~~1120-71-4~~					~~2.4E+00~~		~~2.4E+00~~		~~1.6E-01~~
~~Propylene (propene)~~	~~115-07-1~~		~~3.0E+03~~		~~3.0E+03~~					~~1.2E+05~~
~~Propylene glycol monomethyl ether~~	~~107-98-2~~		~~7.0E+03~~		~~7.0E+03~~					~~2.7E+05~~
~~Propylene oxide~~	~~75-56-9~~	~~3.1E+03~~	~~3.0E+01~~		~~3.0E+01~~	~~1.3E-02~~		~~1.3E-02~~	~~6.8E+00~~	~~2.9E+01~~
~~Selenium and compounds~~	~~7782-49-2~~		~~2.0E+01~~		~~2.0E+01~~					~~7.7E+02~~
~~hydrogen selenide~~	~~7783-07-5~~	~~5.0E+00~~							~~1.1E-02~~	
~~selenium sulfide~~	~~7446-34-6~~		~~2.0E+01~~		~~2.0E+01~~					~~7.7E+02~~
~~Silica (crystalline, respirable)~~	~~7631-86-9~~		~~3.0E+00~~		~~3.0E+00~~					~~1.2E+02~~
~~Sodium hydroxide~~	~~1310-73-2~~	~~8.0E+00~~							~~1.8E-02~~	
~~Styrene~~	~~100-42-5~~	~~2.1E+04~~	~~9.0E+02~~		~~9.0E+02~~				~~4.6E+01~~	~~3.5E+04~~
~~Sulfates~~		~~1.2E+02~~							~~2.6E-01~~	
~~Sulfuric acid and oleum~~	~~7664-93-9~~	~~1.2E+02~~	~~1.0E+00~~		~~1.0E+00~~				~~2.6E-01~~	~~3.9E+01~~
~~*Sulfuric acid*~~	~~7664-93-9~~	~~1.2E+02~~	~~1.0E+00~~		~~1.0E+00~~				~~2.6E-01~~	~~3.9E+01~~
~~sulfur trioxide~~	~~7446-11-9~~	~~1.2E+02~~	~~1.0E+00~~		~~1.0E+00~~				~~2.6E-01~~	~~3.9E+01~~
~~Oleum~~	~~8014-95-7~~	~~1.2E+02~~	~~1.0E+00~~		~~1.0E+00~~				~~2.6E-01~~	~~3.9E+01~~
~~Tetrachloroethane, 1,1,2,2-~~	~~79-34-5~~					~~2.0E-01~~		~~2.0E-01~~		~~1.9E+00~~
~~Thioacetamide~~	~~62-55-5~~					~~6.1E+00~~		~~6.1E+00~~		~~6.2E-02~~
~~Toluene~~	~~108-88-3~~	~~3.7E+04~~	~~3.0E+02~~		~~3.0E+02~~				~~8.2E+01~~	~~1.2E+04~~
~~Toluene diisocyantates~~	~~26471-62-5~~		~~7.0E-02~~		~~7.0E-02~~	~~3.9E-02~~		~~3.9E-02~~		~~2.7E+00~~
~~toluene-2,4-diisocyanate~~	~~584-84-9~~		~~7.0E-02~~		~~7.0E-02~~	~~3.9E-02~~		~~3.9E-02~~		~~2.7E+00~~
~~toluene-2,6-diisocyanate~~	~~91-08-7~~		~~7.0E-02~~		~~7.0E-02~~	~~3.9E-02~~		~~3.9E-02~~		~~2.7E+00~~
~~Trichloroethane, 1,1,1 (see methyl chloroform)~~										
~~Trichloroethane, 1,1,2- (vinyl trichloride)~~	~~79-00-5~~					~~5.7E-02~~		~~5.7E-02~~		~~6.6E+00~~

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~Table 2-5-1 Toxic Air Contaminant Trigger Levels~~

~~Chemical~~	~~CAS Number~~ [1]	~~Acute Inhalation REL ($\mu g/m^3$)~~	~~Chronic Inhalation REL ($\mu g/m^3$)~~	~~Chronic Oral REL (mg/kg-day)~~	~~CREL Weighting Factor~~ [10]	~~Inhalation Cancer Potency Factor (mg/kg-day)~~ $^{-1}$	~~Oral Cancer Potency Factor (mg/kg-day)~~ $^{-1}$	~~CP Weighting Factor~~ [10]	~~Acute (1-hr. max.) Trigger Level~~ [2] ~~(lb/hour)~~	~~Chronic Trigger Level~~ [2] ~~(lb/year)~~
~~Trichloroethylene~~	~~79-01-6~~		~~6.0E+02~~		~~6.0E+02~~	~~7.0E-03~~		~~7.0E-03~~		~~5.4E+01~~
~~Trichlorophenol, 2,4,6-~~	~~88-06-2~~					~~7.0E-02~~		~~7.0E-02~~		~~5.4E+00~~
~~Triethylamine~~	~~121-44-8~~	~~2.8E+03~~	~~2.0E+02~~		~~2.0E+02~~				~~6.2E+00~~	~~7.7E+03~~
~~Urethane (ethyl carbamate)~~	~~51-79-6~~					~~1.0E+00~~		~~1.0E+00~~		~~3.8E-01~~
~~Vanadium Compounds~~									-	
~~vanadium (fume or dust)~~	~~7440-62-2~~	~~3.0E+01~~							~~6.6E-02~~	
~~vanadium pentoxide~~	~~1314-62-1~~	~~3.0E+01~~							~~6.6E-02~~	
~~Vinyl acetate~~	~~108-05-4~~		~~2.0E+02~~		~~2.0E+02~~					~~7.7E+03~~
~~Vinyl chloride (chloroethylene)~~	~~75-01-4~~	~~1.8E+05~~				~~2.7E-01~~		~~2.7E-01~~	~~4.0E+02~~	~~1.4E+00~~
~~Vinylidene chloride (1,1-dichloroethylene)~~	~~75-35-4~~		~~7.0E+01~~		~~7.0E+01~~					~~2.7E+03~~
~~Xylenes (mixed isomers)~~	~~1330-20-7~~	~~2.2E+04~~	~~7.0E+02~~		~~7.0E+02~~				~~4.9E+01~~	~~2.7E+04~~
~~m-xylene~~	~~108-38-3~~	~~2.2E+04~~	~~7.0E+02~~		~~7.0E+02~~				~~4.9E+01~~	~~2.7E+04~~
~~o-xylene~~	~~95-47-6~~	~~2.2E+04~~	~~7.0E+02~~		~~7.0E+02~~				~~4.9E+01~~	~~2.7E+04~~
~~p-xylene~~	~~106-42-3~~	~~2.2E+04~~	~~7.0E+02~~		~~7.0E+02~~				~~4.9E+01~~	~~2.7E+04~~

~~(Amended January 6, 2010)~~

~~1~~ **~~Chemical Abstract Number (CAS):~~**
~~CAS numbers are not available for many chemical groupings and mixtures.~~

~~2~~ **~~Trigger Levels:~~**
~~All trigger levels are presented in scientific notation (i.e., exponential form based on powers of the based number 10.) For example: 4.9E+01 is equivalent to~~ ~~$4.9X10^1$, or 49; 6.6E-02 is equivalent to $6.6X10^{-2}$, or 0.066; and 5.8E+00 is equivalent to $5.8X10^0$, or 5.8.~~

~~3~~ **~~Averaging Period for Non-Cancer Acute Trigger Levels:~~**

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~**Table 2-5-1 Toxic Air Contaminant Trigger Levels**~~

~~The averaging period for non-cancer acute trigger levels is generally a one-hour exposure. However, some are based on several hours of exposure. The screening levels for the following substances should be compared to estimated emissions occurring over a time period other than maximum one-hour emissions (e.g., a 4-hour trigger level should be compared to the maximum 4-hour average concentration estimated from the maximum emissions occurring in a 4-hour period). However, for conservative screening purposes, a maximum one-hour emission level can be compare to all acute trigger levels.~~

~~**4-hour:** arsenic and inorganic arsenic compounds~~

~~**6-hour:** benzene, carbon disulfide, ethylene glycol ethyl ether, ethylene glycol ethyl ether acetate, ethylene glycol methyl ether~~

~~**7-hour:** carbon tetrachloride, chloroform~~

4 ~~**Chemicals for Which Multi-Pathway Risks are Assessed:**~~

~~Trigger levels are adjusted to include the impact from default non-inhalation pathways.~~

5 ~~**Asbestos:**~~

~~The units for the inhalation cancer potency factor for asbestos are (100 PCM fibers/m^3)$^{-1}$. A conversion factor of 100 fibers/0.003 μg can be multiplied by a receptor concentration of asbestos expressed in μg/m^3. Unless other information necessary to estimate the concentration (fibers/m^3) of asbestos at receptors of interest is available, an inhalation cancer potency factor of 220 (mg/kg-day)$^{-1}$ is available.~~

6 ~~**Diesel Exhaust Particulate Matter:**~~

~~Diesel exhaust particulate matter should be used as a surrogate for all TAC emissions from diesel-fueled compression-ignition internal combustion engines. However, diesel exhaust particulate matter should not be used for other types of diesel-fueled combustion equipment, such as boilers or turbines. For equipment other than diesel-fueled compression-ignition internal combustion engines, emissions should be determined for individual TACs and compared to the appropriate trigger level for each TAC.~~

7 ~~**Polychlorinated Biphenyls:**~~

~~**Low Risk:** Use in cases where congeners with more than four chlorines comprise less than one-half percent of total polychlorinated biphenyls.~~

~~**High Risk:** Use in cases where congeners with more than four chlorines do not comprise less than one-half percent of total polychlorinated biphenyls.~~

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~Table 2-5-1 Toxic Air Contaminant Trigger Levels~~

~~8~~ **~~Polychlorinated Dibenzo-p-Dioxins (PCDDs), Polychlorinated Dibenzofurans (PCDFs), and Dioxin-like Polychlorinated Biphenyls (PCBs):~~** ~~These substances are PCDDs, PCDFs, and dioxin-like PCBs for which OEHHA has adopted the World Health Organization (WHO_{97}) Toxicity Equivalency Factor (TEF) scheme for evaluating cancer risk due to exposure to samples containing mixtures of PCDDs, PCDFs, and dioxin-like PCBs. PCDDs, PCDFs, and dioxin-like PCBs should be evaluated as PCDD-equivalent. This evaluation process consists of multiplying individual PCDD-, PCDF-, and dioxin-like PCB-specific emission levels with their corresponding TEFs listed below. The sum of these products is the PCDD-equivalent and should be compared to the PCDD-equivalent trigger level.~~

~~PCDD~~	~~CAS Number~~	~~TEF~~
~~2,3,7,8-tetrachlorodibenzo-p-dioxin~~	~~1746-01-6~~	~~1.0~~
~~1,2,3,7,8-pentachlorodibenzo-p-dioxin~~	~~40321-76-4~~	~~1.0~~
~~1,2,3,4,7,8-hexachlorodibenzo-p-dioxin~~	~~39227-28-6~~	~~0.1~~
~~1,2,3,6,7,8-hexachlorodibenzo-p-dioxin~~	~~57653-85-7~~	~~0.1~~
~~1,2,3,7,8,9-hexachlorodibenzo-p-dioxin~~	~~19408-74-3~~	~~0.1~~
~~1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin~~	~~35822-46-9~~	~~0.01~~
~~1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin~~	~~3268-87-9~~	~~0.0001~~

~~PCDF~~	~~CAS Number~~	~~TEF~~
~~2,3,7,8-tetrachlorodibenzofuran~~	~~5120-73-19~~	~~0.1~~
~~1,2,3,7,8-pentachlorodibenzofuran~~	~~57117-41-6~~	~~0.05~~
~~2,3,4,7,8-pentachlorodibenzofuran~~	~~57117-31-4~~	~~0.5~~
~~1,2,3,4,7,8-hexachlorodibenzofuran~~	~~70648-26-9~~	~~0.1~~
~~1,2,3,6,7,8-hexachlorodibenzofuran~~	~~57117-44-9~~	~~0.1~~
~~1,2,3,7,8,9-hexachlorodibenzofuran~~	~~72918-21-9~~	~~0.1~~
~~2,3,4,6,7,8-hexachlorodibenzofuran~~	~~60851-34-5~~	~~0.1~~
~~1,2,3,4,6,7,8-heptachlorodibenzofuran~~	~~67562-39-4~~	~~0.01~~
~~1,2,3,4,7,8,9-heptachlorodibenzofuran~~	~~55673-89-7~~	~~0.01~~
~~1,2,3,4,6,7,8,9-octachlorodibenzofuran~~	~~39001-02-0~~	~~0.0001~~

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~**Table 2-5-1 Toxic Air Contaminant Trigger Levels**~~

~~Dioxin-like PCBs (coplanar PCBs)~~	~~CAS Number~~	~~TEF~~
~~PCB 77 (3,3'4,4'-tetrachlorobiphenyl)~~	~~32598-13-3~~	~~0.0001~~
~~PCB 81 (3,4,4',5-tetrachlorobiphenyl)~~	~~70362-50-4~~	~~0.0001~~
~~PCB 105 (2,3,3'4,4'-pentachlorobiphenyl)~~	~~32598-14-4~~	~~0.0001~~
~~PCB 114 (2,3,4,4'5-pentachlorobiphenyl)~~	~~74472-37-0~~	~~0.0005~~
~~PCB 118 (2,3',4,4',5-pentachlorobiphenyl)~~	~~31508-00-6~~	~~0.0001~~
~~PCB 123 (2',3,4,4',5-pentachlorobiphenyl)~~	~~65510-44-3~~	~~0.0001~~
~~PCB 126 (3,3',4,4',5-pentachlorobiphenyl)~~	~~57465-28-8~~	~~0.1~~
~~PCB 156 (2,3,3',4,4',5-hexachlorobiphenyl)~~	~~38380-08-4~~	~~0.0005~~
~~PCB 157 (2,3,3',4,4',5'-hexachlorobiphenyl)~~	~~69782-90-7~~	~~0.0005~~
~~PCB 167 (2,3',4,4',5,5'-hexachlorobiphenyl)~~	~~52663-72-6~~	~~0.00001~~
~~PCB 169 (3,3',4,4',5,5'-hexachlorobiphenyl)~~	~~32774-16-6~~	~~0.01~~
~~PCB 170 (2,2',3,3',4,4',5-heptachlorobiphenyl)~~	~~35065-30-6~~	~~0~~
~~PCB 180 (2,2',3,4,4',5,5'-heptachlorobiphenyl)~~	~~35065-29-3~~	~~0~~
~~PCB 189 (2,3,3',4,4',5,5'-heptachlorobiphenyl)~~	~~39635-31-9~~	~~0.0001~~

[9] ~~**Polycyclic Aromatic Hydrocarbons (PAHs):**~~

~~These substances are PAH-derivatives that have OEHHA-developed Potency Equivalency Factors (PEFs). PAHs should be evaluated as benzo(a)pyrene-equivalents. This evaluation process consists of multiplying individual PAH-specific emission levels with their corresponding PEFs listed below. The sum of these products is the benzo(a)pyrene-equivalent level and should be compared to the benzo(a)pyrene equivalent trigger level.~~

~~PAH or derivative~~	~~CAS Number~~	~~PEF~~
~~benz(a)anthracene~~	~~56-55-3~~	~~0.1~~
~~benzo(b)fluoranthene~~	~~205-99-2~~	~~0.1~~
~~benzo(j)fluoranthene~~	~~205-82-3~~	~~0.1~~
~~benzo(k)fluoranthene~~	~~207-08-9~~	~~0.1~~
~~benzo(a)pyrene~~	~~50-32-8~~	~~1.0~~
~~chrysene~~	~~218-01-9~~	~~0.01~~
~~dibenz(a,j)acridine~~	~~224-42-0~~	~~0.1~~
~~dibenz(a,h)acridine~~	~~226-36-8~~	~~0.1~~
~~dibenz(a,h)anthracene~~	~~53-70-3~~	~~1.05~~
~~7H-dibenzo(c,g)carbazole~~	~~194-59-2~~	~~1.0~~
~~dibenzo(a,e)pyrene~~	~~192-65-4~~	~~1.0~~
~~dibenzo(a,h)pyrene~~	~~189-64-0~~	~~10~~
~~dibenzo(a,i)pyrene~~	~~189-55-9~~	~~10~~
~~dibenzo(a,l)pyrene~~	~~191-30-0~~	~~10~~
~~7,12-dimethylbenz(a)anthracene~~	~~57-97-6~~	~~64~~
~~indeno(1,2,3-cd)pyrene~~	~~193-39-5~~	~~0.1~~
~~5-methylchrysene~~	~~3697-24-3~~	~~1.0~~
~~3-methylcholanthrene~~	~~56-49-5~~	~~5.7~~

[This table will be replaced with the table above that includes a rearrangement of the current column locations.]

~~**Table 2-5-1 Toxic Air Contaminant Trigger Levels**~~

~~5-nitroacenaphthene~~	~~602-87-9~~	~~0.03~~
~~1-nitropyrene~~	~~5522-43-0~~	~~0.1~~
~~4-nitropyrene~~	~~57835-92-4~~	~~0.1~~
~~1,6-dinitropyrene~~	~~42397-64-8~~	~~10~~
~~1,8-dinitropyrene~~	~~42397-65-9~~	~~1.0~~
~~6-nitrocrysene~~	~~7496-02-8~~	~~10~~
~~2-nitrofluorene~~	~~607-57-8~~	~~0.01~~

~~[10] **CREL (chronic Reference Exposure Level) and CP (Cancer Potency) Weighting Factors:** These factors are to be used for purposes of calculating toxicity weighted emissions. Factors were developed assuming multi-pathway exposure where applicable, and continuously operating sources for residential receptor exposure.~~

~~*(Amended January 6, 2010)*~~

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

Staff Report

July 2016

Appendix B

Methodology for Derivation of Toxic Air Contaminant (TAC) Trigger Levels

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET
SAN FRANCISCO, CA 94109

Methodology for Derivation of Toxic Air Contaminant (TAC) Trigger Levels

B1. INTRODUCTION

The toxic air contaminant (TAC) trigger levels in Table 2-5-1 of the Permit Handbook are used to determine the need for a health risk assessment (HRA) for projects involving new and modified sources. The TAC trigger levels are also used: (1) to establish permit requirements for certain sources that may otherwise qualify for permit exemptions, (2) as part of the applicability of the accelerated permit program, and (3) in determining permit fees. The TAC trigger levels are considered to be reasonable de minimis emission rates for use at a project-level. Projects with emissions below the TAC trigger levels are unlikely to cause, or contribute significantly to, adverse health risks.

The TAC trigger levels were calculated using: (1) target health risk levels that are considered de minimis for project-level risks, (2) the Office of Environmental Health Hazard Assessment/ Air Resources Board (OEHHA/ARB) health effect values, (3) generally conservative modeling procedures which establish the extent to which a TAC is transported and dispersed in the atmosphere after its release from the source, and (4) health-protective assumptions regarding the extent of an individual's exposure to an emitted TAC.

B2. Target Health Risk Levels

For chronic health risk, a lifetime cancer risk of 1.0 in a million (10^{-6}) and a non-cancer hazard index of 0.20, were used as the target health risk levels to derive the chronic trigger levels. These are the risk thresholds at which best available control technology for toxics (TBACT) is required under Regulation 2, Rule 5 and are unchanged from what were previously used to derive the trigger levels in 2010.

Where applicable, the chronic trigger level represents the lesser of the trigger levels determined based on the cancer and non-cancer target health risk levels. In general, for compounds that have both potential cancer and non-cancer adverse health effects, the chronic trigger level presented in Table 2-5-1 is based on the potential carcinogenic health effect, which is more health-protective.

For acute health risk, a hazard index of 1.0 was used as the target health risk level; this is an impact equal to the acute reference exposure level (REL). The acute REL represents an air concentration that is not likely to cause adverse effects in a human population, including sensitive subgroups, exposed on an intermittent basis for a one-hour period. An acute hazard index of 1.0 is also the project risk limit required under Regulation 2, Rule 5.

B3. Health Effect Values

Table 2-5-1 of the Permit Handbook incorporates the most recent health effect values adopted by OEHHA/ARB (as of March 2016) for use in the Air Toxics Hot Spots (ATHS) Program. These include cancer potency factors (CPFs) for carcinogens, and RELs for non-carcinogenic health effects. Some TACs do not appear on Table 2-5-1 because there may not be sufficient data available for OEHHA to establish a CPF or REL. Prior to use in Regulation 2, Rule 5, the District will review any new or revised health effects value adopted by OEHHA/ARB after March 2016. Typically within one year of OEHHA/ARB's adoption of new toxicity criteria, the District will evaluate the new criteria for feasibility of implementation, enforcement, compliance with project risk limits and inclusion in Table 2-5-1.

Although OEHHA has provided acute RELs for carbon monoxide (CO), nitrogen dioxide (NO_2) and sulfur dioxide (SO_2) using the State Ambient Air Quality Standards, trigger levels were not developed for these criteria pollutants because they are regulated in other District programs.

The trigger levels for polycyclic aromatic hydrocarbons (PAHs), polychlorinated dibenzo-p-dioxins (PCDDs, or dioxins), polychlorinated dibenzofurans (PCDFs, or furans), and dioxin-like polychlorinated biphenyls (PCBs) were based on compound groupings. The trigger levels were expressed as B(a)P-equivalent and TCDD-equivalents in order to address cumulative exposures to applicable PAH and PCDD/PCDF/dioxin-like PCB congeners, respectively.

Although acute severity exposure levels (e.g., mild, severe, and life-threatening effects) have been identified for each acute REL, all acute trigger levels were developed based on the same exposure assumptions and target risk levels, regardless of the severity of the adverse health effect corresponding to the acute REL.

B4. Modeling Procedures

The trigger levels in Table 2-5-1 are based on the same screening-level dispersion modeling procedure that was used to develop the trigger levels in Regulation 2, Rule 5, amended January 6, 2010. This involves the use of a cavity effects screening procedure that relates emission rate to one-hour average ambient air concentrations (i.e., dispersion factors, or Chi/Q) where dispersion is affected by aerodynamic downwash from a nearby building. The cavity region occurs immediately adjacent to the lee side of the building and is often the “worst-case” dispersion scenario where receptor areas are in close proximity to the source being evaluated. The cavity effects equation (Equation 1 below) is used to derive the trigger levels; this equation is provided in EPA’s Screening Procedures for Estimating the Air Quality Impact of Stationary Sources (EPA, 1992) and is incorporated into the EPA SCREEN3 model (EPA, 1995).

Equation 1: $c_{1\text{-hr}} = q_{1\text{-hr}} / (1.5 * A * u)$

where:
- $c_{1\text{-hr}}$ = one-hour average concentration in air, g/m^3
- $q_{1\text{-hr}}$ = one-hour average emission rate, g/s
- A = cross sectional area of the building normal to the wind, m^2
- u = wind speed, m/s

The cavity effects equation requires the selection of the crosswind building area and the average wind speed. A value of 92.9 square meters was used for the crosswind building area (e.g., a building 25 feet high x 40 feet wide). The average wind speed was taken to be 2 meters per second, based on EPA screening modeling guidelines. Substituting the values for A and u into Equation 1, converting the concentration units to $\mu g/m^3$ instead of g/m^3, and converting the emission rate unit from g/s to lbs/hr yields the following:

$$C_{1\text{-hr}} = (Q_{1\text{-hr}} / (1.5 * 92.9 * 2)) * 1000000 * 453.6 / 3600$$
$$C_{1\text{-hr}} = 452 * Q_{1\text{-hr}}$$

Rearranging for emission rate as a function of the concentration yields:

Equation 2: $Q_{1\text{-hr}} = 2.21\text{ E-3} * C_{1\text{-hr}}$

where:
- $C_{1\text{-hr}}$ = one-hour average concentration in air, $\mu g/m^3$
- $Q_{1\text{-hr}}$ = one-hour average emission rate, lbs/hour

For each TAC, the acute trigger level was calculated using Equation 2 and the TAC specific acute REL as the concentration. As discussed in section B2, an exposure concentration equivalent to the acute REL would result in the target acute hazard index of one.

For use in determining chronic tr

OEHHA has identified a list of substances that require multi-pathway risk analysis, which are listed in Table B-2. The trigger levels for these compounds have been determined based on the minimum residential multi-pathway exposure routes, which are inhalation, incidental soil ingestion, and dermal contact. For lead, lead compounds, dioxins, furans, PAHs, and PCBs, the breast-milk consumption pathway was also included per OEHHA recommendations. The multi-pathway exposure assessment was performed using CARB's Hotspots Analysis and Reporting Program (HARP) (Version 2.0) using default assumptions. A deposition rate of 0.05 meters per second for "uncontrolled sources" and the "warm" climate selection were chosen in the HARP runs for the multi-pathway risk analyses to yield conservative results. For the HARP cancer risk run, the "RMP using the Derived Method" scenario was selected. For the HARP chronic hazard index run, the "OEHHA Derived Method" scenario was selected.

Table B-2 Substances with Trigger Levels Based on Multi-pathway Exposures	
4,4'-Methylene dianiline	Chromium VI & compounds
Fluorides & Hydrofluoric acid	Arsenic & compounds
Diethylhexylphthalate (DEHP)	Beryllium & compounds
Hexachlorocyclohexanes	Lead & compounds
PAHs	Mercury & compounds
PCBs	Nickel & compounds
Cadmium & compounds	Dioxins & Furans
Selenium & compounds	

B6. Trigger Level Calculations

For most of the toxic metals, the OEHHA CPFs and non-cancer RELs apply to the weight of the toxic metal atom contained in the overall compound. The metal compounds contain other elements along with the toxic metal atom (e.g., Nickel hydroxide, has a formula of $Ni(OH)_2$). To ensure that the trigger level is based only on the fraction of the overall weight of the emissions that are associated with health effects of the metal, a molecular weight adjustment factor (MWAF) was applied to derive the trigger level for the metal compounds.

Acute Trigger Levels

The target concentrations used to calculate the acute trigger levels are the acute RELs; this is equivalent to a target acute hazard index of one. Substituting "Acute TL" for $Q_{1\text{-hr}}$, "Acute REL" for $C_{1\text{-hr}}$, and applying the MWAF in Equation 2:

Equation 2: $Q_{1\text{-}hr} = 2.21 \text{ E-3} * C_{1\text{-}hr}$
Acute TL = 2.21 E-3 * Acute REL / MWAF

The acute trigger levels presented in Table 2-5-1 were calculated as follows:

Acute TL = 2.21 E-3 * *Acute REL / MWAF*		
where: Acute TL	=	Acute Trigger Level, pounds/hour
Acute REL	=	Acute Reference Exposure Level (chemical-specific), $\mu g/m^3$
MWAF	=	Molecular Weight Adjustment Factor. For toxic metals the MWAF is the ratio of the molecular weight of the metal atom and the molecular weight of the metal compound. For non-metal compounds the MWAF is one

Chronic Trigger Levels

The chronic trigger levels in Table 2-5-1 represent the lesser of the trigger levels calculated for a carcinogenic and non-carcinogenic adverse health effect.

Chronic Non-carcinogenic Trigger Levels

Chronic trigger levels based on non-carcinogenic adverse health effects were calculated based on a target concentration that is 20% of the chronic REL; this is equivalent to a target chronic hazard index of 0.2. For TACs with non-carcinogenic health effects and an inhalation-only exposure pathway, the chronic trigger levels were calculated using Equation 3, replacing Q_{ann} with "Chronic TL_{nc_inh}", C_{ann} with 20% of the chronic REL and applying the MWAF:

Equation 3: $Q_{ann} = 193.8 * C_{ann}$
Chronic TL_{nc_inh} = 193.8 * (0.2 * Chronic REL) / MWAF

*Chronic TL_{nc_inh} = 38.76 * Chronic REL / MWAF*		
where:		
Chronic TL_{nc_inh}	=	Chronic Trigger Level – non-cancer inhalation risk, pounds/year
Chronic REL	=	Chronic Reference Exposure Level (chemical-specific), $\mu g/m^3$
MWAF	=	Molecular Weight Adjustment Factor. For toxic metals the MWAF is the ratio of the molecular weight of the metal atom and the molecular weight of the metal compound. For non-metal compounds the MWAF is one

For each TAC with multiple exposure pathways for non-carcinogenic adverse health effects, HARP was used to calculate a chronic hazard index for a unit concentration; this value from HARP, "$HARP_{Chronic\_HI}$", can be used to calculate the chronic hazard index (HI) for TACs that have multi-pathway impacts as follows:

Chronic HI = $C_{ann} * (HARP_{Chronic\_HI})$

where: C_{ann}	=	annual average concentration in air, $\mu g/m^3$
$HARP_{Chronic\_HI}$	=	Chronic HI from HARP for a unit concentration (chemical specific), Chronic HI / ($\mu g/m^3$)

Rearranging for C_{ann} and a target chronic HI of 0.2 yields:

C_{ann} = 0.2 / ($HARP_{Chronic\_HI}$)

Substituting C_{ann} into Equation 3 and replacing Q_{ann} with "Chronic TL_{nc_mp}" yields:

Equation 3: Q_{ann} = 193.8 * C_{ann}
Chronic TL_{nc_mp} = 193.8 * (0.2 / $HARP_{Chronic\_HI}$)

The chronic trigger levels TACs with non-cancer multi-pathway adverse health effects were calculated as follows:

Chronic TL_{nc_mp} = 38.76 / ($HARP_{Chronic\_HI}$)

where:

Chronic TL_{nc_mp}	=	Chronic Trigger Level – non-cancer multi-pathway risk, pounds/year
$HARP_{Chronic\_HI}$	=	Chronic HI HARP-value for a unit concentration (chemical specific), Chronic HI / (µg/m^3)

The HARP software automatically applies the appropriate MWAF for each chemical, so no MWAF adjustment is required.

Chronic Carcinogenic Trigger Levels

Chronic trigger levels based on carcinogenic health effects for the residential receptor were calculated for the inhalation exposure pathway using the following equations from the 2015 OEHHA Risk Assessment Guidelines for the Air Toxics Hot Spots Program:

$RISK_{inh}$ = ($DOSE_{air}$ * CPF * ASF * ED/AT * FAH)$_{age\_group}$
$DOSE_{air}$ = C_{ann} * {BR/BW} * A * EF * 10^{-6}

Where:

$RISK_{inh}$	=	Residential inhalation cancer risk
$DOSE_{air}$	=	Daily inhalation dose (mg/kg-day)
CPF	=	Inhalation cancer potency factor (mg/kg-day^{-1})
ASF	=	Age sensitivity factor for a specified age group (unitless)
ED	=	Exposure duration (in years) for a specified age group
AT	=	Averaging time for lifetime cancer risk, 70 years
FAH	=	Fraction of time spent at home
C_{ann}	=	Annual Average Concentration in air (µg/m^3)
BR/BW	=	Daily Breathing rate normalized to body weight (L/kg body weight - day)
A	=	Inhalation absorption factor (unitless) [default value is 1]
EF	=	Exposure frequency (unitless) [default for resident = 0.96 = 350 days/365 days]

Substituting $DOSE_{air}$ and the values for exposure assumptions from Table B-1 into the equation for $RISK_{inh}$ results in the following:

$RISK_{inh}$ = (C_{ann} * {BR/BW} * A * EF * 10^{-6} * CPF * ASF * ED/AT * FAH)$_{age\_group}$

$RISK_{inh}$ = (C_{ann} * 361 * 1 * (350/365) * 10^{-6} * CPF * 10 * 0.25/70 * 1)$_{3rd\ trimester}$
+ (C_{ann} * 1090 * 1 * (350/365) * 10^{-6} * CPF * 10 * 2/70 * 1)$_{0<2years}$
+ (C_{ann} * 572 * 1 * (350/365) * 10^{-6} * CPF * 3 * 14/70 * 1)$_{2<16years}$
+ (C_{ann} * 261 * 1 * (350/365) * 10^{-6} * CPF * 1 * 14/70 * 0.73)$_{16<30years}$

$RISK_{inh} = 6.766E\text{-}04 * (C_{ann} * CPF)$

Rearranging this equation for C_{ann} and substituting the target cancer risk of one in a million for $RISK_{inh}$ yields:

$$C_{ann} = 1\ E\text{-}06 / (6.766E\text{-}04 * CPF)$$
$$C_{ann} = 1.478E\text{-}03 / CPF$$

Substituting C_{ann} into Equation 3, replacing Q_{ann} with "Chronic TL_{cr_inh}" and applying the MWAF:

$$\text{Equation 3: } Q_{ann} = 193.8 * C_{ann}$$
$$\text{Chronic } TL_{cr\_inh} = 193.8 * (1.478E\text{-}03 / CPF) / MWAF$$

The chronic trigger levels for carcinogenic TACs that have an inhalation-only pathway were calculated as follows:

$$\textit{Chronic } TL_{cr\_inh} = 0.2864 / CPF / MWAF$$

where:

Chronic TL_{cr_inh}	=	Chronic Trigger Level – inhalation cancer risk, pounds/year
CPF	=	Cancer Potency Factor (chemical – specific), $(mg/kg\text{-}day)^{-1}$
MWAF	=	Molecular Weight Adjustment Factor. For toxic metals the MWAF is the ratio of the molecular weight of the metal atom and the molecular weight of the metal compound. For non-metal compounds the MWAF is one

For each TAC with multiple exposure pathways, HARP was used to calculate a residential cancer risk for a unit concentration; this value from HARP, "$HARP_{cancer}$", can be used to calculate the cancer risk for TACs that have multi-pathway impacts as follows:

$$\text{Cancer risk} = C_{ann} * (HARP_{cancer})$$

where: C_{ann} = annual average concentration in air, $\mu g/m^3$
$HARP_{cancer}$ = Cancer risk HARP value, Cancer risk / $(\mu g/m^3)$

Rearranging for C_{ann} and substituting the target one in a million cancer risk yields:

$$C_{ann} = 1E\text{-}06 / (HARP_{cancer})$$

Substituting C_{ann} into Equation 3 and replacing Q_{ann} with "Chronic TL_{cr_mp}":

$$\text{Equation 3: } Q_{ann} = 193.8 * C_{ann}$$
$$\text{Chronic } TL_{cr\_mp} = 193.8 * (1E\text{-}06 / HARP_{cancer})$$

The chronic trigger levels for carcinogenic TACs with multi-pathway impacts were calculated as follows:

$$Chronic\ TL_{cr\_mp} = 1.938E\text{-}04 / (HARP_{cancer})$$

where:

Chronic TL_{cr_mp}	=	Chronic Trigger Level – multi-pathway cancer risk, pounds/year
$HARP_{cancer}$	=	Cancer risk HARP-value for a unit concentration (chemical specific), Cancer risk / (µg/m^3)

The HARP software automatically applies the appropriate MWAF for each chemical, so no MWAF adjustment is required.

Differences in the chronic trigger levels listed in Table 2-5-1 of Regulation 2, Rule 5, amended January 6, 2010 and the proposed Table 2-5-1 in the Permit Handbook may be due to one or more of the following factors: (1) revised chemical-specific health effects values (e.g., CPFs and/or RELs) in the 2015 HRA Guidelines and the March 2016 “Table 1 Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Value” update, (2) changes in default multi-pathway exposure parameters or calculations included in HARP2 relative to the original HARP (which was previously used), (3) changes in the exposure assumptions (breathing rates, exposure durations, fraction of time spent at home) and/or (4) changes in the cancer risk calculation methodology. Therefore, although a chemical-specific health effect value may not have been revised, the use of the new exposure assumptions and calculation methodology may result in a significant change in the trigger level.

BAY AREA
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PROPOSED AMENDMENTS TO:

BAAQMD REGULATION 2, RULE 5:
NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

Staff Report
December 2016

APPENDIX C

Proposed Revisions to Air District Health Risk Assessment Guidelines

BAAQMD

Air Toxics NSR Program

Health Risk ~~Screening Analysis~~ Assessment ~~(HRSA)~~ Guidelines

~~December 2009~~

September 2016

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
~~939 ELLIS STREET~~375 BEALE STREET, SUITE 600
SAN FRANCISCO, CA 9410~~9~~5

BAAQMD Air Toxics NSR Program

Health Risk ~~Screening Analysis~~ Assessment ~~(HRSA)~~ Guidelines

1. INTRODUCTION

This document describes the Bay Area Air Quality Management District's guidelines for conducting health risk ~~screening analyses~~assessments. Any health risk ~~screening analysis~~ assessment (HR~~S~~A) that is required pursuant to Regulation 2 Permits, Rule 1 General Requirements or Rule 5 New Source Review of Toxic Air Contaminants shall be conducted in accordance with these Air District HRA ~~g~~Guidelines.

In accordance with Regulation 2-5-402, ~~these~~ the Air District HRA ~~g~~Guidelines generally conform to the Health Risk Assessment Guidelines adopted by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) for use in the Air Toxics Hot Spots Program for all types of facilities except gasoline dispensing facilities (GDFs). In addition, these guidelines are in accordance with State ~~risk assessment and risk management policies and guidelines in effect as of June 1, 2009~~ "Risk Management Guidance for Stationary Sources of Air Toxics" developed by the California Air Resources Board (ARB) and the California Air Pollution Control Officers Association (CAPCOA).

The Air District is delaying implementation of OEHHA's 2015 HRA Guidelines for gasoline dispensing facilities while further research is conducted on the potential impacts of OEHHA's 2015 HRA Guidelines on gasoline dispensing facilities. The Air District HRA Guidelines for gasoline dispensing facilities are described in Section 2.2.

~~Through the District's rule development process, these guidelines~~ The Air District will periodically ~~be~~ update~~d~~ these Air District HRA Guidelines to clarify procedures~~, amend health effects data,~~ or incorporate other revisions to regulatory guidelines.

2. PROCEDURES

The procedures described below constitute the Regulation 2-5-603 Health Risk ~~Screening Analysis~~ Assessment Procedures.

2.1 Procedures for All Facilities Other Than Gasoline Dispensing Facilities

All HRAs for facilities other than gasoline dispensing facilities shall be completed by following the procedures described in the OEHHA Health Risk Assessment Guidelines for the Air Toxics Hot Spots Program adopted by OEHHA on March 6, 2015 and using the recommended breathing rates described in the ARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics adopted by ARB on July 23, 2015.

The OEHHA HRA Guidelines contain several sections which identify (a) the overall methodology, (b) the exposure assessment assumptions and procedures, and (c) the health effects data (cancer potency factors and reference exposure levels).

A summary of OEHHA's HRA Guidelines and an index of the relevant documents are located at:

http://www.oehha.ca.gov/air/hot_spots/index.html

OEHHA's risk assessment methodology (February 2015) is located at:

http://www.oehha.ca.gov/air/risk_assess/index.html

The exposure assessment and stochastic technical support document (August 2012) is located at:

http://www.oehha.ca.gov/air/exposure_assess/index.html

The Technical Support Document for Cancer Potency Factors: Methodologies for Derivation, Listing of Available Values, and Adjustments to Allow for Early Life Stage Exposures (May 2009) is located at:

http://www.oehha.ca.gov/air/hot_spots/tsd052909.html

The Technical Support Document for the Derivation of Noncancer Reference Exposure Levels (June 2008) is located at:

http://www.oehha.ca.gov/air/hot_spots/rels_dec2008.html

The ARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics (July 23, 2015) provides guidance on managing potential health risks from sources subject to California air toxics programs and updates the Risk Management Policy for Inhalation Risk Assessments. It is located at:

http://www.arb.ca.gov/toxics/rma/rmaguideline.htm

Sections 2.1.1 through 2.1.6 below clarify and highlight some of the exposure assessment procedures including exposure assumptions (e.g., breathing rate and exposure duration), health effect values, and calculation procedures to be used for conducting Air District HRAs.

2.1.1 Clarifications of Exposure Assessment Procedures

This section clarifies and highlights some of the exposure assessment procedures that should be followed when conducting an Air District HRA.

2.1.1.1 Breathing Rate

On July 23, 2015, ARB adopted “Risk Management Guidance for Stationary Sources of Air Toxics”, which includes an updated Risk Management Policy for Inhalation Risk Assessments. For the HRA methodology used in the Air Toxics NSR Program, the Air District has conformed with these State guidelines and adopted the exposure assessment recommendations made by ARB and CAPCOA. The policy considers the new science while providing a reasonable estimate of potential cancer risk for use in risk assessments for risk management decisions. This policy recommends using a combination of the 95th percentile and 80th percentile daily breathing rates as the minimum exposure inputs for risk management decisions. Specifically, the policy recommends using the 95th percentile rate for age groups less than 2 years old and the 80th percentile rate for age groups that are greater than or equal to 2 years old.

To assess potential inhalation exposure to offsite workers, OEHHA recommends assuming a breathing rate of 230 L/kg-8 hours. This value represents the 95th percentile 8-hour breathing rate based on moderate activity of 16-70 years-old age range.

To assess exposure to children at schools and daycare facilities, OEHHA recommends using the 95th percentile moderate intensity breathing rates from Table 5.8 of OEHHA’s HRA Guidelines. As a default, the Air District recommends using the breathing rate for 2<16 years (520 L/kg-8 hours) for children at schools. For a more refined analysis, the Air District will allow the use of breathing rates for other age ranges that are tailored to the ages of the children in the specific school under evaluation.

2.1.1.2 Exposure Frequency

Based on OEHHA recommendations, the Air District will estimate cancer risk to residential receptors assuming exposure occurs 24 hours per day for 350 days per year. For a worker receptor, exposure is assumed to occur 250 days per year. However, for some professions (e.g., teachers) a different schedule may be more appropriate. For children at school sites, exposure is assumed to occur 180 days (or 36 weeks) per year.

2.1.1.3 Exposure Duration

Based on OEHHA recommendations, the Air District will estimate cancer risk to residential receptors based on a 30-year exposure duration. Although 9-year and 70-year exposure scenarios may be presented for information purposes, risk management decisions will be made based on 30-year exposure duration for residential receptors.

For worker receptors, risk management decisions will be made based on OEHHA's recommended exposure duration of 25 years.

As a default, cancer risk estimates for children at school sites will be calculated based on a 9-year exposure duration, such as for a K-8 school. However, this exposure duration may be refined based on the specific school under evaluation (i.e. 6 years for a K-5 elementary school, 4 years for a 9-12 high school, or 3 years for a 6-8 middle school). For any analyses using an alternative to the 9-year default duration for school children, the breathing rate assumptions must also be adjusted in accordance with the ages of the children in the school.

2.1.2 Health Effects Values

Chemical-specific health effects values have been consolidated and are presented in Regulation 2, Rule 5, Table 2-5-1 Toxic Air Contaminant Trigger Levels for use in conducting HRAs. The Air District has added the 8-hour reference exposure levels (RELs) adopted by OEHHA to this table. The Air District will periodically update this table to include OEHHA's revisions to health effects values.

2.1.3 Cancer Risk Calculations

In accordance with OEHHA's 2015 HRA Guidelines, cancer risk estimates should incorporate age sensitivity factors (ASFs) and fraction of time at home (FAH) adjustment factors. Air District HRAs should follow OEHHA's recommended cancer risk calculation procedures as presented in Section 8.2 of OEHHA's 2015 HRA Guidelines.

For residential exposures, the cancer risk calculations should include the most sensitive age groups: from third trimester of pregnancy to 30 years of age for a 30-year exposure duration. For worker receptors, assume working begins at age 16 years.

2.1.3.1 Fraction of Time at Home (FAH)

For the initial cancer risk estimate, assume the fraction of time at home factors are equal to one (FAH = 1.0) for the following age groups: 3rd trimester to < 2 years and 2 to < 16 years. Use this initial analysis to assess if there are any schools within cancer risk isopleths of one in a million or greater. If there are no schools within one in a million or greater cancer risk isopleths, the cancer risk analysis may be refined by using the appropriate age-specific FAH factors as identified in Table 8.4 of the 2015 OEHHA Guidelines:

- FAH = 0.85 for age group: 3rd trimester to < 2 years;
- FAH = 0.72 for age group: 2 to < 16 years;
- FAH = 0.73 for age group: 16 to 70 years.

2.1.3.2 Short Term Projects

In the 2015 HRA Guidelines, OEHHA recommends using actual project duration for short term projects, but cautions that the risk manager should consider a lower cancer risk threshold for very short term projects, because a higher exposure over a short period of time may pose a greater risk than the same total exposure spread over a much longer period of time. To ensure that short-term projects do not result in unanticipated higher cancer impacts due to short-duration high-exposure rates, the Air District recommends that the cancer risk be evaluated assuming that the average daily dose for short-term exposure lasts a minimum of three years for projects lasting three years or less. For residential exposures, the cancer risk calculations should include the most sensitive age groups (beginning with the third trimester of pregnancy) and should use the 95th percentile breathing rates. The Air District recommends following OEHHA guidelines for other aspects of short term projects. In summary, the Air District recommends:

- use of actual emission rates over a minimum 3-year duration for cancer risk assessments involving projects lasting 3 years or less, and
- use of actual project duration for cancer risk assessments on projects lasting longer than 3 years.

2.1.4 Noncancer Health Impacts

In accordance with OEHHA's 2015 HRA Guidelines, noncancer health impacts should be calculated using the hazard index approach. Air District HRAs should follow OEHHA's recommended calculation procedures for noncancer health impacts, as presented in Section 8.3 of OEHHA's 2015 HRA Guidelines.

Regarding Section 8.3.5 of OEHHA's 2015 HRA Guidelines, the Air District does not require inclusion of the contribution of background criteria pollutants to respiratory health effects for Air District HRAs.

2.1.5 Spatial Averaging

Typically, HRA results for an individual receptor have been based on air dispersion modeling results at a single point or location. In the 2015 OEHHA Guidelines (Section 4.7.3), OEHHA provides a refinement option that takes into account that people move around within their property or workplace and do not normally remain at a single fixed point for the entire exposure duration. This spatial averaging refinement may be used for any chronic analysis in an Air District HRA. Spatial averaging is not appropriate for an acute analysis.

After the points of interest have been identified by the air dispersion modeling analysis, the ground level air concentration for each maximum impact point may be refined by using the arithmetic mean of the receptor concentrations identified within a spatial average grid instead of the single maximum impact point concentration. The modeler shall generally center the spatial average grid around the maximum impact point, but the modeler shall also consider facility boundaries, possible receptor locations, and predominant wind direction. This grid shall be of an appropriate shape, shall be no larger than 400 square meters, and shall have a receptor spacing within the grid of no less than 5 meters. Grid shape, size, and location are subject to Air District approval.

2.1.6 Stochastic Risk Assessment

For a stochastic, multipathway risk assessment, the potential cancer risk should be reported for the full distribution of exposure from all exposure pathways included in the risk assessment. For risk management decisions, the potential cancer risk from a stochastic, multipathway risk assessment should be based on the 95th percentile cancer risk.

2.2 Procedures for Gasoline Dispensing Facilities

Any HR~~S~~A for a gasoline dispensing facility shall be completed by following the procedures described in the OEHHA Health Risk Assessment Guidelines for the Air Toxics Hot Spots Program that were adopted by OEHHA on October 3, 2003 and any State risk assessment and risk management policies and guidelines in effect as of June 1, 2009.

The 2003 OEHHA Health Risk Assessment Guidelines contain several sections which identify (a) the overall methodology, (b) the exposure assessment assumptions and procedures, and (c) the health effects data (cancer potency factors, chronic reference exposure levels, and acute reference exposure levels).

A summary of OEHHA's 2003 Health Risk Assessment Guidelines and an index of the relevant documents are located at:

~~**http://www.oehha.ca.gov/air/hot_spots/index.html**~~
http://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk

OEHHA's 2003 risk assessment methodology is located at:

~~**http://www.oehha.ca.gov/air/risk_assess/index.html**~~
http://oehha.ca.gov/media/downloads/crnr/hraguidefinal.pdf

The exposure assessment and stochastic technical support document (Part IV of OEHHA's Risk Assessment Guidelines) is located at:

~~**http://www.oehha.ca.gov/air/exposure_assess/index.html**~~
http://oehha.ca.gov/media/downloads/crnr/stoch4f.pdf

The Technical Support Document for Cancer Potency Factors: Methodologies for Derivation, Listing of Available Values, and Adjustments to Allow for Early Life Stage Exposures (~~May~~ June 2009) is located at:

~~**http://www.oehha.ca.gov/air/hot_spots/tsd052909.html**~~
http://oehha.ca.gov/media/downloads/crnr/tsdcancerpotency.pdf

The Technical Support Document for the Derivation of Noncancer Reference Exposure Levels (June 2008) is located at:

http://www.oehha.ca.gov/air/hot_spots/rels_dec2008.html
http://oehha.ca.gov/media/downloads/crnr/noncancertsdfinal.pdf

Sections 2.2.1 through 2.2.~~3~~4 below clarify and highlight some of the exposure assessment procedures including exposure assumptions (e.g., breathing rate and exposure duration) and health effect values to be used for conducting HR~~S~~As for gasoline dispensing facilities.

2.2.1 Clarifications of Exposure Assessment Procedures

This section clarifies and highlights some of the exposure assessment procedures that should be followed when conducting an HR~~S~~A for a gasoline dispensing facility. ~~Please note that OEHHA is currently revising the Technical Support Document (TSD) for Exposure Assessment. When the revised TSD for Exposure Assessment is finalized and adopted, the District will revise the HRSA Guidelines accordingly.~~

2.2.1.1 Breathing Rate

On October 9, 2003, a statewide interim Risk Management Policy for inhalation-based residential cancer risk was adopted by the California Air Resources Board (ARB) and Cal/EPA's OEHHA (http://www.arb.ca.gov/toxics/rmpolicy.pdf). For the HR~~S~~A methodology used in the Air Toxics NSR Program for gasoline dispensing facilities, the Air District has conformed with these State guidelines and adopted the interim exposure assessment recommendations made by ARB and OEHHA. The Air District will continue to use this interim recommendation for gasoline dispensing facilities even though newer guidance has been adopted by ARB and OEHHA. The interim policy recommend~~s~~ed, where a single cancer risk value for a residential receptor is needed or prudent for risk management decision-making, the potential cancer risk estimate for the inhalation exposure pathway be based on the breathing rate representing the 80th percentile value of the breathing rate range of values (302 L/kg-day).

To assess potential inhalation exposure to offsite workers, OEHHA recommend~~s~~ed assuming a breathing rate of 149 L/kg-day. This value corresponds to a 70 kg worker breathing 1.3 m^3/hour (breathing rate recommended by USEPA as an hourly average for outdoor workers) for an eight-hour day.

For children, OEHHA recommend~~s~~ed assuming a breathing rate of 581 L/kg-day to assess potential risk via the inhalation exposure pathway. This value represents the upper 95% percentile of daily breathing rates for children.

2.2.1.2 Exposure Time and Frequency

Based on OEHHA's 2003 HRA Guidelines ~~recommendations~~, the Air District will estimate cancer risk to residential receptors for gasoline dispensing facilities assuming exposure occurs 24 hours per day for 350 days per year. For a worker receptor, exposure is assumed to occur 8 hours per day for 245 days per year. However, for some professions (e.g., teachers) a different schedule may be more appropriate. For children at school sites, exposure is assumed to occur 10 hours per day for 180 days (or 36 weeks) per year.

2.2.1.3 Exposure Duration

Based on OEHHA's 2003 HRA Guidelines ~~recommendations~~, the Air District will estimate cancer risk to residential receptors for gasoline dispensing facilities based on a 70-year lifetime exposure. Although 9-year and 30-year exposure scenarios may be presented for information purposes, risk management decisions will be made based on 70-year exposure duration for residential receptors. For worker receptors for gasoline dispensing facilities, risk management decisions will be made based on OEHHA's 2003 recommended exposure duration of 40 years. Cancer risk estimates for children at school sites will be calculated based on a 9-year exposure duration.

2.2.2 Health Effects Values

Chemical-specific health effects values have been consolidated and are presented in Regulation 2, Rule 5, Table 2-5-1 Toxic Air Contaminant Trigger Levels for use in conducting HR~~S~~As. Toxicity criteria summarized in Table 2-5-1 represent health effects values that were adopted by OEHHA/ARB as of ~~June 1, 2009~~ March 31, 2016. ~~Although 8-hour RELs for six chemicals were adopted in December 2008, these 8-hour RELs will not be used in conducting HRSAs until OEHHA finalizes and adopts the revised TSD for Exposure Assessment. Prior to use in Regulation 2, Rule 5, any new or revised health effects values adopted by OEHHA/ARB after June 1, 2009 will be reviewed by the District through a rule development process. The District will evaluate the new criteria for implementation, enforcement, and feasibility of compliance with the project risk limits.~~

2.2.3 Cancer Risk Calculations

In accordance with OEHHA's revised health risk assessment guidelines (specifically, OEHHA's Technical Support Document (TSD) for Cancer Potency Factors, adopted

June 1, 2009), calculation of cancer risk estimates for gasoline dispensing facilities should incorporate age sensitivity factors (ASFs).

The revised TSD for Cancer Potency Factors provides updated calculation procedures used to consider the increased susceptibility of infants and children to carcinogens, as compared to adults. The ~~updated~~ calculation procedure below includes the use of age-specific weighting factors in calculating cancer risks from exposures of infants, children and adolescents, to reflect their anticipated special sensitivity to carcinogens. OEHHA recommended~~s~~ weighting cancer risk by a factor of 10 for exposures that occur from the third trimester of pregnancy to 2 years of age, and by a factor of 3 for exposures that occur from 2 years through 15 years of age. These weighting factors should be applied to all carcinogens emitted from gasoline dispensing facilities. For estimating cancer risk for residential receptors, the incorporation of the ASFs results in a cancer risk adjustment factor of 1.7. For estimating cancer risk for student receptors, an ASF ~~cancer risk adjustment factor~~ of 3 should be applied. For estimating cancer risk for worker receptors, an ASF ~~cancer risk adjustment factor~~ of 1 should be applied.

The cancer risk adjustment factors~~-~~for gasoline dispensing facilities were developed based on the following:

Receptor	Age ~~Bin~~Groups	ASF	Duration	Cancer Risk Adjustment Factor
Resident	Third trimester to age 2 years	10	2.25/70	0.32
	Age 2 to age 16 years	3	14/70	0.6
	Age 16 to 70 years	1	54/70	0.77
				1.7
Student	Age 2 to age 16 years	3	9 years	***3***
Worker	Age 16 to 70 years	1	40 years	***1***

Since the exposure duration for a student receptor (9 years), and worker receptor (40 years), falls within a single age ~~bin~~ group, the student cancer risk adjustment factor is 3 and the worker cancer risk adjustment factor is 1.

Cancer risk adjustment factors should be used to calculate all cancer risk estimates for gasoline dispensing facilities. ~~Please note that these ASFs represent default values. In cases where there are adequate data for a specific carcinogen potency by age, OEHHA will recommend chemical-specific adjustments to cancer risk estimates. In addition, OEHHA is currently revising the TSD for Exposure Assessment. When the revised TSD for Exposure Assessment is finalized and adopted, the District will revise the HRSA Guidelines accordingly.~~

Below is the equation for calculating cancer risk estimates for gasoline dispensing facilities:

Cancer Risk = Dose * Cancer Risk Adjustment Factor * Cancer Potency Factor

~~2.4 Stochastic Risk Assessment~~

~~For a stochastic, multipathway risk assessment, the potential cancer risk should be reported for the full distribution of exposure from all exposure pathways included in the risk assessment. For risk management decisions, the potential cancer risk from a stochastic, multipathway risk assessment should be based on the 95th percentile cancer risk.~~

2.2.4 Noncancer Health Impacts

In accordance with OEHHA's 2003 HRA Guidelines, noncancer health impacts should be calculated using the hazard index approach. Air District HRAs should follow OEHHA's recommended calculation procedures for noncancer health impacts, as presented in Section 8.3 of OEHHA's 2003 HRA Guidelines, using the RELs identified in Table 2-5-1.

Regarding Section 8.3.A of OEHHA's 2003 HRA Guidelines, the Air District does not require inclusion of the contribution of background criteria pollutants to respiratory health effects for Air District HRAs.

3. Assessment of Acrolein Emissions

~~Currently, CARB does not have certified emission factors or an analytical test method for acrolein. Therefore, since the appropriate tools needed to implement and enforce acrolein emission limits are not available, the District will not conduct a HRSA for emissions of acrolein. When the necessary tools are developed, the District will re-evaluate this specific evaluation procedure and the HRSA guidelines will be revised.~~CARB has issued advisories regarding acrolein emissions data determined using CARB Method 430 (M430): http://www.arb.ca.gov/ei/acrolein.htm. The CARB advisories state that acrolein emissions data determined using CARB Method 430 are suspect and should be flagged as non-quantitative. Although acrolein emission factor data is available for several types of stationary combustion sources, this data was developed based on source tests that utilized CARB Method 430 or equally inaccurate test methods; therefore, the validity of this acrolein emission factor data is suspect. In addition, the tools the Air District needs to implement and enforce acrolein emission limits are not available due to the lack of an ARB approved acrolein test method for stationary sources.

In consideration of this information, the Air District has determined that acrolein emissions may be included in Air District HRAs for screening or informational purposes, but the Air District will exclude acrolein emissions from the final HRA results on which risk management decisions will be based.

References

1 *"Air Toxics "Hot Spots" Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments," OEHHA, August, 2003*

2 *"Air Toxics "Hot Spots" Program Risk Assessment Guidelines, Part IV. Technical Support Document for Exposure Assessment and Stochastic Analysis", OEHHA, September, 2000*

3 *"Air Toxics Hot Spots Program Risk Assessment Guideline; Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures", OEHHA, May, 2009*

4 *"Air Toxics Hot Spots Program Risk Assessment Guidelines; Technical Support Document for the Derivation of Noncancer Reference Exposure Levels", OEHHA, June, 2008*

~~5 "Guidance for School Site Risk Assessment Pursuant to Health and Safety Code Section 901(f): Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites: Final Report", Integrated Risk Assessment Section, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, February, 2004.~~

~~6~~5 *"Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values", California Air Resources Board, updated ~~February, 2009~~March 28, 2016*

6 *"Air Toxics Hot Spots Program Risk Assessment Guidelines; Guidance Manual for Preparation of Health Risk Assessments", OEHHA, February, 2015*

7 *"Air Toxics Hot Spots Program Risk Assessment Guidelines; Technical Support Document for Exposure Assessment and Stochastic Analysis", OEHHA, August, 2012*

8 *"Risk Management Guidance for Stationary Sources of Air Toxics", Air Resources Board and California Air Pollution Control Officers Association, July 23, 2015*

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

PROPOSED AMENDMENTS TO:

BAAQMD REGULATION 2, RULE 5:
NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

Staff Report
December 2016

APPENDIX D

Socioeconomic Impacts Analysis

bae urban economics

Proposed Changes to the Air District's Air Toxics New Source Review (NSR) Program

Submitted to: Bay Area Air Quality Management District

July 20, 2016

bae urban economics

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San Francisco
2600 10th Street
Suite 300
Berkeley, CA 94705
510.547.9380

Sacramento
803 2nd Street
Suite A
Davis, CA 95616
530.750.2195

Los Angeles
706 South Hill Street
Suite 1200
Los Angeles, CA 90014
213.471.2666

Washington DC
1400 I Street NW
Suite 350
Washington, DC 20005
202.588.8945

New York City
49 West 27th Street
Suite 10W
New York, NY 10001
212.683.4486

www.bae1.com

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DESCRIPTION OF PROPOSED RULE AMENDMENT

The Bay Area Air Quality Management District (“Air District” or “BAAQMD”) proposes to amend Regulation 2, Rule 5 (Rule 2-5), the New Source Review (“NSR”) of Toxic Air Contaminants (“TACs”). This section describes the proposed amendments in detail, largely repeating the description found in the Staff Report describing the proposed amendments.[1]

This report assesses socioeconomic impacts related to these proposed changes to the Air District’s Air Toxics New Source Review (NSR) Program, including amendments to Rule 2-5 and associated procedures. The Air Toxics NSR Program is a health risk-based program, where program requirements are based on results of health risk assessments (HRA). HRA is an analysis that estimates the increased likelihood of health risk for individuals in the affected population that may be exposed to emissions of one or more toxic substances.

The goals of the Air Toxics NSR Program are to:

- Evaluate and mitigate potential increases in public health risks resulting from new and modified sources emitting TACs; and
- Provide net health risk benefits by improving the level of control when existing sources are modified or replaced.

Rule 2-5 requires an assessment of the health impacts from these new and/or modified projects if the TAC emissions exceed Air District specified de minimis risk screen trigger levels. Rule 2-5 also sets health risk thresholds that trigger mandatory use of best available control technology for toxics (TBACT) and establishes health risk limits (permit denial levels) for these projects.

In accordance with Regulation 2, Rule 5, project health impacts are determined through preparation of a health risk assessment (HRA), which is completed following the Air District’s HRA Guidelines. The Air District’s HRA guidelines generally conform to the health risk assessment methodology that was developed by Cal/EPA’s Office of Environmental Health Hazard Assessment (OEHHA) specifically for air pollution control programs in California and to the risk management guidance for stationary sources adopted by the California Air Resources Board (CARB) and the California Air Pollution Control Officers Association (CAPCOA). The OEHHA Health Risk Assessment Guidelines contain several sections which identify (a) overall methodology, (b) exposure assessment assumptions and procedures, and (c) health effects data such as cancer potency factors and reference exposure levels. The CARB/CAPCOA risk management guidelines provide additional recommendations regarding specific types of projects.

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[1] From BAAQMD Staff Report, "Workshop Report - Proposed Amendments to Air District Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants” henceforth referred to as the "Staff Report," January 2016.

The Air District's current HRA Guidelines generally follow the 2003 OEHHA Guidelines, except that the Air District's HRA Guidelines use OEHHA health effects values adopted as of January 1, 2010 and the Air District's cancer risk calculation procedures include the age sensitivity factors (ASFs) discussed in OEHHA's June 1, 2009 Technical Support Document for Cancer Potency Factors. These ASFs are one part of the 2015 revisions to OEHHA's HRA Guidelines. In addition, the Air District's current HRA Guidelines incorporate CARB's 2003 Interim Risk Management Policy for inhalation-based residential cancer risk assessments.

OEHHA periodically updates health effects values and health risk assessment procedures to reflect advances in science. Most recently, as mandated under the Children's Environmental Health Protection Act of 1999 (SB25), OEHHA developed major revisions to these health risk assessment guidelines that considered protection of children's health. Advances in science have shown that early-life exposures to air toxics contribute to an increased lifetime risk of developing cancer compared to exposures that occur in adulthood. OEHHA's 2015 risk assessment methodology reflects both this greater sensitivity and more refined data in childhood and adult exposure to air toxics. In addition, OEHHA has adopted a number of updates to health effects values since the Air District's HRA Guidelines were last revised.

In response to these OEHHA updates, CARB and CAPCOA adopted an updated Risk Management Guidance Document for Stationary Sources of Air Toxics on July 23, 2015. This document provides risk management guidance for sources subject to stationary source permitting and Air Toxic Hot Spots programs including an updated Risk Management Policy for Inhalation Risk Assessments that replaces the 2003 Interim Risk Management Policy.

The primary purpose of this Toxics NSR rule amendment is to incorporate OEHHA's 2015 Health Risk Assessment Guidelines and CARB/CAPCOA's 2015 Risk Management Guidelines into the Air District's Toxics NSR rule. This rule amendment will also include new and revised health effects values that have been adopted by OEHHA since January 2010, as well as revised risk assessment trigger levels. The Air District is proposing several rule amendments related to modified sources to improve the transparency of HRA results and to streamline procedures for these projects. The Air District is proposing a few additional amendments to this rule to exempt small engines, remove unnecessary language, and clarify requirements. The Air District is delaying implementation of the 2015 risk assessment and risk management guidelines for gasoline dispensing facilities (GDFs), but GDFs will be subject to the updated health effect limits and other Rule 2-5 amendments. The Air District is not proposing any changes to the current TBACT thresholds or project risk limits.

The overall effect of the Air District's proposed rule revisions is that cancer risk will increase for many projects even though emissions remain the same. This is because estimating cancer risk using the new and better scientific information contained in the revised OEHHA and CARB/CAPCOA guidelines will result in higher risk numbers for many toxic air contaminants. For most toxic air contaminants, the cancer risk will increase by about 40 percent for the same emissions level compared to the cancer risk calculated using the Air District's current HRA Guidelines. For a dozen TACs, the cancer risk could increase by up to a factor of five. The net result of these proposed revisions is that projects will trigger HRA and TBACT requirements and will reach project risk limits at lower emission rates. More projects will be required to control TAC emissions and to reduce project health impacts than would otherwise be required to do so under the current rule.

METHODOLOGY

BAE Urban Economics (BAE) has analyzed the socioeconomic impacts of the rule in part by following the methodology used by Applied Development Economics (ADE) in their 2009 analysis (the "ADE Report") of previous revisions to the same Rule. Where relevant, this will allow consistency in comparing the impacts at that time and the impacts of the current New Source Review rule revisions.

The analysis begins with an overview of current demographic and economic conditions in the Air District region, to provide context for the impact analysis that follows. Following that overview, BAE provides more detail on specific industries that may be affected by the rule revisions, including data on number of establishments as classified by number of employees, estimated revenues per employee, and net profits for each affected industry.

This report uses data from a number of sources, including County Business Patterns, the 2012 Economic Census, the US Bureau of Labor Statistics, the State of California's Employment Development Department (EDD) Labor Market Information Division and Department of Finance, the Internal Revenue Service, and the Air District itself.

Using this information, BAE generated an overview of regional demographic and economic trends, developed a profile of potentially impacted business establishments and estimate net income as percent of revenues. These figures were then compared to the compliance costs associated with the revised Rule, and determined the potential for these costs to be a significant portion of estimated profits (using a 10 percent impact threshold). Then, to the extent that the impacts on profit could result in job losses, BAE analyzed the direct and indirect job losses using the IMPLAN input-output model. Finally, the potential for impacts on small businesses is assessed.

REGIONAL TRENDS

Regional Demographic Trends

Table 1 shows the population and household trends for the nine county Bay Area and California between 2000 and 2015. During this time, the Bay Area's population increased by 10.7 percent, compared to 14.3 percent for California as a whole. Similarly, the number of Bay Area households grew by 8.5 percent, compared to 11.5 percent growth statewide, as average household size increased in both geographies.

Table 1: Population and Household Trends, 2000-2015

Bay Area (a)	**2000**	**2015**	**Total Change 2000-2015**	**% Change 2000-2015**
Population	6,784,348	7,510,942	726,594	10.7%
Households	2,466,020	2,675,537	209,517	8.5%
Average Household Size	2.69	2.75		
California				
Population	33,873,086	38,714,725	4,841,639	14.3%
Households	11,502,871	12,830,035	1,327,164	11.5%
Average Household Size	2.87	2.95		

Notes:
(a) Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties.

Sources: California State Department of Finance, 2015; US Census, 2000; BAE 2015.

The Bay Area's slower growth is tied to its relatively built-out environment, compared to the state overall. While Central Valley locations, such as the Sacramento region, experienced large increases in the number of housing units, the Bay Area only experienced moderate increases in housing units.

Regional Economic Trends

Table 2 shows jobs by sector in 2010 and 2015[2] for the Bay Area and California. In the five-year period between 2010 and 2015, the Bay Area's employment base grew by 17.5 percent, increasing from 3.2 million jobs to 3.7 million jobs, as the area economy has recovered from the depths of the Great Recession and continued to grow. The state saw somewhat smaller job growth, increasing by 12.3 percent from 14.7 million jobs in 2010 to 16.5 million jobs in 2015.

The largest non-government sectors in the Bay Area economy are Professional & Business Services; Education & Health Services; Leisure & Hospitality; and Retail Trade. These sectors each constituted nine percent or more of the region's total jobs in 2015. Overall, the Bay Area's economic base largely reflects the state's base, sharing a similar distribution of employment across sectors. One noteworthy variation is the high employment in the Professional & Business Services, which makes up 19.2 percent of employment in the Bay Area compared to only 15.1 percent statewide.

All industry sectors showed an increase in employment in the Bay Area between 2010 and 2015, with increases of greater than 20 percent in Mining, Logging, & Construction; Information; Professional & Business Services; and Leisure & Hospitality. Statewide growth was also over 20 percent in three of these four sectors; Information only grew by 12.6 percent, compared to 44.4 percent in the Bay Area, where the tech economy is driving growth. For both the Bay Area and the state, the slowest growth was in the Government sector.

Summary of Regional Trends

The Bay Area economy is currently strong, with strong growth and recovery from the recession, particularly in professional services and technology-related industries. Population is also growing, albeit at a slower rate than jobs.

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[2] Most recent year for which full-year employment data are available.

Table 2: Jobs by Sector, 2010-2015 (a)

	Bay Area					California				
	2010 (b)		2015 (c)		% Change	2010 (b)		2015 (c)		% Change
Industry Sector	**Jobs**	**% Total**	**Jobs**	**% Total**	**2010-2015**	**Jobs**	**% Total**	**Jobs**	**% Total**	**2010-2015**
Agriculture	20,900	0.7%	21,800	0.6%	4.3%	382,800	2.6%	423,300	2.6%	10.6%
Mining, Logging, and Construction	132,600	4.2%	179,800	4.8%	35.6%	586,700	4.0%	756,400	4.6%	28.9%
Manufacturing	307,500	9.7%	333,600	9.0%	8.5%	1,244,000	8.5%	1,291,900	7.8%	3.9%
Wholesale Trade	113,200	3.6%	127,800	3.4%	12.9%	644,000	4.4%	721,200	4.4%	12.0%
Retail Trade	309,700	9.8%	345,700	9.3%	11.6%	1,517,700	10.3%	1,663,100	10.1%	9.6%
Transportation, Warehousing, and Utilities	89,500	2.8%	106,200	2.9%	18.7%	466,300	3.2%	554,000	3.4%	18.8%
Information	113,500	3.6%	163,900	4.4%	44.4%	429,000	2.9%	483,000	2.9%	12.6%
Financial Activities	168,400	5.3%	180,100	4.8%	6.9%	759,700	5.2%	797,400	4.8%	5.0%
Professional & Business Services	546,500	17.3%	716,100	19.2%	31.0%	2,076,900	14.2%	2,493,800	15.1%	20.1%
Educational & Health Services	474,500	15.0%	552,300	14.8%	16.4%	2,123,400	14.5%	2,456,200	14.9%	15.7%
Leisure & Hospitality	325,900	10.3%	405,100	10.9%	24.3%	1,501,600	10.2%	1,830,000	11.1%	21.9%
Other Services, except Public Administration	108,500	3.4%	123,600	3.3%	13.9%	484,900	3.3%	545,700	3.3%	12.5%
Government (d)	458,200	14.5%	468,100	12.6%	2.2%	2,448,400	16.7%	2,458,800	14.9%	0.4%
Total, All Employment (e)	**3,168,000**	**100.0%**	**3,723,800**	**100.0%**	**17.5%**	**14,665,300**	**100.0%**	**16,474,800**	**100.0%**	**12.3%**

Notes:
(a) Includes all wage and salary employment.
(b) Represents annual average employment for calendar year 2010.
(c) Represents annual average employment for calendar year 2015.
(d) Government employment includes workers in all local, state and Federal workers, not just those in public administration. For example, all public school staff are in the Government category.
(e) Totals may not sum from parts due to independent rounding.
(f) Santa Clara County data is for MSA, which includes San Benito County. As of 2014, San Benito had approximately 16,100 wage and salary jobs, an insignificant number relative to the Bay Area total.

Sources: California Employment Development Department, 2016; BAE, 2016.

SOCIO-ECONOMIC IMPACTS

This section of the report analyzes socio-economic impacts stemming from the revisions to Rule 2-5. In order to estimate the economic impacts of the changes to the Rule, this report compares the affected industries' annualized compliance costs with their profit ratios. The following analysis uses data from the Air District, 2014 US Census County Business Patterns, the IRS, and the 2012 US Economic Census.

BAAQMD has identified the potential project types, and based on that information, has evaluated the types of industries and establishments that would likely be impacted by the rule revisions. Detail on the project types and the industries affected can be found below. In determining the typical source categories identified below, the Air District analyzed its databases and identified a number of types of businesses that might be subject to the rule changes.

In addition to direct impacts, any decline in revenues for the directly affected industries may result in a "ripple effect" through the regional economy. These effects are analyzed by utilizing the IMPLAN input-output model, as discussed in the section on regional indirect and induced impacts below.

Affected Industries

Based on an analysis of past trends, the Air District estimated the number of affected projects by project type on an annual average basis as shown in Table 3.[3] This table also shows potential modifications and controls to meet the revised Rule. For diesel engines, more detailed industry assumptions are available from the previous study for this rule conducted in 2009. Based on additional discussions with BAAQMD regarding industries historically affected by the Rule, Table 4 shows detail on the industries likely to be affected by the proposed rule changes. According to the estimates derived from the US Census, in 2014, the Bay Area had approximately 17,000 establishments in industries potentially affected, with a total of 485,000 jobs, or an average of 28 jobs per establishment. It is important to note, however, that while the rule may affect specific businesses in this broad spectrum of industries, BAAQMD analysis as shown in Table 3 indicates the actual number of projects subject to the Rule in any given year is extremely small. The Rule covers many types of industries in large part due to the regulations associated with emergency diesel-powered generators, which are used across a broad variety of businesses and institutions. Furthermore, some of the affected industries include real estate operators whose properties are occupied by other businesses.

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[3] Note that some of these uses have an annual average occurrence <1, but are shown here to show all impacted potential industries.

Table 3: Annual Average Number of Projects That May Require Project Modifications and Potential Controls

Types of Projects	Projected Total Number of Projects Per Year	Limit Throughput Rate or Operating Time	Diesel Particulate Filters	Oxidation Catalysts	Enclosures/ Baghouses	Carbon Absorbers	Thermal or Catalytic Oxidizers	Other Risk Reduction Measures
Diesel Engines – emergency	45	37	4					4 – increase stack height
Diesel Engines – fire pump	1		1					
Diesel Engs – portable/prime	2		2					
Gas Engines – power plant	1	possible		1				increase stack height or revise source location
Crematory – pet or human	1	1 or …						increase stack height or revise source location
Other Combustion	1	1 or …						increase stack height or revise source location
Gas Stations – new/modified	1	1						For new stations, possibly revise source locations
Remediation – SVE	3	possible				possible	3	If proposed project already has oxidizers, use other possible control measures or increase stack height or change source location
Cement, Concrete, and Asphalt	2	possible			2			revise source location
Coating and Solvent	1	possible				possible	1	increase stack height
Landfill Modifications	1							1 - Set TAC Concentration Limits for LFG
Solid Material Handling	1				1			

Table 4: Profile of Affected Industries

General Use Description	NAICS	Employment (a)	Average Employment per Establishment	Number of Establishments (by workforce size) 1-4	5-9	10-19	20-49	50-99	100+	Total
Office	531120	10,449	5	1,658	406	131	35	11	6	2,247
Industrial	31-33	237,546	31	3,130	1,503	1,214	1,011	436	450	7,744
Refinery	324110	3,570	298	4	1	1	-	1	5	12
Institutional: education	6111	30,494	43	139	85	97	198	115	72	706
Institutional: cultural	712	5,416	32	77	33	23	11	12	13	169
Institutional: Hospital	622	115,053	1,085	7	1	2	-	2	94	106
Institutional: residential	531110	10,449	5	1,658	406	131	35	11	6	2,247
Institutional: Hotel/Motel	721110	47,367	42	252	143	257	270	79	114	1,115
Cell phone tower	517210	5,072	19	59	43	79	65	9	6	261
Retail Center	531120	5,130	5	837	165	60	26	11	2	1,101
Gas Engines	22111	915	16	21	11	10	13	3	-	58
Other Combustion	562211,562213	612	28	9	5	1	3	3	1	22
Crematories	812220	830	14	17	15	16	11	2	-	61
Gas Dispensing Facilities	4471	9,090	7	450	580	194	49	3	-	1,276
Remediation - SVE	562910	2,685	28	20	18	18	23	11	5	95
Cement, Concrete, and Asphalt	3273	2,773	27	20	20	25	24	9	4	102
Coating and Solvent	332812	828	15	16	12	15	9	3	-	55
Landfill modifications	562212	458	20	6	2	5	8	2	-	23
Solid Material Handling	562920	872	42	8	2	3	3	3	2	21
Totals		**485,211**	**28**							**17,354**

Notes:
(a) For counties where the actual employment number is not disclosed for confidentiality purposes, the analysis uses the midpoint employment number for each size cohort.
(b) Eliminated double counting for duplicated sectors.

Sources: U.S. Census County Business Patterns, 2014; BAE, 2016.

Compliance Costs

The Air District has identified a range of compliance measures for potential impacted projects. These include the following:

- Limiting Throughput or Operating Hours
- Diesel Particulate Filters
- Oxidation Catalysts
- Enclosures
- Baghouses
- Carbon Absorbers
- Thermal or Catalytic Oxidizers
- Other Risk Reduction Measures (including stack height extension and revised source location)

Following is a brief discussion of each of these compliance measures

Limiting Throughput or Operating Hours

This option is largely available for emergency diesel generators and gas stations; the primary ways to limit throughput involve reduced operating hours, or in the case of gas stations, reduced sales (through either reduced hours or higher prices). Thus, there is no direct cost associated with this option, but for gas stations, it could result in reduced profitability through constraints on operation.

Diesel Particulate Filters

The ADE Report assumed that diesel particulate filter costs were roughly proportional to engine size, with costs in 2009 ranging from $20,000 to $65,000 per engine. Adjusting for inflation and using current factors for annualized costs, this translates into $3,500 to $11,400 annually. BAAQMD provided data on costs for two more recent projects; one of these cost $60,300 with an annualized cost of $8,930, but the other was considerably more expensive, with a cost of $430,000 and an annualized cost of $63,681.[4]

Oxidation Catalysts

BAAQMD provided two cost estimates for this mitigation measure; for a project with a gas pre-treatment system in place, the annualized costs were $14,450; for a project without such a system in place, costs were estimated to be considerably higher, at $116,400 on an annual basis.

[4] For both of these projects, the proposed engines did not meet TBACT requirements. The applicant had purchased (prior to Air District review) older model engines that had diesel PM emission rates greater than the TBACT limit (0.15 grams/bhp-hour). Engines not meeting TBACT are limited to the TBACT threshold of one in a million cancer risk, while a project cancer risk of 10 in a million is allowed, if the engines in the project meet TBACT. As a result, diesel particulate filter costs were high for these projects because the site had to retrofit older model engines to meet TBACT. Newer engines meet TBACT and some already include diesel particulate filters. Applicants are more likely to choose a new engine that meets TBACT or that has an integral diesel particulate filter than to retrofit an existing older model engine. However, should they choose to retrofit an older model engine, the costs could be in the ranges shown.

Enclosures and Baghouses

Air District staff provided estimated annualized baghouse costs of $7,000 per unit, based on an analysis of data from similar installations.

Carbon Absorbers

Air District staff provided estimated annualized baghouse costs of $40,000 per unit, based on an analysis of data from similar installations.

Thermal or Catalytic Oxidizers

No data was provided by the Air District on costs for thermal or catalytic oxidizers. For project types where this is shown as a potential modification or control, alternatives with costs available were assumed.

Other Risk Reduction Measures

One potential compliance measure for several types of projects is increased stack height or revising the source location. BAAQMD provided data on one soil vapor extraction project where the cost of an increased stack was reported as $10,000, for a total annualized cost of $1,481. Since the costs for moving the source location may be variable or unknown, for projects which may have the option of increased stack height or revised source location, increased stack height is assumed in order to measure potential economic impacts.

For landfill modifications, the risk reduction measure presented is to set TAC concentration limits for landfill gas. When calculating fugitive TAC emissions from landfills, the District relies on site-specific landfill gas concentration analyses (if available) or EPA approved default concentration data from AP-42 Chapter 2.4 if data is not available. For one landfill project, TAC emission limits were set based on AP-42 data. A later proposed modification of this landfill (to increase the cumulative amount of waste disposal allowed) was evaluated, and the District found that the existing TAC limits resulted in unacceptable project risks (> 10 in a million cancer risk). The site agreed to use lower TAC limits that would keep them under 10 in a million cancer risk and that are verified by annual laboratory analysis of the landfill gas, which the site was already required to do anyway per Title V requirements. There were not any sort of control or new procedures involved in setting these permit condition limits, so no costs were available for this project. Future landfill modification projects would likely see the same kind of action. At most, the District would add an annual analysis of the landfill gas, if the site were not already doing this. Blue Sky Environmental provided a cost estimate of $770 per run for typical toxic compound analysis of landfill gas. BAAQMD would typically require three runs per test, for a maximum cost of $2,310 per year.

Impacts on Affected Industries

Estimated Rate of Return

The analysis here measures impacts based on changes in net income. In its report on returns of active corporations, the Internal Revenue Service (IRS) provides annual data on total sales and net income for public companies across the broad spectrum of the private sector. For this analysis, 10-

year averages were used such that the impacts of any particular year's performance due to economic fluctuations are lessened. The rates of return for each industry under analysis are presented in the Tables below.

Diesel Fired Emergency Generator Engines

The Air District estimates that in a given year, on average 45 projects of this type will require modifications and potential controls to meet the revised standards. As noted previously, a broad array of locations have emergency generators, ranging from office buildings to hospitals to retail centers. The mix of establishments here is based on the ADE Report, assuming the same mix of location types as found in their analysis in 2009. The impacted industries include the following:

- Office
- Industrial
- Refinery
- Institutional: education
- Institutional: cultural
- Institutional: Hospital
- Institutional: residential
- Institutional: Hotel/Motel
- Cell phone tower
- Retail Center

Table 5 below shows potential impacts on profits estimated based on the assumption that users would be required to install diesel particular filters, which is likely the highest cost solution. The costs have been scaled assuming that larger firms would require larger backup generators, based on the range of costs as discussed above. It should be noted that for the estimated 45 projects affected annually, 37 of them would be able to limit operating time, four would need to increase stack height, and only four would require particulate filters, so this table represents a "worst-case" scenario. For all the sectors except the hotel/motel sector, on average the decline in profits would be less than significant (<10%). For the accommodation sector, a more detailed look (see Appendix A) indicates that the average estimated decline in profits is less than 10 percent for establishments with 100 or more employees; these larger hotels may be the types that would be most likely to install or require a backup power source.

Table 5: Cost Impacts of Installing Diesel Particulate Filters for Emergency Generator Users

User Type	Number of Establish-ments	Average Annual Sales per Establishment	Average Profit Margin 2003-2012	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
Office	2,247	$3,513,366	20.56%	$722,219	$7,599	1.05%
Industrial	7,744	$11,156,742	6.81%	$759,223	$20,263	2.67%
Refinery	12	$881,377,600	6.70%	$59,050,710	$35,533	0.06%
Institutional: education	706	$3,429,812	11.51%	$394,725	$32,256	8.17%
Institutional: cultural	169	$3,183,958	12.92%	$411,419	$19,243	4.68%
Institutional: Hospital	106	$33,130,692	4.22%	$1,398,693	$58,591	4.19%
Institutional: residential	2,247	$1,963,133	20.56%	$403,548	$7,599	1.88%
Institutional: Hotel/Motel	1,115	$3,859,500	4.44%	$171,458	$28,746	16.77%
Cell phone tower	261	$17,656,083	5.79%	$1,022,075	$24,595	2.41%
Retail Center	1,101	$3,706,714	20.56%	$761,964	$7,621	1.00%

Sources: Economic Census, 2012; County Business Patterns 2014; Internal Revenue Service, 2003-2012; BAAQMD, 2016; BAE, 2016.

Diesel Engines: Fire Pump

Fire pumps provide additional pressure as required for building sprinkler systems; as such, they would most likely be found in larger commercial structures or large residential structures. The Air District indicates that the required control measure for these units would be diesel particulate filters, as analyzed above. Thus, the cost impacts would mirror those found above, which are below significant levels for all users except possibly hotels.

Diesel Engines: Portable/Prime

The mitigation measure for these engines is also through particulate filters. These could have a variety of use types. As indicated above by a broad range of uses, the filter costs are generally well below the level of significance for most users.

Gas Engines – Power Plant

The modification assumed for these engines is an oxidation catalyst, with the results of the analysis for this and several other project types found below in Table 6. Based on information provided by the Air District on costs, the industry shows profit losses greater than the 10 percent threshold, but as noted below in Appendix B, this is due to the business data including a substantial number of establishments with only one to four employees; these are not likely to be the businesses undertaking this type of project. Furthermore, oxidation catalysts are not the only possible control option for these projects. One facility reduced the project size from three engines to two engines to meet current Regulation 2-5 requirements and another changed the proposed stack location, rather than putting on oxidation catalysts.

Gas Stations

In the course of developing these Rule revisions, the Air District has determined that it is difficult to predict how many stations will be impacted by such throughput limits and how these limits may impact an individual station or the whole Bay Area gasoline market. In addition, CARB and CAPCOA are planning to develop Industrywide Guidelines for sources such as gasoline dispensing facilities that support essential goods or public services, and CARB is working on updates to gasoline dispensing facility emission factors. Air District staff will need additional time to consider these new guidelines and emission factors and to evaluate the potential impacts to gas stations.

Given these uncertainties, the Air District has decided to continue using its current health risk calculation procedures for gas stations, rather than using the 2015 updated procedures, until CARB and CAPCOA provide the updated Industrywide Guidelines for gas stations. These health risk calculation procedures for gas stations will be described in the Air District's proposed HRA Guidelines. Overall, these HRA guidelines will ensure that gas station health risks are calculated in a manner that is at least as stringent as the current Regulation 2, Rule 5 procedures.

For new or modified Gas Stations, the Air District will use the updated health effects values for toxic air contaminants. For modified gas stations, the Air District will use its proposed revised emission calculation procedure, basing the HRA on the total proposed emissions from the modified gas station rather than the post-1987 increases in emissions at the gas station. Thus, health risk calculations for modified gas stations may include a somewhat larger gasoline throughput rate than current procedures. The worst-case outcome would be that a gas station requesting a throughput increase might not be allowed to have an increase, if the current health risk exceeds 10 in a million. This rule would not require any gas station to reduce an existing throughput limit.

The possible project controls are not changing, but the new health effects values may result in one more gas station per year being subject to a lower throughput limit than they originally requested (probably for a modified station request rather than for a new station request), worst case would be denial of a throughput increase request for a modified station. As a result, there are no socioeconomic impacts related to existing facilities to assess at this time.

Other Combustion Sources

In the last five years, there were three "other combustion" sources in the Bay Area subject to review under this Rule. Two were portable thermal oxidizers used to abate tank degassing operations (often located at petroleum refineries or large chemical plants), but owned by an independent contractor. The other project was a pathological waste incinerator at a VA medical center. Per the independent contractor, the impacts have been assessed relative to waste remediation services. In order to assess impacts, it is assumed here that there will be one project per year. These sources are assumed to be associated with waste treatment facilities and analysis here assumes the use of increased stack height to establish potential costs. The costs of for this measure do not significantly impact profits in this industry overall, with an overall decrease of only 0.15 percent of profits.

Crematories

The two options presented for crematories that might need to make project modifications or add controls are limiting throughput/operating time or increasing stack height. Overall, the compliance costs for crematories are well below significance thresholds, at only 1.13 percent of profits.

Remediation – Soil Vapor Extraction

The companies conducting SVE projects (average of three per year over last five years) included a mix of business types, including petroleum producing companies and environmental remediation firms. For this type of project, the possible modifications and controls include limiting throughput rate or operating time, carbon absorbers, thermal or catalytic oxidizers, and increasing stack height/revising source location. The analysis here assumes the use of carbon absorbers, for which data were available as provided by the Air District and which entail a higher cost than stack height increases, in order to be conservative in the analysis. On average, the impact on profits is estimated at 9.42 percent, slightly below the significance threshold.

Cement, Concrete, and Asphalt

Over the last five years there were two cement plant projects (both at Lehigh), one hot mix asphalt plant project, and eight concrete batch plant projects averaging two projects per year. Available modifications and controls include limiting throughput rate or operating time, enclosures and baghouses, and increasing stack height/revising source location. The analysis here assumes the use of baghouses. The resulting analysis shows profit impacts below the level of significance, at only 1.67 percent.

Coating and Solvent

For this category there have been three projects in five years; it is assumed here that there will be one project per year. This has been for processes across three disparate industries. For the purposes of the analysis here, the impact has been assessed per metal coating, engraving, and allied services to manufacturers, and relies on carbon absorbers. This may be a more expensive option than others provided (e.g., increased stack height), thus representing a more conservative scenario. Assuming this control mechanism, the impacts on profits are estimated at 16.91 percent, above the threshold of significance.

Landfill Modifications

The modification option provided for landfill modifications is to set TAC concentration limits for landfill gas (see Table 3 above). As discussed above, the only costs potentially associated with this are minimal tests associated with testing; assuming these costs, the impacts on profits are well below the level of significance, at only 0.27 percent.

Solid Material Handling

Over the past five years, the Air District has seen five similar projects, at various solid materials handling companies. Assuming the use of baghouses, the impact on profits is estimated at only 0.72 percent, well below the threshold of significance.

Table 6: Cost Impacts for Other Modifications and Potential Controls by Industry

User Type	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
Gas Engines	58	$14,405,791	$975,526	$116,400	11.93%
Other Combustion	22	$11,946,841	$975,377	$1,481	0.15%
Crematories	61	$2,516,392	$131,038	$1,481	1.13%
Remediation - SVE	95	$5,200,597	$424,593	$40,000	9.42%
Cement, Concrete, & Asphalt	102	$7,849,201	$418,202	$7,000	1.67%
Coating and Solvent	55	$2,931,662	$236,523	$40,000	16.91%
Landfill modifications	23	$10,367,780	$846,458	$2,310	0.27%
Solid Material Handling	21	$11,826,756	$965,573	$7,000	0.72%

Sources: Economic Census, 2012; County Business Patterns 2014; Internal Revenue Service, 2003-2012; BAAQMD, 2016; BAE, 2016.

Affected Industries and Regional Impacts

On average, the proposed Rule revision would not result in significant economic impacts in most of the affected industries. The three potentially affected user types are hotels and motels, gas engines at power plants, and projects providing coating and solvents. The associated industries are as follows:

- Hotels (except Casino Hotels) and Motels
- Electric Power Generation
- Metal Coating, Engraving, and Allied Services to Manufacturers

While perhaps overstating the impacts, the following analysis assumes that because of the impact on return, these businesses would close rather than implement modifications or controls. Furthermore, the analysis is based on the most expensive possible control cost, and less expensive control options are available for each of these industries. Based on this and assuming an average size business for each sector, annual lost sales would total approximately $34.7 million with a loss of 156 jobs. This analysis also assumes these businesses would not be replaced by others.

Table 7: Annual Direct Losses Due to Rule Revisions

NAICS	Name of Industry	Project Type	Permits per Year (a)	Average Sales per Establishment	Total Annual Lost Sales	Employment Loss (b)
721110	Hotels (except Casino Hotels) & Motels	Emergency Diesel Engines	4.5	$3,859,500	$17,367,748	139.5
22111	Electric Power Generation	Gas Engines	1	$14,405,791	$14,405,791	4.6
332812	Metal Coating, Engraving, & Allied Services to Manufacturers	Coating and Solvent	1	$2,931,662	$2,931,662	12.0
Total			**6.5**		**$34,705,201**	**156.1**

(a) BAAQMD estimates a total of 45 projects annually involving emergency diesel generators spread across 10 industries (per previous ADE analysis).
(b) Direct employment loss as estimated by IMPLAN model based on revenues.

Sources: BAAQMD; ADE, 2009; 2012 Economic Census; 2014 County Business Patterns; IMPLAN; BAE, 2016.

These impacts could potentially lead to indirect job or other economic losses at other businesses. An analysis of potential indirect impacts follows.

Regional Indirect and Induced Impacts

Indirect and induced impacts refer to regional multiplier effects of increasing or decreasing regional economic activity. If the Rule were to significantly impact local businesses, any closures would result in direct regional economic losses. Firms would no longer buy goods from local suppliers, thereby resulting in reduced indirect impacts, or business-to-business expenditures. In addition, firms would no longer employ regional residents, resulting in induced impacts due to decreases in household spending. Because the proposed amendments could result in significant direct impacts in the three sectors listed above, the analysis uses the IMPLAN input-output model to estimate the indirect or induced impacts.

IMPLAN Input-Output Model

Regional and national input-output models have been used for years by economists as a tool to understand the extremely complex interactions among the various parts of an economy. The economic model used in this analysis, IMPLAN ("IMpact analysis for PLANning"), is a PC-based computer software package that automates the process of developing input-output models for regions within the United States. At the heart of the model is an input-output dollar flow table. For the specified region, the input-output table accounts for all of the dollar flows between the different sectors within the economy. Using this information, the IMPLAN software models the way income injected into one sector is then spent, and re-spent in other sectors of the economy, generating waves of economic activity, or so-called "economic multiplier" effects.

Regions studied using the IMPLAN model can be defined at various geographic levels to fit the particular analysis. The developers of the IMPLAN model maintain large databases of economic and trade data that are collected and published by the federal government, which they compile and format for use in the computer model. The data regarding input-output relationships between sectors used in the model for this analysis are from 2014 (latest currently available), and have been adjusted to provide results expressed in 2016 dollar figures. The data that IMPLAN uses are customized to reflect the specific, detailed economic characteristics of each individual county that is included within the specified regional study area. The IMPLAN model in turn is able to summarize the economic effects of a given economic "event" that is input into the model, expressing the impacts in terms of direct, indirect, and induced jobs and output by industry sector.

- Direct Impacts. Direct impacts refer to the dollar value of economic activity available to circulate through the economy.

- Indirect Impacts. The indirect impacts refer to the inter-industry impacts of the input-output analysis, which would include any payments that the directly impacted industries make to other businesses in the region for goods and services.

- Induced Impacts. The induced impacts refer to the impacts of household expenditures in the model. When households earn income, they spend part of that income on goods and services. The model treats households as an "industry" in determining their local expenditure patterns in the model, based on the availability of goods and services within the geography.

The IMPLAN model is well respected as the industry standard for projecting economic impacts resulting from future "events." In this study, the projected loss of sales in the three impacted industries makes up the "events" in the IMPLAN model.

Economic Impacts of Loss of Sales in Impacted Industries

Table 8 shows the direct, indirect, and induced regional impacts from annual economic output due to the decline in operating revenues flowing through the Air District economy. The total reduction in annual economic output is estimated at approximately $57.6 million annually, with a related annual loss of 284 jobs. It should be noted that this is based on assumptions derived from a variety of sources regarding average firm size, revenues, net income, and modification/control costs. For a particular business establishment, these factors may vary considerably from the assumptions here. In particular, to the extent that mitigation costs are fixed, larger firms would be better able to absorb these costs.

As context, the IMPLAN model estimates the gross regional product for the nine-county Bay Area at approximately $675 billion; the possible reduction in output is equivalent to 0.09 percent of this total for the region.

Table 8: Regional Economic Impacts

Economic Impact	Direct (a)	Indirect (b)	Induced (c)	Total
Output	-$34,705,201	-$9,370,520	-$13,554,608	-$57,630,329
Employment	-156.1	-48.5	-78.9	-283.5

(a) Based on the iniital loss of sales and employment, direct impacts measure the reduction of dollars available to then flow through the local economy.
(b) Indirect Impacts refer to business-to-business impacts.
(c) Induced impacts occur when workers spend their household incomes throughout the local economy.

Sources: IMPLAN; BAE, 2016, based on information provide in other tables.

Impacts on Small Businesses

According to California Government Code 14835, a small business is any business that meets the following requirements:

- Must be independently owned and operated;
- Cannot be dominant in its field of operation;
- Must have its principal office located in California;
- Must have its owners (or officers in the case of a corporation) domiciled in California; and
- Together with its affiliates, be either:
    - A business with 100 or fewer employees, and average annual gross receipts of $10 million or less over the previous three tax years, or
    - A manufacturer with 100 or fewer employees.

While the available data by industry and establishment does not specify principal office location or owner address, or affiliate status, County Business Patterns does provide data by employment class size, making it possible to estimate the number of potentially affected business establishments with less than 100 employees.

Based on the detailed analysis as shown in Appendix A and Appendix B, small businesses in the following industries may be significantly impacted as measured by a 10 percent or greater impact on net income:

- NAICS 6111, Educational Services
- NAICS 712, Museums, Historical Sites, and Similar Institutions
- NAICS 622, Hospitals
- NAICS 721110, Hotels (except Casino Hotels) and Motels
- NAICS 562910, Remediation Services
- NAICS 3273, Cement and Concrete Product Manufacturing
- NAICS 332812, Metal Coating, Engraving, and Allied Services to Manufacturers
- NAICS 562920, Materials Recovery Facilities

Following is a brief discussion covering these industries.

Educational Services and Museums, Historical Sites, and Similar Institutions
These institutional users are listed due to their potential use of diesel backup generators. The use of backup generators is likely associated with larger institutions with a total number of employees greater than the 100+ employment threshold, and that some of these users are government entities that are not subject to an evaluation of profits or net income.

Hospitals
Once again, the larger institutions not impacted as greatly in this category are likely the full-service hospitals that require diesel backup generators. The smaller institutions may be businesses specializing in psychiatric and substance abuse services or other types of care, and may not require the use of emergency generators. Additionally, some of these hospitals may be publicly or non-profit owned.

Hotels and Motels
Smaller hotel operators would see substantial impacts on net income in order to comply with the revised Rule based on worst-case control costs (less expensive control options are available). However, these hotels may be less likely to use backup generators, due to the overall costs relative to their operating margins.

Remediation Services
This category includes the firms associated with SVE projects. Based on historic risk screens, these include larger firms such as full-service petroleum product firms and environmental firms. While some of these environmental firms have less than 100 employees, these are contractors completing cleanup projects for other firms that would be absorbing increased costs.

Cement and Concrete Product Manufacturing
The analysis shows that only extremely small businesses in this sector (with one to four employees) would be significantly impacted. The historic data indicate that the actual businesses that fall under the Rule are larger, e.g., the Lehigh Hanson Cement Plant outside Cupertino.

Metal Coating, Engraving, and Allied Services to Manufacturers
This industry was selected to represent projects using coatings and solvents; however, BAAQMD reports that the only three businesses affected by the Rule over the last five years include a company providing microwave transmission, reception, and related products, a uniform rental company with facilities across the US and Canada, and a satellite manufacturer that is a subsidiary of a larger corporation. Based on corporate financial filings and website descriptions, these companies all have well over 100 employees, and thus are not small businesses as considered here.

Materials Recovery Facilities

The analysis shows that only extremely small businesses in this sector (with one to four employees) would be significantly impacted. Air District staff reports five projects in the last five years that would have been potentially affected by the new guidelines; the firms involved all have more than four workers.

APPENDICES

Appendix A: Detailed Cost Impacts of Diesel Particulate Filters for Emergency Generator Users

Offices

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	1,658	$1,650,126	$339,205	$3,000	0.88%
5-9	406	$4,620,353	$949,775	$15,200	1.60%
10-19	131	$9,570,731	$1,967,391	$27,400	1.39%
20-49	35	$22,771,740	$4,681,033	$39,600	0.85%
50-99	11	$49,173,757	$10,108,318	$51,800	0.51%
100+	6	$115,178,800	$23,676,530	$64,000	0.27%
Total/Average	**2,247**	**$3,513,366**	**$722,219**	**$7,599**	**1.05%**

Based on 2012 Economic Census data for NAICS 531120, Lessors of Nonresidential Buildings (except Miniwarehouses)

Average revenues per employee	$660,050
Average Profit Margin 2003-2012	20.56%

Industrial

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	3,130	$1,187,857	$80,834	$3,000	3.71%
5-9	1,503	$3,325,999	$226,336	$15,200	6.72%
10-19	1,214	$6,889,569	$468,839	$27,400	5.84%
20-49	1,011	$16,392,423	$1,115,514	$39,600	3.55%
50-99	436	$35,398,131	$2,408,864	$51,800	2.15%
100+	450	$82,912,402	$5,642,238	$64,000	1.13%
Total/Average	**7,744**	**$11,156,742**	**$759,223**	**$20,263**	**2.67%**

Based on 2012 Economic Census data for NAICS 31-33, Manufacturing Sector

Average revenues per employee	$475,143
Average Profit Margin 2003-2012	6.81%

Refineries

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	4	$27,022,308	$1,810,446	$3,000	0.17%
5-9	1	$75,662,461	$5,069,248	$15,200	0.30%
10-19	1	$156,729,384	$10,500,586	$27,400	0.26%
20-49	-	$372,907,845	$24,984,153	$39,600	0.16%
50-99	1	$805,264,767	$53,951,287	$51,800	0.10%
100+	5	$1,886,157,071	$126,369,122	$64,000	0.05%
Total/Average	**12**	**$881,377,600**	**$59,050,710**	**$35,533**	**0.06%**

Based on 2012 Economic Census data for NAICS 324110, Petroleum Refineries

Average revenues per employee	$10,808,923
Average Profit Margin 2003-2012	6.70%

Sources: Economic Census, 2012; County Business Patterns 2014; Internal Revenue Service, 2003-2012; BAAQMD, 2016; BAE, 2016.

Appendix A, continued: Detailed Cost Impacts of Diesel Particulate Filters for Emergency Generator Users

Education

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	139	$199,714	$22,984	$3,000	13.05%
5-9	85	$559,198	$64,356	$15,200	23.62%
10-19	97	$1,158,339	$133,309	$27,400	20.55%
20-49	198	$2,756,047	$317,184	$39,600	12.48%
50-99	115	$5,951,464	$684,933	$51,800	7.56%
100+	72	$13,940,006	$1,604,307	$64,000	3.99%
Total/Average	**706**	**$3,429,812**	**$394,725**	**$32,256**	**8.17%**

Based on 2012 Economic Census data for NAICS 6111, Educational Services

Average revenues per employee	$79,885
Average Profit Margin 2003-2012	11.51%

Cultural

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	77	$312,915	$40,434	$3,000	7.42%
5-9	33	$876,162	$113,214	$15,200	13.43%
10-19	23	$1,814,908	$234,516	$27,400	11.68%
20-49	11	$4,318,229	$557,986	$39,600	7.10%
50-99	12	$9,324,871	$1,204,925	$51,800	4.30%
100+	13	$21,841,476	$2,822,275	$64,000	2.27%
Total/Average	**169**	**$3,183,958**	**$411,419**	**$19,243**	**4.68%**

Based on 2012 Economic Census data for NAICS 712, Museums, Historical Sites, and Similar Institutions

Average revenues per employee	$125,166
Average Profit Margin 2003-2012	12.92%

Hospitals

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	7	$528,718	$22,321	$3,000	13.44%
5-9	1	$1,480,412	$62,499	$15,200	24.32%
10-19	2	$3,066,567	$129,463	$27,400	21.16%
20-49	-	$7,296,314	$308,032	$39,600	12.86%
50-99	2	$15,755,808	$665,170	$51,800	7.79%
100+	94	$36,904,545	$1,558,015	$64,000	4.11%
Total/Average	**106**	**$33,130,692**	**$1,398,693**	**$58,591**	**4.19%**

Based on 2012 Economic Census data for NAICS 622, Hospitals

Average revenues per employee	$211,487
Average Profit Margin 2003-2012	4.22%

Sources: Economic Census, 2012; County Business Patterns 2014; Internal Revenue Service, 2003-2012; BAAQMD, 2016; BAE, 2016.

Appendix A, continued: Detailed Cost Impacts of Diesel Particulate Filters for Emergency Generator Users

Residential

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	1,658	$922,027	$189,535	$3,000	1.58%
5-9	406	$2,581,675	$530,698	$15,200	2.86%
10-19	131	$5,347,756	$1,099,302	$27,400	2.49%
20-49	35	$12,723,970	$2,615,581	$39,600	1.51%
50-99	11	$27,476,400	$5,648,139	$51,800	0.92%
100+	6	$64,357,474	$13,229,532	$64,000	0.48%
Total/Average	**2,247**	**$1,963,133**	**$403,548**	**$7,599**	**1.88%**

Based on 2012 Economic Census data for NAICS 531120, Lessors of Nonresidential Buildings (except Miniwarehouses)
Average revenues per employee $368,811
Average Profit Margin 2003-2012 20.56%

Hotels/Motels

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	252	$265,960	$11,815	$3,000	25.39%
5-9	143	$744,688	$33,083	$15,200	45.95%
10-19	257	$1,542,569	$68,528	$27,400	39.98%
20-49	270	$3,670,250	$163,050	$39,600	24.29%
50-99	79	$7,925,613	$352,094	$51,800	14.71%
100+	114	$18,564,020	$824,704	$64,000	7.76%
Total/Average	**1,115**	**$3,859,500**	**$171,458**	**$28,746**	**16.77%**

Based on 2012 Economic Census data for NAICS 721110, Hotels (except Casino Hotels) and Motels
Average revenues per employee $106,384
Average Profit Margin 2003-2012 4.44%

Cell Phone Towers

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	59	$2,074,288	$120,076	$3,000	2.50%
5-9	43	$5,808,006	$336,214	$15,200	4.52%
10-19	79	$12,030,869	$696,443	$27,400	3.93%
20-49	65	$28,625,171	$1,657,053	$39,600	2.39%
50-99	9	$61,813,775	$3,578,274	$51,800	1.45%
100+	6	$144,785,286	$8,381,326	$64,000	0.76%
Total/Average	**261**	**$17,656,083**	**$1,022,075**	**$24,595**	**2.41%**

Based on 2012 Economic Census data for NAICS 517210, Wireless Telecommunications Carriers
Average revenues per employee $829,715
Average Profit Margin 2003-2012 5.79%

Sources: Economic Census, 2012; County Business Patterns 2014; Internal Revenue Service, 2003-2012; BAAQMD, 2016; BAE, 2016.

Appendix A, continued: Detailed Cost Impacts of Diesel Particulate Filters for Emergency Generator Users

Retail Centers

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	837	$1,650,126	$339,205	$3,000	0.88%
5-9	165	$4,620,353	$949,775	$15,200	1.60%
10-19	60	$9,570,731	$1,967,391	$27,400	1.39%
20-49	26	$22,771,740	$4,681,033	$39,600	0.85%
50-99	11	$49,173,757	$10,108,318	$51,800	0.51%
100+	2	$115,178,800	$23,676,530	$64,000	0.27%
Total/Average	**1,101**	**$3,706,714**	**$761,964**	**$7,621**	**1.00%**

Based on 2012 Economic Census data for NAICS 531120, Lessors of Nonresidential Buildings (except Miniwarehouses)

Average revenues per employee	$660,050
Average Profit Margin 2003-2012	20.56%

Sources: Economic Census, 2012; County Business Patterns 2014; Internal Revenue Service, 2003-2012; BAAQMD, 2016; BAE, 2016.

Appendix B: Detailed Cost Impacts for Other Modifications and Potential Controls by Industry

Gas Engines - Power Plant

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	21	$2,206,909	$149,447	$116,400	77.89%
5-9	11	$6,179,346	$418,451	$116,400	27.82%
10-19	10	$12,800,075	$866,791	$116,400	13.43%
20-49	13	$30,455,350	$2,062,364	$116,400	5.64%
50-99	3	$65,765,901	$4,453,510	$116,400	2.61%
100+	-	$154,042,278	$10,431,376	$116,400	1.12%
Total/Average	**58**	**$14,405,791**	**$975,526**	**$116,400**	**11.93%**

Based on 2012 Economic Census data for NAICS 22211, Electric Power Generation

Average revenues per employee	$882,764
Average Profit Margin 2003-2012	6.77%

Other Combustion

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	9	$1,145,730	$93,541	$1,481	1.58%
5-9	5	$3,208,045	$261,915	$1,481	0.57%
10-19	1	$6,645,235	$542,538	$1,481	0.27%
20-49	3	$15,811,077	$1,290,865	$1,481	0.11%
50-99	3	$34,142,760	$2,787,521	$1,481	0.05%
100+	1	$79,971,967	$6,529,160	$1,481	0.02%
Total/Average	**22**	**$11,946,841**	**$975,377**	**$1,481**	**0.15%**

Based on 2012 Economic Census data for NAICS 562211, Hazardous Waste Treatment and Disposal, and 562213, Solid Waste Combustors and Incinerators

Average revenues per employee	$458,292
Average Profit Margin 2003-2012	8.16%

Crematories

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	17	$422,632	$22,008	$1,481	6.73%
5-9	15	$1,183,369	$61,623	$1,481	2.40%
10-19	16	$2,451,265	$127,647	$1,481	1.16%
20-49	11	$5,832,321	$303,712	$1,481	0.49%
50-99	2	$12,594,432	$655,841	$1,481	0.23%
100+	-	$29,499,710	$1,536,165	$1,481	0.10%
Total/Average	**61**	**$2,516,392**	**$131,038**	**$1,481**	**1.13%**

Based on 2012 Economic Census data for NAICS 812220, Crematories

Average revenues per employee	$169,053
Average Profit Margin 2003-2012	5.21%

Sources: Economic Census, 2012; County Business Patterns 2014; Internal Revenue Service, 2003-2012; BAAQMD, 2016; BAE, 2016.

Appendix B, continued: Detailed Cost Impacts for Other Modifications and Potential Controls by Industry

Remediation - SVE

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	20	$422,632	$34,505	$40,000	115.93%
5-9	18	$1,183,369	$96,614	$40,000	41.40%
10-19	18	$2,451,265	$200,129	$40,000	19.99%
20-49	23	$5,832,321	$476,169	$40,000	8.40%
50-99	11	$12,594,432	$1,028,249	$40,000	3.89%
100+	5	$29,499,710	$2,408,448	$40,000	1.66%
Total/Average	**95**	**$5,200,597**	**$424,593**	**$40,000**	**9.42%**

Based on 2012 Economic Census data for NAICS 562910, Remediation Services

Average revenues per employee	$169,053
Average Profit Margin 2003-2012	8.16%

Cement, Concrete, and Asphalt

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	20	$728,100	$38,793	$7,000	18.04%
5-9	20	$2,038,679	$108,620	$7,000	6.44%
10-19	25	$4,222,979	$224,999	$7,000	3.11%
20-49	24	$10,047,777	$535,342	$7,000	1.31%
50-99	9	$21,697,373	$1,156,028	$7,000	0.61%
100+	4	$50,821,364	$2,707,743	$7,000	0.26%
Total/Average	**102**	**$7,849,201**	**$418,202**	**$7,000**	**1.67%**

Based on 2012 Economic Census data for NAICS 3273, Cement and Concrete Product Manufacturing

Average revenues per employee	$291,240
Average Profit Margin 2003-2012	5.33%

Coating and Solvent

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	16	$460,427	$37,147	$40,000	107.68%
5-9	12	$1,289,194	$104,011	$40,000	38.46%
10-19	15	$2,670,474	$215,451	$40,000	18.57%
20-49	9	$6,353,887	$512,625	$40,000	7.80%
50-99	3	$13,720,713	$1,106,972	$40,000	3.61%
100+	-	$32,137,777	$2,592,840	$40,000	1.54%
Total/Average	**55**	**$2,931,662**	**$236,523**	**$40,000**	**16.91%**

Based on 2012 Economic Census data for NAICS 332812, Metal Coating, Engraving, and Allied Services to Manufacturers

Average revenues per employee	$184,171
Average Profit Margin 2003-2012	8.07%

Sources: Economic Census, 2012; County Business Patterns 2014; Internal Revenue Service, 2003-2012; BAAQMD, 2016; BAE, 2016.

Appendix B, continued: Detailed Cost Impacts for Other Modifications and Potential Controls by Industry

Landfill Modifications

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	6	$1,132,284	$92,443	$2,310	2.50%
5-9	2	$3,170,394	$258,841	$2,310	0.89%
10-19	5	$6,567,245	$536,170	$2,310	0.43%
20-49	8	$15,625,514	$1,275,716	$2,310	0.18%
50-99	2	$33,742,053	$2,754,806	$2,310	0.08%
100+	-	$79,033,399	$6,452,532	$2,310	0.04%
Total/Average	**23**	**$10,367,780**	**$846,458**	**$2,310**	**0.27%**

Based on 2012 Economic Census data for NAICS 562212, Solid Waste Landfill

Average revenues per employee	$452,913
Average Profit Margin 2003-2012	8.16%

Solid Material Handling

Number of Employees	Number of Establishments	Average Annual Sales per Establishment	Average Annual Profit per Establishment	Compliance Costs per Establishment	Compliance Costs as % of Profits
1-4	8	$824,027	$67,276	$7,000	10.40%
5-9	2	$2,307,277	$188,373	$7,000	3.72%
10-19	3	$4,779,359	$390,202	$7,000	1.79%
20-49	3	$11,371,579	$928,411	$7,000	0.75%
50-99	3	$24,556,018	$2,004,830	$7,000	0.35%
100+	2	$57,517,116	$4,695,876	$7,000	0.15%
Total/Average	**21**	**$11,826,756**	**$965,573**	**$7,000**	**0.72%**

Based on 2012 Economic Census data for NAICS 562920, Materials Recovery Facilities

Average revenues per employee	$329,611
Average Profit Margin 2003-2012	8.16%

Sources: Economic Census, 2012; County Business Patterns 2014; Internal Revenue Service, 2003-2012; BAAQMD, 2016; BAE, 2016.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

PROPOSED AMENDMENTS TO:

BAAQMD REGULATION 2, RULE 5:
NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

Staff Report
December 2016

APPENDIX E

CEQA: Draft Initial Study and Proposed Negative Declaration

Initial Study/Negative Declaration for the Bay Area Air Quality Management District

BAAQMD Regulation 2, Rule 5 (Regulation 2-5): New Source Review of Toxic Air Contaminants

Prepared for:

Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
Contacts: Sanjeev Kamboj, (415) 749-4634
Carol Allen
(415) 749-4702

Prepared By:

Environmental Audit, Inc.
1000-A Ortega Way
Placentia, CA 92870
Contact: Debra Bright Stevens
(714) 632-8521

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CHAPTER 1

Introduction

1.1 PURPOSE OF THIS DOCUMENT

This Negative Declaration assesses the environmental impacts of the proposed modifications to the Bay Area Air Quality Management District's (BAAQMD or District) Air Toxics New Source Review Program, including amendments to Regulation 2, Rule 5 (Regulation 2-5) (proposed project). This assessment is required by the California Environmental Quality Act (CEQA) and in compliance with the state CEQA Guidelines (Title 14 California Code of Regulations §15000 et seq.). A Negative Declaration serves as an informational document to be used in the decision-making process for a public agency that intends to carry out a project, it does not recommend approval or denial of the project analyzed in the document. The BAAQMD is the lead agency under CEQA and must consider the impacts of the proposed new and amendment rules when determining whether to adopt them. The BAAQMD has prepared this Negative Declaration because no significant adverse impacts are expected to result from modifications to the Air Toxic NSR Program.

1.2 SCOPE OF THIS DOCUMENT

This document evaluates the potential impacts of the proposed amendments on the following resource areas:

- aesthetics,
- agriculture and forestry resources,
- air quality,
- biological resources,
- cultural resources,
- geology / soils,
- greenhouse gas emissions,
- hazards & hazardous materials,
- hydrology / water quality,
- land use / planning,
- mineral resources,
- noise,

- population / housing,
- public services,
- recreation,
- transportation / traffic, and
- utilities / service systems.

1.3 IMPACT TERMINOLOGY

The following terminology is used in this Initial Study/Negative Declaration to describe the levels of significance of impacts that would result from the proposed rule amendments:

- An impact is considered *beneficial* when the analysis concludes that the project would have a positive effect on a particular resource.
- A conclusion of *no impact* is appropriate when the analysis concludes that there would be no impact on a particular resource from the proposed project.
- An impact is considered *less than significant* if the analysis concludes that an impact on a particular resource topic would not be significant (i.e., would not exceed certain criteria or guidelines established by BAAQMD). Impacts are frequently considered less than significant when the changes are minor relative to the size of the available resource base or would not change an existing resource.
- An impact is considered *less than significant with mitigation incorporated* if the analysis concludes that an impact on a particular resource topic would be significant (i.e., would exceed certain criteria or guidelines established by BAAQMD), but would be reduced to a less than significant level through the implementation of mitigation measures.

1.4 ORGANIZATION OF THIS DOCUMENT

The content and format of this document, described below, are designed to meet the requirements of CEQA.

- Chapter 1, “Introduction,” identifies the purpose, scope, and terminology of the document.
- Chapter 2, “Description of the Proposed Rule,” provides background information on the Air Toxic New Source Review Program, describes the proposed rule modifications, and describes the area and facilities that would be affected by the rule.

- Chapter 3, “Environmental Checklist,” presents the checklist responses for each resource topic. This chapter includes a brief setting description for each resource area and identifies the impact of the proposed rule amendments on the resources topics listed in the checklist.
- Chapter 4, “References Cited,” identifies all printed references and personal communications cited in this report.

CHAPTER 2

Description of the Proposed Rule

2.1 INTRODUCTION

The proposed project consists of proposed changes to the Air District's Air Toxics New Source Review (NSR) Program, including amendments to Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants and associated procedures. The Air Toxics Program has three main elements that integrate federal and state mandates and local goals: 1) the pre-construction review of new and modified sources of toxic air contaminants (TAC) emissions (the Air Toxics New Source Review program), 2) the assessment and reduction of health risks from existing facilities (the Air Toxics "Hot Spots" program), and 3) the implementation of air pollution control measures for specific categories of TAC sources. The Air Toxics NSR Program is a health risk-based program, where program requirements are based on results of health risk assessments (HRAs). HRAs are an analysis that estimates the increased likelihood of health risk for individuals in the affected population that may be exposed to emissions of one or more toxic substances.

2.2 OBJECTIVES

The U.S. EPA has set primary national ambient air quality standards for air pollutants to define the levels considered safe for human health. The California Air Resources Board (CARB) has also set California ambient air quality standards. The Bay Area is a non-attainment area for particulate matter of 10 microns or less (PM10) or for particulate matter of 2.5 microns or less (PM2.5). Under State law, non-attainment areas must prepare plans showing how they will attain the state standards. The BAAQMD has prepared, approved and is currently implementing, the 2010 Clean Air Plan (CAP) which provides a plan to show how the Air District will meet applicable air quality standards. The CAP is being updated in 2016.

The primary objectives of the proposed rule amendments are to evaluate and mitigate potential increases in public health risks resulting from new and modified sources emitting TACs and to provide net health risk benefits by improving the level of control when existing sources are modified or replaced. The rule amendment is designed to incorporate the Office of Environmental Health Hazard Assessment's (OEHHA) 2015 HRA Guideline Revisions into Regulation 2-5. The overall effect of the Air District's proposed rule revisions is that cancer risk will increase for many projects even though emissions remain the same. This is because estimating cancer risk using new and better scientific information contained in revised OEHHA and CARB guidelines will result in higher risk numbers for many toxic air contaminants. For most toxic air contaminants, the cancer risk will increase by approximately 40 percent for the same emissions level compared to the cancer risk calculated using the Air District's current HRA Guidelines. For a dozen TACs, the cancer risk could increase by up to a factor of five. The net result of these proposed revisions is that projects will trigger HRA and toxics best available control technology (TBACT) requirements and will reach project risk limits at lower emission rates. More projects will be required to control TAC emissions and to reduce project health impacts than would otherwise be required to do so under the current rule.

2.3 BACKGROUND

Over the last several decades, public concern about air pollution has expanded to include toxic pollutants. A pollutant is considered toxic if it has the potential to cause adverse health effects such as cancer, birth defects, respiratory ailments, or other serious illness. The Air District has implemented programs that are designed to identify and reduce the public's exposure to TACs.

The Air District's Air Toxics Program is directed at reducing TAC emissions from stationary sources. Based on the Air District's TAC emissions inventories, toxicity weighted emissions have decreased by at least 87 percent since 1990. Since Rule 2-5 was last revised in 2010, cancer risk weighted emissions from Bay Area stationary sources have decreased by 26 percent with emission reductions observed for the TACs that contribute most to cancer risk.

The Air Toxics NSR Program and the Air Toxics "Hot Spots" Program are health risk based programs. These programs have action and decision thresholds that are based on estimated health risks for the exposed population. To ensure parity with other air districts within the state and conformity with state mandates, the BAAQMD follows state-wide guidance regarding HRA methodologies to evaluate public exposures to TACs and to calculate and manage the resulting health risks. Although these programs focus on different types of sources (new and modified sources for the Air Toxics NSR Program and existing sources for the Air Toxics "Hot Spots" Program), both programs rely on the same state-wide HRA guidance: Cal/EPA's OEHHA HRA Guidelines.

OEHHA periodically updates these HRA Guidelines to reflect advances in science. In 2015, OEHHA adopted a major update to the HRA Guidelines that focused on children's health protection. The Air District is planning to update the Air Toxic NSR and Air Toxic "Hot Spots" Programs by incorporating OEHHA's 2015 HRA Guideline Revisions into the Air District's health risk assessment procedures for these programs.

This Negative Declaration (Neg Dec) discusses changes to the Air Toxics NSR Program and amendments to the rule that implements this program: Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants.

2.4 AIR TOXICS NEW SOURCE REVIEW (NSR) PROGRAM

The Air Toxics NSR Program was established in 1987 and was initially implemented based on policies and procedures established by the Air District's Air Pollution Control

Officer (APCO). In 2005, the Air District updated the Air Toxics NSR Program and codified the Air Toxics NSR policies and procedures in Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants, in the Manual of Procedures, Volume II, Part 4 - New and Modified Sources of Toxic Air Contaminants, and in the BAAQMD Health Risk Screening Analysis (HRSA) Guidelines. In the 2010 rule amendment, the Air District updated Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants to include new and revised health values as well as age-sensitivity factors. Age sensitivity factors are cancer risk adjustment factors that account for children's heightened sensitivity to air toxics. OEHHA first identified age sensitivity factors in a June 2009 Technical Support Document for the OEHHA HRA Guidelines. These age sensitivity factors are one of several measures OEHHA included in the 2015 HRA Guideline Revisions.

The goal of the Air Toxics NSR Program is to evaluate and mitigate potential increases in public health risks resulting from new and modified sources of TACs based on pre-construction permit review. The program is also intended to reduce existing health risks by requiring updated control requirements when older, more highly polluting, sources are modified or replaced. Regulation 2-5 contains health risk based thresholds at which a new or modified source must employ TBACT and health risk limits that each project cannot exceed. The rule also delineates the procedures to be used for calculating TAC emission increases from sources and projects and for evaluating the health impacts that result from these emission increases.

When evaluating heath impacts from new and modified sources, the Air District follows the BAAQMD HRA Guidelines, which generally conform to State Air Toxics "Hot Spots" HRA guidelines. OEHHA periodically revises the State HRA guidelines and has made a number of changes since the BAAQMD HRA Guidelines were updated in 2010.

The Air Toxics NSR program relies on two primary program components:

- Risk assessment, which involves estimating risk for a project using a prescribed methodology, and
- Risk management, which involves taking action on the project based on risk action levels.

The stringency of the program is affected by both the methodology and the action levels. Stringency can be increased either by changes in methodology that result in a higher calculated risk or by reductions in the risk action levels.

2.5 PROPOSED CHANGES TO AIR TOXICS NSR PROGRAM

The Air District is proposing to increase the stringency of the Air Toxics NSR Program by updating Air District HRA procedures that incorporate the 2015 OEHHA HRA guidelines, thus resulting in higher calculated cancer risks for the same level of emissions. The Air District is not proposing any changes to the risk action levels for the

Air Toxics NSR Program. The Air District is proposing to make the following specific revisions to the Air Toxics NSR Program:

- Implement OEHHA's Revised HRA Guidelines (2015), except for gasoline dispensing facilities, which will continue to follow the Air District's current HRA Guidelines,
- Implement CARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics (2015),
- Update the Air District's acute and chronic emission rate trigger levels for TACs, toxicity weighting factors, and OEHHA health effects values in Table 2-5-1,
- Revise the emission calculation procedures for modified sources that were initially installed before 1987, and add net project risk limits for projects that include these pre-1987 modified sources,
- Extend the look-back period from two years to three years for related applications in a project,
- Add an exemption from health risk assessment for any alteration of a source that results in no increases in toxicity weighted emissions for that source,
- Add an exemption from health risk assessment for internal combustion engines and gas turbines smaller than 50 bhp, and
- Clarify terminology in Regulation 2-5.

CARB is currently working on updating the emission factors and Industrywide HRA guidelines for gasoline dispensing facilities (GDFs). As a result, the Air District is proposing to delay implementation of the updated residential cancer risk calculation procedures for GDFs at this time, but GDFs would be subject to the proposed Rule 2-5 revisions that include updated health effects data, updated TAC trigger levels, and revisions to modified source emission calculation procedures.

2.5.1 Proposed HRA Guidelines

As mandated under the Children's Environmental Protection Act of 1999 or SB25, OEHHA has been evaluating a number of revisions to HRA procedures to include consideration of children's health protection. In the last decade, advances in science have shown that early-life exposures to TACs contribute to an increased lifetime risk of developing cancer, or other adverse health effects, compared to exposures that occur in adulthood.

On March 6, 2015, OEHHA adopted a revised Air Toxics "Hot Spots" Program Guidance Manual for the Preparation of HRAs to replace the 2003 Air Toxic "Hot Spots" Guidance Manual. OEHHA's 2015 HRA Guidelines reflect children's greater sensitivity to TACs, include more refined data related to childhood and adult exposure to air toxics, and affect how risk assessments are conducted. These guideline revisions primarily affect calculated cancer risks for residential receptors.

On July 23, 2015, CARB adopted the CARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics. This document provides guidance on managing potential cancer and non-cancer health risks from sources subject to Air Toxics NSR Permitting and Air Toxics "Hot Spots" Programs. This document includes additional recommendations that affect how risk is calculated for certain types of risk assessments.

The Air District is proposing to incorporate both of these guidance documents into the Air District's Toxic NSR Program. OEHHA's 2015 HRA Guidelines include five key revisions to HRA procedures, which are as follows:

- Age Sensitivity Factors, which are adjustment factors that account for children's heightened sensitivity to air toxics;
- Age-Specific exposure variables, such as breathing rates, dermal uptake rates, food ingestion rates, etc., for each of six age groups;
- Fraction of Time at Home based on updated population and activity statistics;
- Exposure Durations for residents and workers based on updated demographic data; and
- Spatial Averaging of Exposure Concentrations, which reflects a person's typical movement within their home or workspace.

The Air District is proposing to incorporate these five key revisions into the Air District's HRA Guidelines. The Air District has been using Age Sensitivity Factors (ASFs) in toxic NSR HRAs since January 2010. OEHHA's recommended ASFs have not changed. The Air District is proposing to include all of OEHHA's recommended age-specific exposure variables in Air District HRAs. For HRAs involving toxics with only inhalation exposure variables, the Air District is proposing to follow CARB's recommended policy of using the 95th percentile breathing rate for the two most sensitive age groups and the 80th percentile breathing rate for the other age groups (the 95/80 DBR policy). For fraction of time at home (FAH), the Air District will use the new recommended FAH factors for all age groups, including an FAH of 1.0 for children under age 16 when schools are impacted by a project. The Air District is proposing to reduce the exposure duration assumptions to 30 years for residents and 25 years for workers to conform to OEHHA's HRA Guidelines. For spatial averaging, the Air District is proposing to use a 400 square meter grid with 5-meter receptor intervals to determine the average concentration near the maximum impact point.

2.5.2 Impacts of HRA Guidelines Changes

The vast majority of Air District NSR risk assessments involve TACs that have a single exposure pathway (the inhalation pathway). Examples of common inhalation only TACs are: diesel engine exhaust particulate matter (PM), benzene, formaldehyde, and perchloroethylene. As reported in the CARB/CAPCOA Risk Management Guidance for Stationary Sources of Air Toxics, inhalation cancer risks calculated using the 2015 risk assessment procedures are expected to be one and a half to three times higher than inhalation cancer risks calculated using OEHHA's 2003 Risk Assessment Guidelines for the same emission rate and cancer potency value. Age sensitivity factors are the largest contributor to this projected increase in cancer risk. The Air District has included age sensitivity factors in its Toxics NSR program HRAs since 2010. As a result, the Air District expects that including the remaining guideline changes (age specific exposure variables with the CARB 95/80 daily breathing rate policy, fractions of time at home, exposure duration, and spatial averaging) will result in about a 40 percent increase in inhalation cancer risk for most sources compared to the Air District's current toxics NSR risk assessment procedures.

For HRAs that include TACs with multiple exposure pathways, OEHHA's 2015 HRA procedures may result in additional increases in calculated cancer risk compared to the 2003 HRA procedures. Due to the wide variety of possible multiple exposure pathway projects, it is difficult to predict exactly how large of an impact the 2015 risk calculation procedures will have on future projects. However, the Air District found that using 2015 HRA procedures in HRAs for several projects involving multi-pathway pollutants resulted in cancer risks that were three to five times higher than cancer risks determined using current Air District procedures. Less than five percent of the Air District's NSR risk assessments involve multi-pathway pollutants.

2.5.3 Proposed TAC Trigger Level Changes

The Air District uses TAC emission rate trigger levels to determine the need for an HRA for a project involving new and modified sources. The TAC trigger levels are considered to be reasonable de minimis emission rates (acute and chronic) for use at a project-level. Projects with emissions below the TAC trigger levels are unlikely to cause, or contribute significantly to, adverse health risks. These TAC trigger levels are also used: (1) to establish permit requirements for certain sources that may otherwise qualify for permit exemptions, (2) as part of the applicability of the accelerated permit program, and (3) in determining permit fees.

The proposed TAC trigger levels are calculated using: (1) target health risk levels that are considered de minimis for project-level risks; (2) OEHHA health effect values; (3) generally conservative modeling procedures that establish the extent to which a TAC is transported and dispersed in the atmosphere after it is emitted from the source; and (4) health-protective assumptions regarding the extent of an individual's response to an emitted TAC. The current TAC trigger levels and the OEHHA health effects data on which these trigger levels were based are identified in Table 2-5-1 Toxic Air Contaminant Trigger Levels in Regulation 2, Rule 5. Table 2-5-1 was last updated in January 2010.

Since 2010, OEHHA has updated non-cancer health effects values for a number of TACs, has added 8-hour reference exposure levels (RELs) for several TACs, and has identified health effects values for a new TAC. In addition, OEHHA's 2015 HRA Guidelines include updates or revisions to a number of the health protective assumptions that the Air District uses to calculate the TAC trigger levels. The Air District is proposing to incorporate OEHHA's new health effects values and new health risk calculation assumptions into the trigger level calculation procedures. The changes to health effect values will impact acute trigger levels and chronic trigger levels for non-carcinogenic compounds. The changes to the health protective assumptions will impact chronic trigger levels for carcinogenic compounds.

2.5.4 Impacts of TAC Trigger Level Changes

For non-carcinogenic compounds and compounds with acute impacts, the trigger levels will change in proportion to the change in the OEHHA health effect value for that compound. Some compounds have large changes in non-cancer health effects values. For example, the acute REL for benzene will decrease by 98% and the chronic REL for benzene will decrease by 95%. However, for benzene, cancer risk continues to be the dominant chronic health effect. Considering the differences between the acute and chronic trigger levels for benzene, acute impacts are not likely to be a dominant issue for benzene emission projects, such as gasoline dispensing facilities. Cancer risk is expected to be the dominant health effect for 1,3 butadiene as well, but acute health impacts could become more significant for projects emitting nickel and nickel compounds.

The proposed TAC trigger levels will decrease by about 30% for most carcinogenic TACs. The Air District reviewed the proposed TAC trigger levels for several common carcinogens and compared them to expected emission rates from small sources. The Air District found that the proposed chronic trigger level for diesel particulate matter is less than the expected emission rate for some emergency standby engines that are smaller than 50 brake-horsepower (bhp). These small engines (< 50 bhp) are currently exempt from Air District Regulation 9, Rule 8 and from Air District permitting requirements. To prevent unintended consequences for engines smaller than 50 bhp, the Air District is proposing to exempt these small engines from the Regulation 2, Rule 5 health risk assessment requirement.

For a few compounds that have significant carcinogenic impacts from non-inhalation pathways (lead, methylene dianiline, PCBs, and chlorinated dioxins and furans), the TAC trigger level will decrease by about 90%. It is difficult to project how these changes may impact future projects, but projects involving multi-pathway pollutants are not common (less than 5% of the HRAs conducted recently involved multi-pathway pollutants) and emissions of these compounds often result in a small contribution to the maximum project health risk.

2.5.5 Proposed Regulation 2, Rule 5 Amendments

The Air District is proposing to amend Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. The Air District is proposing several rule changes that impact modified sources, related applications in a project, and small engines. These proposed revisions are explained in more detail below. The Air District is also proposing non-substantive rule amendments that will clarify requirements and procedures, improve conformity with OEHHA's HRA Guidelines, and correct citations. The Air District is not proposing any changes to this rule's health risk thresholds.

Modified Sources

The Air District's toxic NSR program became effective on January 1, 1987. Currently, HRAs involving a source that was operating prior to January 1, 1987 are based on the emission increases occurring after this date. For all other new or modified sources, the HRA is based on the total emissions from the proposed new or modified source. This emission calculation disparity for modified sources can create confusion when evaluating HRA results, especially for the public who may not have a detailed understanding of this emission calculation procedural difference. The Air District is proposing to eliminate the January 1, 1987 baseline date for modified sources and to determine health risks using the total proposed emissions from all the sources in the project. This change is intended to improve the public's understanding of HRA results by eliminating the uncertainty regarding emission calculation procedures for modified sources.

Since it is possible that pre-1987 emissions from a modified source could cause a project to exceed a project risk threshold, the Air District is proposing to add several new sections to Rule 2-5 to handle this possible outcome. If pre-1987 emissions from a modified source are above the project risk limits, the Air District is proposing to allow a facility to include contemporaneous toxic emission reductions from other equipment in the HRA to demonstrate that the overall project will meet net project health risk limits that are the same has the current project risk thresholds. The Air District is also clarifying that any source that has no increases in toxicity weighted emissions is exempt from the HRA requirement.

Related Applications in a Project

Currently, a project includes the current application and any related applications submitted within the previous two years. This look-back procedure is intended to discourage circumvention of Rule 2-5 that may occur by breaking a project into multiple applications. The Air District is proposing to extend this look-back period to three years to further discourage circumvention.

Small Engines

The District is adding an exemption from HRA requirements for small engines and gas turbines (< 50 bhp). Engines smaller than 50 bhp are currently exempt from Air District permitting requirements and from state and Air District prohibitory regulations. The proposed trigger level changes could have unintended impacts on these very small sources, such as triggering a risk screen to verify that the engine is exempt from Air District permitting requirements. To avoid this impact, the Air District is proposing to exempt small engines from the HRA requirements.

2.5.6 Impacts of Rule 2-5 Amendments

The proposed amendments to Rule 2-5 that affect modified sources and related applications in a project may result in a higher rate of toxic air contaminant emissions in a project compared to the current rule. As a result of these higher toxic emission rates in the project, a modified source might trigger TBACT and a project may trigger risk reduction measures to meet project risk limits or net project risk limits. However, these types of projects are very rare. The three-year look back period is limited to related projects. Any project that is deemed related under the project definition, ought to meet any tighter restrictions that might apply, as intended by this regulation. For pre-1987 modified sources, the Air District is adding consideration of contemporaneous on-site toxic risk reduction for projects that exceed a risk limit due to these pre-1987 emissions. The net project health risk limits will encourage facilities with significant health risks from older operations to reduce toxic emissions at the site, when these older operations are modified.

Overall, the Air District does not anticipate any changes in the number of projects subject to TBACT or risk reductions as a result of these rule changes due to the rarity of such projects. In the most extreme case, such as a gas station that is meeting TBACT and has no opportunities for contemporaneous on-site reductions, the Air-District would not allow a requested increase in gasoline throughput for that station.

The proposed exemption from HRA requirements for small engines is intended to ensure the status-quo regarding the triggering of HRA requirements. Therefore, this rule change is not expected to have any impacts.

2.6 POTENTIAL ENVIRONMENTAL IMPACTS OF AIR TOXIC NSR PROGRAM CHANGES

The Air District's proposals to update the Air Toxics NSR Program will increase the stringency of this program. Implementing the 2015 OEHHA risk assessment guidelines will result in lower risk screen trigger levels for most of the carcinogenic TACs and will result in higher cancer risks for the same level of TAC emissions. As a result, more new source review projects will be subject to health risk assessment requirements, more NSR projects will trigger TBACT, and more NSR projects will require revisions or limitations to meet the Air District's project risk limits.

The Air District currently conducts about 300 HRAs per year for a wide variety of new and modified sources. About 80 percent of toxic NSR HRAs conducted by the Air District involve diesel-fired internal combustion engines. Although the trigger level threshold for diesel engine exhaust particulate matter is decreasing from 0.34 pounds per year to 0.26 pounds per year, the Air District does not expect an increase in the number of diesel engine projects that are subject to HRA requirements.

The Air District conducts about 60 HRAs per year for toxic NSR projects involving non-diesel engine combustion operations, gas stations, remediation operations, petroleum refinery projects, and other project types. Due to the reduction in HRA trigger level requirements, the Air District expects an additional 100 projects per year to require HRAs.

Currently, about 20 projects per year require some type of risk reduction action to meet TBACT requirements or project risk limits. The Air District anticipates that the rule revisions will increase the number of projects requiring risk reduction to about 80 projects per year. Thus, the rule revisions will require risk reduction measures for about 60 more projects per year. The number and types of control measures that are expected to be implemented as a result of the new OEHHA risk assessment guidelines are summarized in Table 2.6-1.

Table 2.6-1 – Annual Average Number of Projects that May Require Project Modifications and Potential Controls [a]

Types of Projects	Projected Total Number of Projects Per Year [c]	Limit Throughput Rate or Operating Time	Diesel Particulate Filters	Oxidation Catalysts	Enclosure and Vent to Baghouses	Carbon Adsorbers	Thermal or Catalytic Oxidizers	Other Risk Reduction Measures [b]
Diesel Engines – emergency	45	37	4					4 – increase stack height
Diesel Engines – fire pump	1		1					
Diesel Engines – portable/prime	2		2					
Gas Engines – power plant	1	possible [d]		1				increase stack height or revise source location
Crematory – pet or human	1	1 or …						increase stack height or revise source location
Other Combustion	1	1 or …						increase stack height or revise source location
Gas Stations – new/modified	1	1						For new stations, possibly revise source locations
Remediation – SVE	3	possible [d]				possible [d]	3	If proposed project already has oxidizers, use other possible control measures or increase stack height or change source location
Cement, Concrete, and Asphalt	2	possible [d]			2			revise source location
Coating and Solvent	1	possible [d]				possible [d]	1	increase stack height
Landfill Modifications	1							1 – Revise TAC concentration limits for landfill gas
Solid Material Handling	1				1			
Total	60	40	7	1	3		4	5

a. This data is based on BAAQMD health risk assessment data collected between January 1, 2010 and August 31, 2015 (68 months) for permit applications involving new and modified sourced.
b. This table represents the Air Districts best prediction of the preferred control method for a given project. "Other risk reduction measures" explores additional plausible alternatives.
c. Some of these project types have an annual average occurrence of less than 1, but are shown here as 1 to highlight all potentially impacted industries.
d. "Possible" indicates where multiple control measures are feasible and it is less clear which measure is likely to be chosen.

Gasoline dispensing facility (GDF) applications are included in Table 2.6-1. Most GDF applications involve dispenser replacements or other equipment improvements that do not involve any TAC emission increases. Based on recent application data, about 5% of the gas station applications (10 projects per year) involved new or modified gas stations with TAC emission increases that were subject to health risk assessment requirements. The Air District estimates that the proposed TAC trigger level changes could increase the number of new or modified gas stations that are subject to HRA requirements up to about 50 projects per year.

Although more GDFs will be required to undergo HRAs due to the trigger level changes, the Air District does not expect any significant changes to GDF permitting decisions, because GDFs will continue to be subject to the current health risk calculation procedures. For the additional projects triggering HRAs, about 40% are expected to be new stations with proposed throughput rates of 0.5-1.0 million gallons/year. These new low throughput rate stations are expected to have TBACT controls and are likely to meet project risk limits with no project changes. An additional 24 applications/year may involve modified GDFs that trigger an HRA, and 6% of these, or 1 application/year, are likely to require a lower throughput rate than was initially requested, based on current statistics regarding throughput increase requests for modified GDFs. The elimination of the January 1, 1987 baseline date for modified sources could potentially impact these GDF applications as well. If a GDF has a large pre-1987 throughput limit, including the total proposed emissions for a modification request could result in a GDF exceeding a project risk limit based on the facility's currently permitted throughput rate. Since GDFs are employing TBACT and rarely include other types of sources at the site, contemporaneous TAC emission reductions are not likely to be possible for GDFs. In this case, the Air District may need to deny a throughput increase for the proposed project. However, most of the additional modified stations triggering HRAs are expected to be low throughput level stations. Also, none of the GDF applications evaluated since 2010 involved pre-1987 GDFs. Therefore, it is unlikely that a modification of a pre-1987 station will occur that would also have a large enough throughput rate and a high enough project risk to result in denial of a throughput increase request.

In summary, the proposed revisions to the Air Toxics NSR Program will:

- Increase the stringency of this program,
- Allow less toxic emission increases for new or modified sources than would be allowed by the current program,
- Increase the number of new or modified projects that will be subject to HRA requirements from about 300 projects per year currently to about 400 projects per year,
- Increase the number of new or modified projects that will be required to implement risk reduction measures by about 60 projects per year.

2.7 EMISSION CONTROL TECHNOLOGIES FOR TOXICS

To comply with TBACT or project risk limits, some projects involving new or modified sources, which have been identified as potentially exceeding the risk thresholds in Regulation 2-5, may need to implement risk reduction measures. Risk reduction measures may include the use of emission capture and control technologies that are intended to capture and remove a TAC or to convert a TAC into a less toxic material. However, risk reduction measures may also include use of alternative system designs, products, or technologies that reduce or prevent the emission of the TAC or other measures that reduce the amount of TACs that nearby receptors are exposed to. Examples of potential risk reduction measures are:

- Emission Capture and Control Technologies
  - Add system enclosures or emission capture systems;
  - Add emission control systems or conversion devices;

- Pollution Prevention Measures
  - Limit throughput rates or operating times;
  - Employ alternate technologies;
  - Reformulate or substitute products;
  - Modify production systems or practices;

- Public Exposure Reduction Measures
  - Modify source locations
  - Modify exhaust point locations or orientation
  - Increase stack height

The most appropriate risk reduction measures for a project are dependent on many factors such as:

- project design and operating requirements;
- the physical characteristics and chemical properties of the TACs that will be emitted;
- the concentration of TACs in the exhaust stream;
- exhaust system design parameters such as the exhaust flow rate, temperature, pressure, and stack height;
- the efficiency of the collection and control equipment needed to comply with the requirements of the rule;
- availability of alternative technologies or substitute products; and
- the distances to and locations of nearby receptors.

After the types of appropriate risk reduction measures have been identified for a project, the level of risk reduction needed and the cost of the risk reduction measure are key factors for the final risk reduction measure decision.

The type of emission capture and control technology that may be used depends on the specific type of TAC. Generally, TACs may be classified as inorganic aerosols and particulate matter, inorganic gases, volatile organic compounds (VOCs), and semivolatile organic compounds. Each different type of TAC is likely to need a specific type of control technology. Pollution prevention measures are highly dependent on the type of project and the availability of project alternatives. Public exposure reduction measures are available for all types of TAC projects. The most common risk reduction measures that are likely to be encountered as a result of the proposed Regulation 2, Rule 5 amendments are discussed in more detail below.

Emission control technologies that may be applied to new and modified TAC projects as a result of the proposed Regulation 2, Rule 5 amendments are categorized into the following groups and are summarized in Table 2.6-1:

- Enclosures and collection systems for particulate matter TACs;
- Filtration for toxic aerosols and particulate matter;
- Carbon adsorption and adsorption-oxidation systems for VOCs;
- Chemical absorption for VOCs;
- Thermal and catalytic oxidation for inorganic gases (such as hydrogen sulfide) and organic compounds; and
- Combination systems for the control of halogenated VOCs;

While other types of control equipment may be available for emissions control (e.g. wet gas scrubbers), they are either commonly employed and are already part of the project (such as wet scrubbers used to abate acid gas emissions from semiconductor fabrication operations) or are not expected to be used because of cost or control efficiency.

Pollution prevention measures that may be employed by new and modified TAC projects include:

- Reduced throughput or operating time for particulate matter TACs and organic compound TACs
- Alternative technologies for particulate matter
- Product substitution for VOCs

Public exposure reduction measures may be used for any type of TAC emission.

Table 2.7-1 – Risk Reduction Measures and Target Substances

Risk Reduction Measure	Substance Group	Control Efficiency
Enclosures	Particulates	Varied
Capture and Collection Systems	VOCs and Particulates	Varied
Diesel Particulate Filter	Particulates	85%
Baghouse	Particulates	99-99.9%
HEPA filter and pre-filter	Particulates	99.9-99.99%
Carbon Adsorption	VOCs	90-99%
Thermal and Catalytic Oxidizers	VOCs and Inorganic Gases	98-99.9%
Reduced Throughput or Operating Time	VOCS and Particulates	Varied
Alternative Technologies	Particulates	Up to 100%
Product Substitution	VOCs	Up to 100%
Relocate Source or Stack	All TAC Types	Not Applicable
Stack Modifications	All TAC Types	Not Applicable

2.7.1 Enclosures

Cement plants and concrete batch plants use raw materials that contain toxic metals and crystalline silica. Particulate matter emissions from the storage, handling, and processing of these raw materials contains these TACs and can become airborne or contaminate groundwater if not properly contained. High winds and rain are particular concerns for lose materials. By building an enclosure around these types of materials, the risk of release is greatly reduced. This control measure may have minor environmental impacts associated with the construction of the enclosure, but will have no lasting impacts as a result of operation.

2.7.2 Capture Systems

Dust and VOC capture systems consist of hoods, ducting, and a blower to collect TACs within a building. These capture systems are typically used in conjunction with an emission control system. Power needs for the blowers are generally low compared to total power use at the facility. Since capture systems are typically contained within existing buildings and used in conjunction with emission control systems, these systems are not expected to have any adverse environmental impacts.

2.7.3 Diesel Particulate Filters (DPF)

DPFs allow exhaust gases to pass through the filter medium, but trap diesel PM. Depending on engine baseline emissions, fuel sulfur content, and emission test method or duty cycle, DPF's can achieve a PM emission reduction of greater than 85 percent. In addition, DPFs can reduce hydrocarbon emissions by 95 percent and CO emissions by 90 percent. Limited test data indicate that DPFs can also reduce NOx emissions by six to ten percent. Most DPFs require periodic regeneration, most commonly achieved by burning off accumulated diesel PM. There are both active DPFs and passive DPFs. Active DPFs use heat generated by means other than exhaust gases (e.g., electricity, fuel burners, microwaves, and additional fuel injection to increase exhaust gas temperatures) to assist in the regeneration process. Passive DPFs, which do not require an external heat source to regenerate, incorporate a catalytic material, typically a platinum group metal, to assist in oxidizing trapped diesel PM. Although there is a slight increase in directly emitted NO_2 during the regeneration of passive DPFs, overall there is ultimately a net reduction in NO_2 emissions.

2.7.4 Baghouses

Baghouses remove particulate matter from gas streams in the same manner as a household vacuum cleaner bag, using the principle of aerodynamic capture by fibers. The bag fabric used in the baghouse largely determines emission reduction effectiveness. Natural or synthetic bag fabrics such as cotton or Nomex will generally have less reduction capability than polytetrafluoroethylene (PTFE) fabric, for example. PTFE bags are capable of a particulate collection efficiency of 99 to 99.9 percent for particle sizes down to 1.0 micron (µm) when properly operated and maintained. Thus, renovating current baghouses to use a more effective fabric can contribute to emission reductions.

2.7.5 High-Efficiency Particulate Arrestors (HEPA) Filters

Used in conjunction with a baghouse or cartridge filter as a prefilter, high-efficiency particulate arrestors (HEPA) filters can trap toxic particles as small as 0.1 µm at an efficiency of 99.99 percent or greater. Like cartridge filters, HEPA filter elements are of pleated construction. Air-to-cloth ratios for HEPA filters are low due to high media density, low porosity, and resulting high-pressure drop. HEPA filters are generally limited to ambient temperature (100°F), though special applications for higher temperatures are available. Unlike bags or cartridge filters, HEPA filters are not automatically cleaned. When a HEPA filter element becomes loaded with particulate matter, the element is changed out and disposed of as dry solid waste (possibly hazardous).

2.7.6 Oxidation – Thermal and Catalytic Oxidizers

Oxidation is the process of converting VOC gases to carbon dioxide and water through combustion. Of the various types of oxidizers available, the two basic types of equipment used most often are thermal oxidizers and catalytic oxidizers. Thermal oxidizers rely on direct contact between toxic gases and high-temperature flames to disassociate and destroy toxic substances. Catalytic oxidizers rely on an active catalyst bed at moderate temperatures to break intramolecular bonds, also causing disassociation and destruction of toxic substances.

Thermal oxidizers include afterburners, recuperative thermal oxidizers, and regenerative thermal oxidizers. Afterburners are most commonly used to control intermittent emergency releases of VOCs and typically operate in the 1,200°F to 1,400°F range. Recuperative thermal oxidizers and regenerative thermal oxidizers both aim to recover and reuse heat from exhaust via heat exchange. Recuperative thermal oxidizers operate between 1,400°F and 1,600°F, recover between 60 and 95 percent of the energy required to run them, and are about 98-99 percent effective at eliminating VOCs. Regenerative thermal oxidizers operate between 1,800°F and 2,000°F, are 99-99.9 percent effective at eliminating VOCs, and typically use less fuel than recuperative thermal oxidizers. The initial cost of regenerative thermal oxidizers is higher, but the life-time cost tends to be lower when savings in energy and fuel are considered.

Catalytic oxidizers operate similarly to thermal oxidation in that heat is used to convert the VOC contaminants to carbon dioxide and water. However, a catalyst is used to lower the oxidation activation energy, allowing combustion to occur at 600°F to 800°F, significantly lower temperatures than those of thermal units. In catalytic oxidation, the pre-heated gas stream is passed through a catalyst bed, where the catalyst initiates and promotes the oxidation of the VOC without being permanently altered itself. The primary advantage of catalytic oxidation over thermal oxidation is lower fuel cost, depending on the efficiency of the air pre-heater. Disadvantages include higher capital costs, periodic catalyst replacement, and the inability to handle halogenated organics.

2.7.7 Oxidation Catalysts

Oxidation catalysts can also be used to facilitate chemical reactions that convert harmful pollutants and VOCs into non-threatening chemical compounds. For example, a platinum catalyst can be used to convert formaldehyde into carbon dioxide and water ($CH_2O + O_2 \rightarrow CO_2 + H_2O$). This process has been used successfully in the past to reduce formaldehyde emissions from natural gas fired engines, and it is technologically feasible for landfill gas fired engines as well. Additionally, as a new BACT requirement, new landfill gas engine projects may be required to have oxidation catalysts to control carbon monoxide emissions.

2.7.8 Carbon Adsorption

Carbon adsorption is a process by which VOCs are collected within the pores of activated carbon, most commonly derived from charcoal. While materials such as silica gel or alumina may be used as adsorbents, activated carbon is the most common for VOC removal. Carbon may also be used to remove other compounds such as sulfur-bearing or odorous materials. Advantages of carbon adsorption include the recovery of a relatively pure product for recycle and reuse and a high removal efficiency with low inlet concentrations. In addition, if a process stream is already available onsite, additional fuel costs are low, the main energy requirement being electrical power to run fan motors. Disadvantages are the potential generation of a hazardous organic waste if the recovered product cannot be reused, the generation of potentially contaminated wastewater that must be treated (when regeneration is by steam), and potentially higher operating and maintenance costs for the disposal of these two waste streams. Well designed and operated carbon adsorption systems are normally 90-99% percent efficient at VOC removal.

2.7.9 Reduced Throughput or Operating Time

Reducing the amount of materials used in a given process is a straightforward way to reduce emissions. Likewise, reducing the overall time the process operates over a given period will lead to similar emission reductions. The District believes that many facilities will meet the risk thresholds by employing this type of control measure. No equipment will be used to meet emission reductions via these methods, thus there will be no adverse environmental impacts.

2.7.10 Alternative Technologies

When health impacts of a proposed project are significant, some applicants may decide to use alternative technologies. One common example of an alternative technology is the use of electrically powered equipment instead of diesel-fired IC engines. This type of alternative technology would obviously increase electricity usage at the site, but this impact is not expected to be significant given the current power infrastructure in the Bay Area.

Another common example of using an alternative technology is to use a spark-ignited engine fired on natural gas or propane instead of a compression-ignition engine fired on diesel-fuel. Properly controlled gas fired engines typically have lower health impacts than a comparable diesel-fired engine. The alternative engine might not be as efficient and so a larger engine may be required. Carbon monoxide and VOC emissions might be higher than the diesel fueled engine. SCR might be required to control NOx emissions, which would involve use of ammonia. These potential air quality and hazard impacts would be subject to District requirements and proper storage and handling limitations that would ensure that these impacts would not be significant.

For less common projects, the use of an alternative technology may be a possible risk reduction measure. Sometimes, the alternative technology may have some drawback compared to the initial proposal, such as less efficient, uses more water, requires disposal of a waste, etc. However, these potential environmental impacts are likely to be small and within the scope of any environmental reviews for the particular project in question.

2.7.11 Product Substitution

Another possible risk reduction measure is the use of product substitution. This is a common risk reduction method for coating and solvent projects. Products that emit a TAC that may cause a significant health impact would be replaced by a less toxic product or formulation. The new product would continue to be subject to District requirements, which would ensure that air quality and health impacts for the use of the new product would be less than significant. Typically, the products would be commercially available alternative that have been approved for use by all appropriate agencies. In this case, no adverse environmental impacts are expected from such product substitutions.

2.7.12 Relocating a Source or Stack

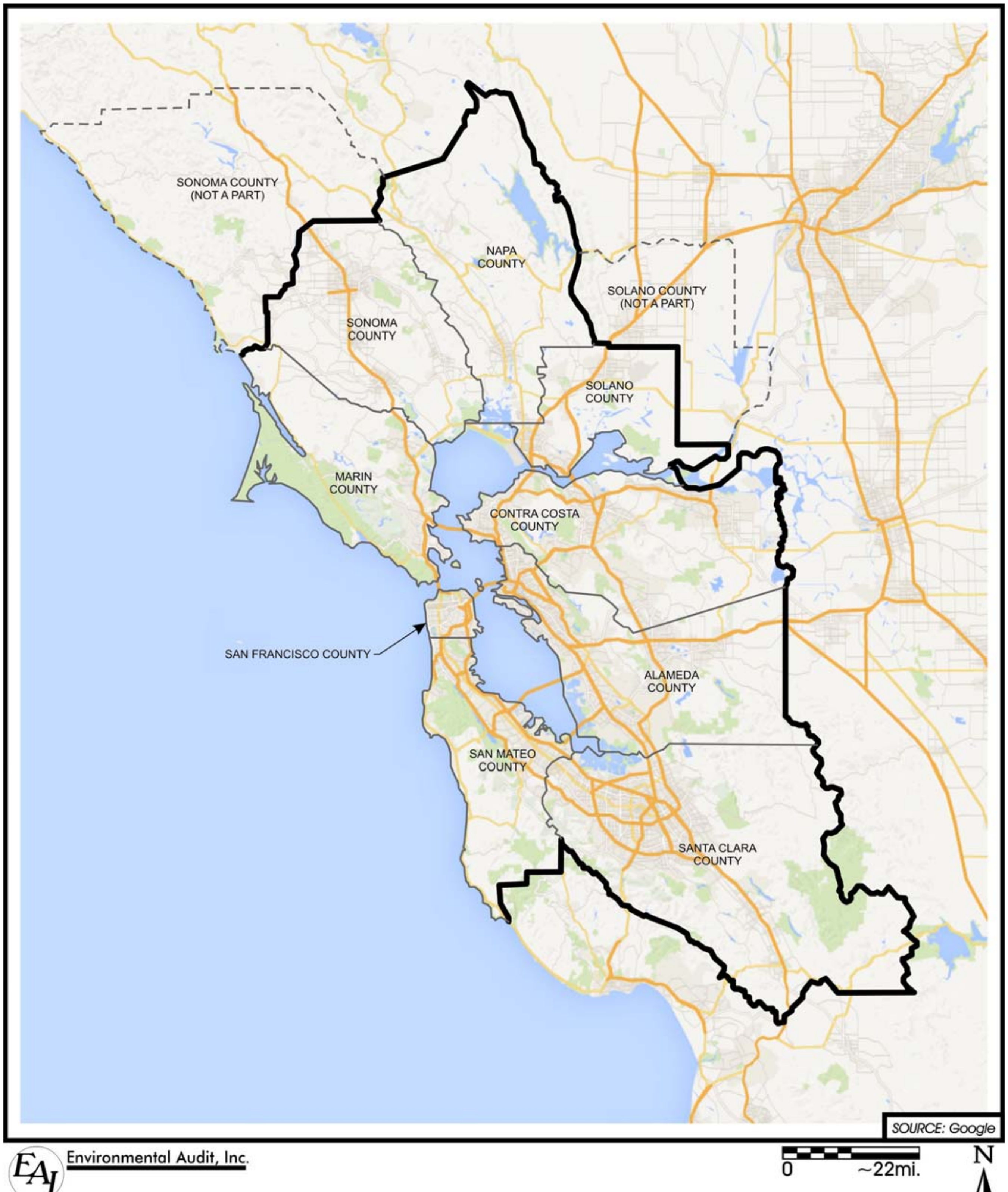
Relocating a source or stack farther away from the highest impacted receptor is a common way to reduce health risk. The District evaluates health risks at the new source/stack location to ensure that risks to all receptors meet acceptable levels. This type of risk reduction measure would not involve any new equipment or processes and would have no adverse environmental impacts.

2.7.13 Stack Modifications

Stack modifications are another common and generally inexpensive risk reduction measure that are often used to reduce risk from back-up generators and soil remediation operations. Changing the direction of a stack (from horizontal to vertical, for example) and increasing the height of a stack to just above the height of nearby buildings will increase the dispersion of the emissions from that stack and will typically result in lower ground level air concentrations at nearby receptors and lower health risks. The District evaluates health risks from a project using the modified stack parameters to ensure that risks to all receptors meet acceptable levels. Stack modifications usually involve extensions of about 2-20 feet and are not expected to have any significant impact on the aesthetics of a facility. No other environmental impacts are expected for stack modifications.

2.8 AFFECTED AREA

BAAQMD proposes to regulate toxic air contaminant emissions, which are typically also criteria pollutant emissions, within its jurisdiction. The equipment affected by the proposed project is located within the jurisdiction of the Bay Area Air Quality Management District (see Figure 2.8-1). The BAAQMD jurisdiction includes all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma counties (approximately 5,600 square miles). The San Francisco Bay Area is characterized by a large, shallow basin surrounded by coastal mountain ranges tapering into sheltered inland valleys. The combined climatic and topographic factors result in increased potential for the accumulation of air pollutants in the inland valleys and reduced potential for buildup of air pollutants along the coast. The Basin is bounded by the Pacific Ocean to the west and includes complex terrain consisting of coastal mountain ranges, inland valleys, and bays.



BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Project No. 2994

Figure 2.8-1

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CHAPTER 3

Environmental Checklist

INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed project.

GENERAL INFORMATION

Project Title:	BAAQMD Regulation 2-5
Lead Agency Name:	Bay Area Air Quality Management District
Lead Agency Address:	375 Beale Street, Suite 600 San Francisco, California 94105
Contact Persons:	Sanjeev Kamboj, Carol Allen
Contact Phone Number:	415-749-4634, 415-749-4702
Project Location:	The proposed project applies to the area within the jurisdiction of the Bay Area Air Quality Management District, which encompasses all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties.
Project Sponsor's Name:	Bay Area Air Quality Management District
Project Sponsor's Address:	375 Beale Street, Suite 600 San Francisco, California 94105
General Plan Designation:	Facilities subject to the Air Toxics NSR Program are typically designated as industrial, commercial, or institutional.
Zoning:	Facilities subject to the Air Toxics NSR Program are typically zoned industrial, commercial, or institutional.
Description of Project:	See "Background" in Chapter 2.
Surrounding Land Uses and Setting:	See "Affected Area" in Chapter 2.
Other Public Agencies Whose Approval is Required:	None

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The following environmental impact areas have been assessed to determine their potential to be affected by the proposed project. As indicated by the checklist on the following pages, environmental topics marked with an "✓" may be adversely affected by the proposed project. An explanation relative to the determination of impacts can be found following the checklist for each area.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology / Soils
☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials	☐	Hydrology / Water Quality
☐	Land Use / Planning	☐	Mineral Resources	☐	Noise
☐	Population / Housing	☐	Public Services	☐	Recreation
☐	Transportation / Traffic	☐	Utilities / Service Systems	☐	Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☒ I find the proposed project COULD NOT have a significant effect on the environment, and that a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature: Date:

Printed Name: Date:

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis.

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tier, Program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This checklist is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

SUMMARY OF PROPOSED PROJECT AND POTENTIAL IMPACTS

Chapter 2 provides a summary of the main components of the proposed changes to the Air District's Air Toxics NSR Program. The Air District expects that these program changes may affect an estimated 60 additional projects per year. The types of projects and expected control measures are summarized in Table 2.6-1. The impacts associated with these control measures and the potential secondary adverse environmental impacts are evaluated in this Negative Declaration. CEQA recognizes that regulatory requirements consisting of monitoring and inspections, do not typically generate environmental impacts (see for example, CEQA Guidelines §15309).

ENVIRONMENTAL CHECKLIST AND DISCUSSION

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less-than-Significant Impact	No Impact
I. AESTHETICS.				
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b) Substantially damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	☐	☐	☐	☑
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☑
d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles), so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. Scenic highways or corridors are located throughout the Bay Area.

The proposed rule amendments focus on TAC emissions from stationary sources. The amendments to Regulation 2-5 will primarily affect stationary sources and pollution control equipment within commercial, industrial and institutional facilities located within the Bay Area. The facilities affected by the proposed rule amendments are generally located in commercial, industrial or institutional areas. Scenic highways or corridors are generally not located in the vicinity of these facilities.

Regulatory Background

Visual resources are generally protected by the City and/or County General Plans through land use and zoning requirements.

Significance Criteria

The proposed project impacts on aesthetics will be considered significant if:

- The project will block views from a scenic highway or corridor.
- The project will adversely affect the visual continuity of the surrounding area.
- The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

Discussion of Impacts

I. a-d. The proposed rule amendments are designed to limit emissions of TACs from new and modified stationary sources in the Bay Area. The proposed project is not expected to require the construction of any substantial new structures that would impact the views of commercial, industrial, or institutional facilities or areas outside of these existing facility boundaries. The proposed rule amendments may require that enclosure be constructed to minimize certain types of particulate emissions. Any new or modified equipment is expected to be located within the boundaries of commercial, industrial, or industrial facilities; expected to be approximately the same height as the existing equipment; and would be compatible with the existing commercial, industrial, or institutional structures within the facilities. Therefore, new or modified equipment would not be expected to impact scenic resources or vistas or degrade the existing visual character of any site or its surroundings.

The proposed project is not expected to require any new light generating equipment for compliance. The existing commercial, industrial, or institutional facilities that may be impacted by the proposed rule amendment are currently operating and lit for nighttime work if necessary, and no additional light or glare are expected to be added to impact day or nighttime views in the Air District.

Conclusion

Based upon these considerations, no significant adverse aesthetic impacts are expected from adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE and FOREST RESOURCES.				
In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.--Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?	☐	☐	☐	☑
c) Conflict with existing zoning for, or cause rezoning of, forest land as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☑
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, institutional, residential, agricultural, and open space uses. Some of these agricultural lands are under Williamson Act contracts.

The proposed project focuses on reducing TAC emissions stationary sources located within commercial, industrial or institutional facilities within the Bay Area.

Regulatory Background

Agricultural and forest resources are generally protected by the City and/or County General Plans, Community Plans through land use and zoning requirements, as well as any applicable specific plans, ordinances, local coastal plans, and redevelopment plans.

Significance Criteria

Project-related impacts on agriculture and forest resources will be considered significant if any of the following conditions are met:

- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined in Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code § 51104 (g)).
- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

Discussion of Impacts

II. a-e. The proposed project is designed to reduce TAC emissions from new and modified stationary sources located within the Bay Area. Any new or equipment modifications would be expected to occur within the confines of existing commercial, industrial, or institutional facilities. Therefore, the proposed amendments to Regulation 2-5 would not require conversion of existing agricultural land to other uses. The proposed project would not conflict with existing agriculture related zoning designations or Williamson Act contracts. Existing agriculture and forest resources within the boundaries of the BAAQMD are not expected to be affected, because the rule amendment would not require any new development. Therefore, there is no potential for conversion of farmland to non-agricultural use or conflicts related to agricultural uses or land under a Williamson Act contract, or impacts to forestland resources.

Conclusion

Based upon these considerations, no significant adverse impacts to agricultural and forest resources are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY				
When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☑	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☑	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☑

Setting

Meteorological Conditions

The summer climate of the West Coast is dominated by a semi-permanent high centered over the northeastern Pacific Ocean. Because this high pressure cell is quite persistent, storms rarely affect the California coast during the summer. Thus the conditions that persist along the coast of California during summer are a northwest air flow and negligible precipitation. A thermal low pressure area from the Sonoran-Mojave Desert also causes air to flow onshore over the San Francisco Bay Area much of the summer.

In winter, the Pacific High weakens and shifts southward, upwelling ceases, and winter storms become frequent. Almost all of the Bay Area's annual precipitation takes place in the November through April period. During the winter rainy periods, inversions are weak or nonexistent, winds are often moderate and air pollution potential is very low. During winter periods when the Pacific high becomes dominant, inversions become strong and often are surface based; winds are light and pollution potential is high. These periods are characterized by winds that flow out of the Central Valley into the Bay Area and often include Tule fog.

Topography

The San Francisco Bay Area is characterized by complex terrain consisting of coastal mountain ranges, inland valleys, and bays. Elevations of 1,500 feet are common in the higher terrain of this area. Normal wind flow over the area becomes distorted in the lower elevations, especially when the wind velocity is not strong. This distortion is reduced when stronger winds and unstable air masses move over the areas. The distortion is greatest when low level inversions are present with the surface air, beneath the inversion, flowing independently of the air above the inversion.

Winds

In summer, the northwest winds to the west of the Pacific coastline are drawn into the interior through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately to the south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more nearly from the west as they stream through the Golden Gate. This channeling of the flow through the Golden Gate produces a jet that sweeps eastward but widens downstream producing southwest winds at Berkeley and northwest winds at San Jose; a branch curves eastward through the Carquinez Straits and into the Central Valley. Wind speeds may be locally strong in regions where air is channeled through a narrow opening such as the Carquinez Strait, the Golden Gate, or San Bruno Gap.

In winter, the Bay Area experiences periods of storminess and moderate-to-strong winds and periods of stagnation with very light winds. Winter stagnation episodes are characterized by outflow from the Central Valley, nighttime drainage flows in coastal valleys, weak onshore flows in the afternoon and otherwise light and variable winds.

Temperature

In summer, the distribution of temperature near the surface over the Bay Area is determined in large part by the effect of the differential heating between land and water surfaces. This process produces a large-scale gradient between the coast and the Central Valley as well as small-scale local gradients along the shorelines of the ocean and bays. The winter mean temperature high and lows reverse the summer relationship; daytime variations are small while mean minimum nighttime temperatures show large differences and strong gradients. The moderating effect of the ocean influences warmer minimums along the coast and penetrating the Bay. The coldest temperatures are in the sheltered valleys, implying strong radiation inversions and very limited vertical diffusion.

Inversions

A primary factor in air quality is the mixing depth, i.e., the vertical dimension available for dilution of contaminant sources near the ground. Over the Bay Area, the frequent occurrence of temperature inversions limits this mixing depth and consequently limits the availability of air for dilution. A temperature inversion may be described as a layer or layers of warmer air over cooler air.

Precipitation

The San Francisco Bay Area climate is characterized by moderately wet winters and dry summers. Winter rains (December through March) account for about 75 percent of the average annual rainfall; about 90 percent of the annual total rainfall is received in November to April period; and between June and September, normal rainfall is typically less than 0.10 inches. Annual precipitation amounts show greater differences in short distances. Annual totals exceed 40 inches in the mountains and are less than 15 inches in the sheltered valleys.

Pollution Potential

The Bay Area is subject to a combination of physiographic and climatic factors which result in a low potential for pollutant buildups near the coast and a high potential in sheltered inland valleys. In summer, areas with high average maximum temperatures tend to be sheltered inland valleys with abundant sunshine and light winds. Areas with low average maximum temperatures are exposed to the prevailing ocean breeze and experience frequent fog or stratus. Locations with warm summer days have a higher pollution potential than the cooler locations along the coast and bays.

In winter, pollution potential is related to the nighttime minimum temperature. Low minimum temperatures are associated with strong radiation inversions in inland valleys that are protected from the moderating influences of the ocean and bays. Conversely, coastal locations experience higher average nighttime temperatures, weaker inversions, stronger breezes and consequently less air pollution potential.

Air Quality

Criteria Pollutants

It is the responsibility of the BAAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), PM_{10}, $PM_{2.5}$, sulfur dioxide (SO_2) and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride.

The state and national ambient air quality standards for each of these pollutants and their effects on health are summarized in Table 3-1. The BAAQMD monitored levels of various criteria pollutants at 25 monitoring stations in 2014.

The 2014 air quality data from the BAAQMD monitoring stations are presented in Table 3-2. The data indicate that the air quality at all monitoring stations were below the state standard and federal ambient air quality standards for CO, NO_2, and SO_2. The federal 8-hour ozone standard was exceeded on five days in the Air District in 2014, while the state 8-hour standard was exceeded on 10 days. The State 1-hour ozone standard was exceeded on three days in 2014 in the Air District. The ozone standards are most frequently exceeded in the Eastern District (Livermore) (Seven days for the state 8-hour standard and four days for the federal 8-hour standard), followed by San Ramon, (four days for the state 8-hour standard and three days for the federal 8-hour standard) and San Martin (three days for the state 8-hour standard and five days for the federal 8-hour standard). The State 24-hour PM10 standard was exceeded on two days in 2014 in the Air District. The PM10 standards were exceeded in Bethel Island and San Jose for one day. The federal 24-hour standard was exceeded on 3 days in 2014 in the Air District. The PM2.5 standards are most frequently exceeded in the Coast/Central Bay District (Oakland, Oakland-West, and San Pablo one day each) (see Table 3-1).

Air quality conditions in the San Francisco Bay Area have improved since the Air District was created in 1955. Ambient concentrations of air pollutants and the number of days on which the region exceeds air quality standards have fallen dramatically (see Table 3-3). The Air District is in attainment of the State and federal ambient air quality standards for CO, NOx, and SO_2. The Air District is not considered to be in attainment with the federal ozone and PM2.5 24-hour standards and State PM10 and PM2.5 standards. This district's attainment status for federal standard for PM10 is currently unclassifiable. The Air District's attainment status for federal annual PM2.5 is currently U/A, which refers to meeting the standard or expected to be meeting the standard despite a lack of monitoring data.

TABLE 3-1

Federal and State Ambient Air Quality Standards

	STATE STANDARD	FEDERAL PRIMARY STANDARD	ATTAINMENT STATUS (1)		MOST RELEVANT EFFECTS
AIR POLLUTANT	CONCENTRATION/ AVERAGING TIME	CONCENTRATION/ AVERAGING TIME	STATE	FEDERAL	
Ozone	0.09 ppm, 1-hr. avg. > 0.070 ppm, 8-hr	0.070 ppm, 8-hr avg.>	N N	N	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr avg. > 20 ppm, 1-hr avg. >	9 ppm, 8-hr avg.> 35 ppm, 1-hr avg.>	A A	A A	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.03 ppm, annual avg.> 0.18 ppm, 1-hr avg. >	0.053 ppm, ann. avg.> 0.10 ppm, 1-hr avg.>	A NR	U A	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0.04 ppm, 24-hr avg.> 0.25 ppm, 1-hr. avg. >	0.14 ppm, 24-hr. avg.> 0.075 ppm, 1-hr avg.>	A A	A A	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM$_{10}$)	20 µg/m3, annual arithmetic mean > 50 µg/m3, 24-hr average>	150 µg/m3, 24-hr avg.>	N N	U	(a) Increase in coughing, wheezing, and shortness of breath. (b) Aggravated asthma. (c) Lung damage, including lifelong respiratory disease. (d) Potential for premature death in individuals with existing heart or lung disease.
Suspended Particulate Matter (PM$_{2.5}$)	12 µg/m3, annual arithmetic mean>	12 µg/m3, annual arithmetic mean> 35 µg/m3, 24-hour average>	N	U/A (2) N	Decreased lung function from exposure and exacerbation of symptoms in sensitive groups, including those with respiratory disease, elderly, and children. May lead to permanent lung damage or premature death if exposed to elevated concentrations for long periods of time.
Sulfates	25 µg/m3, 24-hr avg. >=		A		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/m3, 30-day avg. >=	1.5 µg/m3, calendar quarter> 0.15 µg/m3, 3-mo. avg. >	A	A NR	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10am – 6pm PST)		U	NR	Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent

1. Attainment statuses: A=in attainment N=Not in attainment U=Unclassifiable NR=Not Reported
2. The EPA U/A designation refers to meeting the standard or expected to be meeting the standard despite a lack of monitoring data.

TABLE 3-2
Bay Area Air Pollution Summary - 2014

MONITORING STATIONS	OZONE						CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM 10				PM 2.5				
	Max 1-hr	Cal 1-hr Days	Max 8-hr	Nat 8-Hr Days	Cal 8-hr Days	3-Yr Avg	Max 1-hr	Max 8-hr	Nat/ Cal Days	Max 1-Hr	Ann Avg	Nat/ Cal 1-hr	Max 1-hr	Max 24-hr	Nat/ Cal 1-hr	Ann Avg	Max 24-hr	Nat Days	Cal Days	Max 24-hr	Nat 24-hr Days	3-Yr Avg	Ann Avg	3-Yr Avg
North Counties	(ppb)						(ppm)			(ppb)			(ppb)			($\mu g/m^3$)				($\mu g/m^3$)				
Napa*	74	0	66	0	0	58	2.2	1.4	0	46	8	0	-	-	-	15.8	39	0	0	29.9	0	*	12.0	*
San Rafael	88	0	68	0	0	56	1.9	1.1	0	62	11	0	-	-	-	14.1	41	0	0	38.1	1	22	10.8	9.8
Sebastopol*	67	0	61	0	0	*	1.4	0.9	0	44	4	0	-	-	-	-	-	-	-	26.2	0	*	7.7	*
Vallejo	77	0	68	0	0	58	2.5	2.1	0	50	8	0	23.9	2.4	0	-	-	-	-	39.6	1	26	9.9	9.6
Coast/Central Bay																								
Laney College Fwy*	-	-	-	-	-	-	2.0	1.1	0	65	17	0	-	-	-	-	-	-	-	26.0	0	*	8.4	*
Oakland	83	0	68	0	0	47	2.8	1.7	0	82	12	0	-	-	-	-	-	-	-	37.6	1	24	8.5	9.4
Oakland-West*	72	0	59	0	0	47	3.0	2.6	0	56	14	0	16.5	3.3	0	-	-	-	-	38.8	1	*	9.5	*
Richmond	-	-	-	-	-	-	-	-	-	-	-	-	19.2	5.0	0	-	-	-	-	-	-	-	-	-
San Francisco	79	0	69	0	0	47	1.6	1.2	0	84	12	0	-	-	-	17.0	36	0	0	33.2	0	23	7.7	8.6
San Pablo*	75	0	60	0	0	52	1.8	1.0	0	52	9	0	15.3	5.8	0	16.4	46	0	0	38.2	1	*	10.5	*
Eastern District																								
Bethel Island	92	0	71	0	1	67	0.9	0.7	0	33	5	0	10.5	3.4	0	16.7	61	0	1	-	-	-	-	-
Concord	95	1	80	2	2	64	1.4	1.1	0	48	8	0	29.1	4.5	0	14.2	43	0	0	30.6	0	22	6.6	7.0
Crockett	-	-	-	-	-	-	-	-	-	-	-	-	25.7	5.4	0	-	-	-	-	-	-	-	-	-
Fairfield	81	0	70	0	0	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Livermore	93	0	80	4	7	72	-	-	-	49	10	0	-	-	-	-	-	-	-	42.9	1	27	7.6	7.5
Martinez	-	-	-	-	-	-	-	-	-	-	-	-	21.2	4.6	0	-	-	-	-	-	-	-	-	-
Patterson Pass	-	-	-	-	-	-	-	-	-	21	3	0	-	-	-	-	-	-	-	-	-	-	-	-
San Ramon	86	0	77	3	4	67	-	-	-	37	6	0	-	-	-	-	-	-	-	-	-	-	-	-
South Central Bay																								
Hayward	96	1	75	0	4	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redwood City	86	0	65	0	0	56	3.2	1.6	0	55	11	0	-	-	-	-	-	-	-	35.0	0	23	7.1	8.8
Santa Clara Valley																								
Gilroy	84	0	74	0	4	66	-	-	-	-	-	-	-	-	-	-	-	-	-	25.7	0	18	6.8	7.6
Los Gatos	90	0	77	1	3	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose	89	0	66	0	0	60	2.4	1.9	0	58	13	0	3.0	0.9	0	19.9	55	0	1	60.4	2	30	8.4	10.0
San Jose Freeway*	-	-	-	-	-	-	2.2	1.9	0	65	*	0	-	-	-	-	-	-	-	24.3	0	*	*	*
San Martin	97	1	78	3	5	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Days over Standard		**3**		**5**	**10**				**0**			**0**			**0**			**0**	**2**		**3**			

* PM2.5 monitoring using the federally accepted method began at Napa, Oakland West, and San Pablo in December 2012. Therefore, 3-year average PM2.5 statistics are not available. Air monitoring at Sebastopol began in January 2014. Therefore, 3-year average statistics for ozone and PM2.5 are not available. In addition, the Sebastopol site replaced the Santa Rosa site which closed on December 13, 2013. Therefore, statistics for Santa Rosa are not provided in the 2014 summary. Near-road air monitoring at Laney College Freeway began in February 2014. Therefore, 3-year average PM2.5 statistics are not available. Near-road air monitoring at San Jose Freeway began in September 2014. Therefore, annual average NO_2 and 3-year average PM 2.5 statistics are not available.

(ppb) = parts per billion (ppm) = parts per million, ($\mu g/m^3$) = micrograms per cubic meter. (ppb) = parts per billion (ppm) = parts per million, ($\mu g/m^3$) = micrograms per cubic meter.

TABLE 3-3

Bay Area Air Quality Summary
Days over Standards

YEAR	OZONE			CARBON MONOXIDE				NOx		SULFUR DIOXIDE		PM_{10}		$PM_{2.5}$
	8-Hr	1-Hr	8-Hr	1-Hr		8-Hr		1-Hr		1-Hr	24-Hr	24-Hr		24-Hr
	Nat	Cal	Cal	Nat	Cal	Nat	Cal	Nat	Cal	Nat	Cal	Nat	Cal	Nat
2005	5	9	9	0	0	0	0	0	0	0	0	0	6	21
2006	17	18	22	0	0	0	0	1	0	0	0	0	15	10
2007	2	4	9	0	0	0	0	0	0	0	0	0	4	14
2008	12	9	20	0	0	0	0	0	0	2	0	0	5	12
2009	8	11	13	0	0	0	0	0	0	0	0	0	1	11
2010	9	8	00	0	0	0	0	0	0	0	0	0	2	6
2011	4	5	10	0	0	0	0	0	0	0	0	0	3	8
2012	4	3	8	0	0	0	0	1	0	0	0	0	2	3
2013	3	3	3	0	0	0	0	0	0	0	0	0	6	13
2014	5	3	10	0	0	0	0	0	0	0	0	0	2	3

Toxic Air Pollutants

The BAAQMD maintains a database that contains information concerning emissions of TACs from permitted stationary sources in the Bay Area. This inventory, and a similar inventory for mobile and area sources compiled by CARB, is used to plan strategies to reduce public exposure to TACs. The detailed concentrations of various TACs are reported in the BAAQMD, Toxic Air Contaminant Control Program, 2010 Annual Report (BAAQMD, 2010) and summarized in Table 3-4. The 2010 TAC data show decreasing concentrations of many TACs in the Bay Area. The most dramatic emission reductions in recent years have been for certain chlorinated compounds that are used as solvents including methyl chloroform, dichloromethane, and tetrachloroethylene. Table 3-4 contains a summary of ambient air toxics listed by compound.

TABLE 3-4

Summary of BAAQMD Ambient Air Toxics Monitoring Data (1)

Pollutant	Units	Average MDL (1)	% less than MDL	Max Sample Value	Min Sample Value	Average Sample Value (2) (3)
1,3-Butadiene	ppb	5.73E-02	87%	3.30E-01	0.00E+00	3.84E-02
Acetaldehyde	ppb	5.86E-02	0%	3.10E+00	1.97E-01	6.84E-01
Acetone	ppb	1.27E-01	1%	3.50E+01	0.00E+00	2.25E+00
Acetonitrile	ppb	2.55E-01	26%	2.34E+00	0.00E+00	5.09E-01
Antimony	µg/m^3	1.50E-03	78%	5.02E-02	00.0E+00	2.36E-03
Arsenic	µg/m^3	7.81E-04	92%	2.92E-03	0.00E+00	4.32E-04
Benzene	ppb	2.41E-02	1%	1.26E+00	0.00E+00	2.17E-01
Bromomethane	ppb	3.00E-02	95%	7.30E-02	1.50E-02	1.65E-02
Cadmium	µg/m^3	7.81E-04	85%	1.92E-02	0.00E+00	8.67E-04
Carbon Tetrachloride	ppb	1.14E-02	0%	1.70E-01	7.00E-02	1.03E-01
Chlorine	µg/m^3	0.00E+00	5%	3.64E+00	0.00E+00	3.43E-01
Chloroform	ppb	1.14E-02	46%	8.00E-02	0.00E+00	1.95E-02
Chromium	µg/m^3	1.02E-03	25%	1.00E-01	0.00E+00	2.48E-03
Cis-1,3-Dichloropropylene	ppb	1.00E-01	100%	5.00E-02	5.00E-02	5.00E-02
Cobalt	µg/m^3	7.81E-04	76%	3.26E-03	0.00E+00	5.25E-04
Copper	µg/m^3	4.00E-04	31%	4.90E-02	0.00E+00	5.74E-03
Dichloromethane	ppb	1.00E-01	37%	4.40E+00	0.00E+00	1.80E-01
Ethyl Alcohol	ppb	3.00E-01	0%	2.27E+01	4.00E+00	1.16E+01
Ethylbenzene	ppb	6.18E-02	53%	1.20E+00	0.00E+00	8.25E-02
Ethylene Dibromide	ppb	1.00E-02	100%	0.00E+00	0.00E+00	5.00E-03
Ethylene Dichloride	ppb	1.00E-01	100%	0.00E+00	0.00E+00	5.00E-02
Formaldehyde	ppb	6.76E-02	0%	6.30E+00	2.00E-01	1.46E+00
Lead	µg/m^3	7.81E-04	40%	2.40E-01	0.00E+00	4.85E-03
M/P Xylene	ppb	6.18E-02	9%	5.27E+00	0.00E+00	3.18E-01
Magnesium	µg/m^3	0.00E+00	36%	4.88E-01	0.00E+00	5.54E-02
Manganese	µg/m^3	7.81E-04	25%	2.00E-01	0.00E+00	7.06E-03
Mercury	µg/m^3	0.00E+00	98%	1.70E-03	0.00E+00	2.24E-05
Methyl Chloroform	ppb	2.73E-02	88%	4.30E+00	0.00E+00	3.22E-02
Methyl Ethyl Ketone	ppb	1.00E-01	28%	1.78E+00	0.00E+00	1.89E-01
Nickel	µg/m^3	4.50E-03	57%	6.00E-02	0.00E+00	3.39E-03
O-Xylene	ppb	4.82E-02	30%	5.12E+00	0.00E+00	1.21E-01

TABLE 3-4 (Continued)

Pollutant	Units	Average MDL (2)	% less than MDL	Max Sample Value	Min Sample Value	Average Sample Value (1) (3)
PAHs (4)	ng/m^3					1.90E-01
Selenium	$\mu g/m^3$	7.81E-04	76%	8.60E-03	0.00E+00	8.04E-04
Styrene	ppb	1.00E-01	96%	1.20E-01	5.00E-02	5.22E-02
Sulfur	$\mu g/m^3$	0.00E+00	0%	1.73E+00	3.74E-02	3.56E-01
Tetrachloroethylene	ppb	5.68E-03	21%	2.80E-01	0.00E+00	1.88E-02
Toluene	ppb	6.18E-02	2%	4.33E+00	0.00E+00	6.22E-01
Trans-1,3-Dichloropropylene	ppb	1.00E-01	100%	5.00E-02	5.00E-02	5.00E-02
Trichloroethylene	ppb	1.14E-02	84%	5.20E-01	0.00E+00	1.42E-02
Trichlorofluoromethane	ppb	1.00E-02	0%	6.90E-01	1.00E-02	1.96E-01
Vanadium	$\mu g/m^3$	4.00E-04	72%	5.10E-03	0.00E+00	5.34E-04
Vinyl Chloride	ppb	1.00E-01	100%	0.00E+00	0.00E+00	5.00E-02
Zinc	ng/m^3	1.80E-03	0%	1.90E-01	0.00E+00	1.38E-02

Source: BAAQMD 2010 Toxic Air Contaminant Monitoring Data. Data are a summary of data from all monitoring stations within the Air District.

1. If an individual sample value was less than the MDL (Minimum Detection Limit), then 1/2 MDL was used to determine the Average Sample Value.
2. Some samples (especially metals) have individual MDLs for each sample. An average of these MDLs was used to determine 1/2 MDL for the Average Sample Value.
3. Data for these two substances was collected but not presented because the sampling procedure is not sanctioned for use by EPA or ARB.
4. For compounds with 100% of sample values less than MDL, please use caution using the assumed Average Sample Values.

Regulatory Background

Criteria Pollutants

At the federal level, the Clean Air Act (CAA) Amendments of 1990 give the U.S. EPA additional authority to require states to reduce emissions of ozone precursors and particulate matter in non-attainment areas. The amendments set attainment deadlines based on the severity of problems. At the state level, CARB has traditionally established state ambient air quality standards, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emission inventories, collected air quality and meteorological data, and approved state implementation plans. At a local level, California's air districts, including the BAAQMD, are responsible for overseeing stationary source emissions, approving permits, maintaining emission inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required by CEQA.

The BAAQMD is governed by a 24-member Board of Directors composed of publicly-elected officials apportioned according to the population of the represented counties. The Board has the authority to develop and enforce regulations for the control of air pollution within its jurisdiction. The BAAQMD is responsible for implementing emissions standards and other requirements of federal and state laws. It is also responsible for developing air quality planning documents required by both federal and state laws.

Toxic Air Contaminants

TACs are regulated in the Air District through federal, state, and local programs. At the federal level, TACs are regulated primarily under the authority of the CAA. Title III of the 1990 CAA amendments required U.S. EPA to promulgate National Emission Standards for Hazardous Air Pollutants (NESHAPs) for certain categories of sources identified by U.S. EPA as emitting one or more of the 189 listed HAPs. Emission standards for major sources must require the maximum achievable control technology (MACT). MACT is defined as the maximum degree of emission reduction achievable considering cost and non-air quality health and environmental impacts and energy requirements. NESHAPs for various hazardous air pollutants have been promulgated since 1992.

Many of the sources of TACs that have been identified under the CAA are also subject to the California TAC regulatory programs. CARB developed three regulatory programs for the control of TACs. Each of the programs is discussed in the following subsections.

Control of TACs Under the TAC Identification and Control Program: California's TAC identification and control program, adopted in 1983 as Assembly Bill 1807 (AB 1807) (California Health and Safety Code §39662), is a two-step program in which substances are identified as TACs, and airborne toxic control measures (ATCMs) are adopted to control emissions from specific sources. Since adoption of the program, CARB has identified over 300 TACs. All 189 federal HAPs are CARB TACs.

Control of TACs Under the Air Toxics "Hot Spots" Act: The Air Toxics Hot Spot Information and Assessment Act of 1987 (AB 2588) (California Health and Safety Code §39656) establishes a state-wide program to inventory and assess the risks from facilities that emit TACs and to notify the public about significant health risks associated with those emissions. Inventory reports must be updated every four years under current state law. The BAAQMD uses a maximum individual cancer risk of 10 in one million, or an ambient concentration above a non-cancer reference exposure level, as the threshold for notification.

Senate Bill (SB) 1731, enacted in 1992 (California Health and Safety Code §44390 et seq.), amended AB 2588 to include a requirement for facilities with significant risks to prepare and implement a risk reduction plan which will reduce the risk below a defined significant risk level within specified time limits. At a minimum, such facilities must, as quickly as feasible, reduce cancer risk levels that exceed 100 per one million. The BAAQMD adopted risk reduction requirements for perchloroethylene dry cleaners to fulfill the requirements of SB 1731.

Targeted Control of TACs Under the Community Air Risk Evaluation Program: In 2004, BAAQMD established the Community Air Risk Evaluation (CARE) program to identify locations with high emissions of toxic air contaminants (TAC) and high exposures of sensitive populations to TAC and to use this information to help establish policies to guide mitigation strategies that obtain the greatest health benefit from TAC emission reductions. For example, BAAQMD will use information derived from the CARE program to develop and implement targeted risk reduction programs, including grant and incentive programs, community outreach efforts, collaboration with other governmental agencies, model ordinances, new regulations for stationary sources and indirect sources, and advocacy for additional legislation.

Significance Criteria

Construction Emissions: Regarding construction emissions, the Air District's 1999 Thresholds of Significance did not identify specific significance thresholds for construction emissions. Rather the analysis required that certain control measures be implemented and, if implemented, the air pollutant impacts would be less than significant. The construction emissions identified in the 2011 CEQA Guidelines would be more conservative as they provide a specific threshold number above which impacts would be considered significant (see Table 3-5). Therefore, the 2011 CEQA Guidelines will be used in the current air quality analysis for construction emissions.

TABLE 3-5

Thresholds of Significance for Construction-Related Criteria Air Pollutants and Precursors

Pollutant/Precursor	Daily Average Emissions (pounds/day)
ROG	54
NOx	54
PM10	82*
$PM_{2.5}$	54*
PM10/ $PM_{2.5}$ Fugitive Dust	Best Management Practices

* Applies to construction exhaust emissions only.
Source: BAAQMD, 2011

Operational Emissions: The Air District's CEQA Guidelines have been developed to assist local jurisdictions and lead agencies in complying with the requirements of CEQA regarding potentially adverse impacts to air quality. The Air District first developed CEQA guidelines, which included significance thresholds for use by lead agencies, in 1999 (BAAQMD, 1999). On June 2, 2010, the Bay Area Air Quality Management District's Board of Directors unanimously adopted thresholds of significance to assist in the review of projects under the California Environmental Quality Act. These Thresholds are designed to establish the level at which the Air District believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on the Air District's website and included in the Air District's updated CEQA Guidelines (BAAQMD, 2011).

On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the Air District had failed to comply with CEQA when it adopted the Thresholds. The court did not determine whether the Thresholds were valid on the merits, but found that the adoption of the Thresholds was a project under CEQA. The court issued a writ of mandate ordering the Air District to set aside the Thresholds and cease dissemination of them until the Air District had complied with CEQA. The Air District has appealed the Alameda County Superior Court's decision. The Court of Appeal of the State of California, First Appellate District, reversed the trial court's decision. The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review, and the Supreme Court send the case back to the lower courts for further review.

In view of the trial court's order which remains in place pending final resolution of the case, the Air District is no longer recommending that the Thresholds be used as a generally applicable measure of a project's significant air quality impacts. Lead agencies will need to determine appropriate air quality thresholds of significance based on substantial evidence in the record. Although lead agencies may rely on the Air District's updated CEQA Guidelines for assistance in calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, the Air District has been ordered to set aside the Thresholds and is no longer recommending that these Thresholds be used as a general measure of project's significant air quality impacts. Lead agencies may continue to rely on the Air District's 1999 Thresholds of Significance and they may continue to make determinations regarding the significance of an individual project's air quality impacts based on the substantial evidence in the record for that project.

In light of the court's order, the significance thresholds could be the significance thresholds developed in 1999. These "original" significance thresholds limited emissions for project operations to 15 tons per year or 80 pounds per day of reactive organic gases (ROG), NOx and PM_{10}. Alternatively, the revised 2010 CEQA Guidelines could also be used. The revised CEQA Guidelines (BAAQMD, 2010) established project-specific thresholds (e.g., 10 tons per year of ROG, NOx, and $PM_{2.5}$). Because the 2010 CEQA thresholds are more conservative than the 1999 thresholds, the 2010 CEQA thresholds will be used herein. Therefore, in order to provide a conservative air quality analysis, the thresholds recommended in the revised 2010 CEQA Guidelines (BAAQMD, 2010) will be used in the current air quality impacts analysis.

To determine whether or not air quality impacts from the proposed project may be significant, impacts will be evaluated and compared to the criteria in Table 3-6.

TABLE 3-6

BAAQMD Air Quality Significance Thresholds

Units	VOC	CO	NOx	SOx	PM10	PM2.5
Tons/Year	10	NE [(1)]	10	NE [(1)]	10	10
Pounds/Day	54	NE	54	NE	82	54

(1) Significance threshold has not been established.

Discussion of Impacts

III. a. The proposed project is not expected to conflict with or obstruct implementation of the applicable air quality plan. The proposed project is designed to limit emissions of TACs from new and modified stationary sources located throughout the Bay Area. The 2010 Clean Air Plan is the most recently adopted air quality plan for the Bay Area. The proposed project would contribute directly to meeting the objectives of the 2010 Clean Air Plan by reducing particulate emissions and contributing towards attaining and maintaining the state and federal ambient air quality standards for PM2.5.

Because the rule amendments are expected to result in TACs emissions reductions, the proposed rule is in compliance with the local air quality plan and is expected to provide beneficial impacts to air quality. Furthermore, the proposed project would contribute directly to meeting the objectives of the 2010 Clean Air Plan by reducing particulate emissions and contributing towards attaining and maintaining the state and federal ambient air quality standards for PM2.5. Therefore, the proposed rule amendments will not conflict with or obstruct with an applicable air quality plan.

III. b and d. Implementation of the proposed project is expected to reduce emissions of TACs due to the revision of OEHHA guidelines. Facilities are expected to implement control measures to meet thresholds established by the revised guidelines. The BAAQMD expects that of the estimated 100 additional NSR projects that will require an HRA, approximately 60 will need to implement control measures. Table 2.6-1 summarizes the expected method affected facilities will implement in order to comply with the 2015 OEHHA guideline revisions.

Construction Air Quality Impacts

The proposed rule amendment could result in the construction of additional air pollution control equipment at affected facilities. Construction impacts were considered for the control measures identified in Table 2-6.1. Control measures that do not require equipment, such as reducing operating time, will not produce emissions as a result of construction. The remaining control measures were analyzed and the results are presented below in Table 3-7. The BAAQMD expects that three facilities per year are expected to meet reductions by implementing either a baghouse or an enclosure. Since the emissions associated with construction of an enclosure are greater than a bag house, the impact analysis assumes three enclosures are constructed in lieu of bag houses, to provide a conservative analysis. Similarly, data for carbon absorbers is not presented as thermal/catalytic oxidizers require more construction equipment and have a greater construction emissions impact. Detailed emissions calculations are provided in Appendix A.

TABLE 3-7

Estimated Construction Emissions Impacts (pounds/day)

Control Measure	VOC	CO	NOx	SOx	PM10	PM2.5
DPF	0.33	2.39	1.95	0.00	0.20	0.17
Enclosures	1.56	14.08	17.61	0.04	1.63	1.22
Oxidizers	0.03	0.35	0.45	0.00	0.15	0.05
Total	**1.92**	**16.81**	**20.01**	**0.05**	**1.98**	**1.45**
BAAQMD CEQA Thresholds	**54**	**NE (1)**	**54**	**NE (1)**	**82**	**54**
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

1. NE - Thresholds are not established

As summarized in Table 3-7, construction of air pollution control equipment that is expected to be installed as a result of the proposed project is not expected to exceed construction significance thresholds. Detailed emissions calculations are provided in Appendix A. The proposed project is not expected to have a significant impact on air quality for construction emissions.

Operational Air Quality Impacts

The proposed rule amendment could result in the construction of additional air pollution control equipment at affected facilities. The operation of additional air pollution control equipment can produce some secondary air quality impacts. Operational impacts were considered for the control measures identified in Table 2-6.1. Control measures that do not change the type of equipment used, such as reducing operating time, will not produce additional operational emissions and are not analyzed. Diesel particulate filters can be regenerated passively and are not expected to produce operational impacts, instead, would reduce the PM emissions in the Air Basin. Oxidation catalyst regeneration, enclosures, and baghouses are also not expected to require regular maintenance; therefore, operational impacts will be minimal. Thermal/catalytic oxidizers were based on 2 million British thermal unit (MM BTU) natural gas burners. The operational emissions associated with the proposed project are summarized in Table 3-8. As shown in Table 3-8, operational impacts associated with proposed project is expected to be below the BAAQMD thresholds, therefore, the proposed project is not expected to have a significant impact on air quality for operational emissions. Detailed emissions calculations are provided in Appendix A.

TABLE 3-8

Estimated Operational Emissions Impacts
(tons/year)

Equipment	VOC	CO	NOx	SOx	PM10	PM2.5
Diesel Particulate Filters	0.00	0.00	0.00	0.00	0.00	0.00
Enclosures	0.00	0.00	0.00	0.00	0.00	0.00
Oxidizers	0.09	3.89	0.48	0.01	0.09	0.09
Total	**0.09**	**3.89**	**0.48**	**0.01**	**0.09**	**0.09**
BAAQMD CEQA Thresholds	**10**	**NE**	**10**	**NE**	**15**	**10**
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

III. c. CEQA Guidelines indicate that cumulative impacts of a project shall be discussed when the project's incremental effect is cumulatively considerable, as defined in CEQA Guidelines §15065(c). While the proposed project may initially create an increase in emissions for the construction or installation of control equipment, the project as a whole aims to reduce emissions of PM, TACs, and other harmful pollutants. Therefore, the cumulative air quality impacts of the proposed project are expected to be beneficial and not adversely significant.

III. e. The proposed project is not expected to generate any new odors or contribute to any existing odors. The reductions in TACs and other emissions that will arise directly as a result of the proposed project may even cause a reduction in odor. Therefore, the proposed project is not expected to result in an increase in the emissions that could generate odors. The BAAQMD will continue to enforce odor nuisance complaints through BAAQMD Regulation 7, Odorous Substances.

Conclusion

Based upon these considerations, no significant adverse impacts to agricultural and forest resources are expected from the adoption of the proposed project. The proposed project is expected to provide beneficial long-term air quality impacts through the reduction of TACs and related health benefits associated with reduced exposure to these compounds.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☑
e) Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, institutional, residential, agricultural, and open space uses. A wide variety of biological resources are located within the Bay Area.

The proposed project focuses on reducing TAC emissions from new and modified stationary sources within the Bay Area. The proposed project will primarily affect land located in commercial, industrial, or institutional facilities which have largely been graded for commercial, industrial, or institutional development. Native vegetation, other than landscape vegetation, has generally been removed to accommodate such development. Any new development would fall under compliance with the City or County General Plans, although no new development is anticipated as a result of amendments to Regulation 2-5.

Regulatory Background

Biological resources are generally protected by the City and/or County General Plans through land use and zoning requirements which minimize or prohibit development in biologically sensitive areas. Biological resources are also protected by the California Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service. The U.S Fish and Wildlife Service and National Marine Fisheries Service oversee the federal Endangered Species Act. Development permits may be required from one or both of these agencies if development would impact rare or endangered species. The California Department of Fish and Wildlife administers the California Endangered Species Act which prohibits impacting endangered and threatened species. The U.S. Army Corps of Engineers and the U.S. EPA regulate the discharge of dredge or fill material into waters of the United States, including wetlands.

Significance Criteria

Impacts on biological resources will be considered significant if any of the following criteria apply:

- The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies,
- The project interferes substantially with the movement of any resident or migratory wildlife species.
- The project adversely affects aquatic communities through construction or operation of the project.

Discussion of Impacts

IV. a–f. The proposed project is designed to limit emissions of TAC from commercial, industrial, or institutional facilities in the Bay Area. The proposed project is not expected to require any new substantial new development. New or modified control equipment may be required, which would be located within the confines of the existing commercial, industrial, or institutional facilities. These sites have been graded for existing operations and no native vegetation is located within the operating portions existing facilities. Therefore, the proposed amendments to Regulation 2-5 are not expected to result in impacts to biological resources and would not directly or indirectly affect riparian habitat, federally protected wetlands, or migratory corridors.

The proposed project would not conflict with local policies or ordinances protecting biological resources, nor would it conflict with local, regional, or state conservation plans as the proposed project only applies to equipment in existing developed facilities or to new equipment to be permitted under the requirements of the amended Regulation 2-5. The proposed project will also not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any other relevant habitat conservation plan as no development outside of the existing commercial, industrial, or institutional facilities is expected to be required as a result of the proposed project.

Conclusion

Based upon these considerations, no significant adverse impacts to biological resources are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?	☐	☐	☐	☑
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☐	☐	☑
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☑
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural and open space uses. Cultural resources are defined as buildings, sites, structures, or objects which might have historical architectural, archaeological, cultural, or scientific importance.

The Carquinez Strait represents the entry point for the Sacramento and San Joaquin Rivers into the San Francisco Bay. This locality lies within the San Francisco Bay and the west end of the Central Valley archaeological regions, both of which contain a rich array of prehistoric and historical cultural resources. The areas surrounding the Carquinez Strait and Suisun Bay have been occupied for millennia given their abundant combination of littoral and oak woodland resources.

The facilities affected by the proposed rule amendment are located in areas zoned as commercial, industrial, or institutional, which have primarily been graded to accommodate development. Cultural resources would not be expected to be impacted by the amendments to Regulation 2-5.

Regulatory Background

The State CEQA Guidelines define a significant cultural resource as a "resource listed or eligible for listing on the California Register of Historical Resources" (Public Resources Code Section 5024.1). A project would have a significant impact if it would cause a substantial adverse change in the significance of a historical resource (State CEQA Guidelines Section 15064.5(b)). A substantial adverse change in the significance of a historical resource would result from an action that would demolish or adversely alter the physical characteristics of the historical resource that convey its historical significance and that qualify the resource for inclusion in the California Register of Historical Resources or a local register or survey that meets the requirements of Public Resources Code §§50020.1(k) and 5024.1(g).

Significance Criteria

Impacts to cultural resources will be considered significant if:

- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group.
- Unique paleontological resources are present that could be disturbed by construction of the proposed project.
- The project would disturb human remains.

Discussion of Impacts

V. a–d. The proposed project is designed to limit emissions of TACs from new and modified stationary sources in the Bay Area. The proposed project is not expected to require substantial new development. Any new air pollution control equipment would be expected to occur within existing commercial, industrial or institutional facilities. These sites have been graded for existing uses. Therefore, the proposed project is not expected to require the use of heavy construction equipment or require grading activities that could impact cultural or historic resources. Physical changes are expected to be limited to existing developed areas and no major construction activities are expected to be required. Therefore, no impacts to cultural resources are anticipated to occur as a result of the proposed project as no major construction activities are required.

Conclusion

Based upon these considerations, no significant adverse impacts to cultural resources are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS.				
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☑	☐
ii) Strong seismic ground shaking?	☐	☐	☑	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☑	☐
iv) Landslides?	☐	☐	☑	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☑	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☑	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural and open space uses. The affected facilities by the proposed amendments to Regulation 2-5 are primarily located in areas zoned as commercial, industrial, institutional.

The Bay Area is located in the natural region of California known as the Coast Ranges geomorphic province. The province is characterized by a series of northwest trending ridges and valleys controlled by tectonic folding and faulting, examples of which include the Suisun Bay, East Bay Hills, Briones Hills, Vaca Mountains, Napa Valley, and Diablo Ranges.

Regional basement rocks consist of the highly deformed Great Valley Sequence, which include massive beds of sandstone inter-fingered with siltstone and shale. Unconsolidated alluvial deposits, artificial fill, and estuarine deposits, (including Bay Mud) underlie the low-lying region along the margins of the Carquinez Straight and Suisun Bay. The estuarine sediments found along the shorelines of Solano County are soft, water-saturated mud, peat and loose sands. The organic, soft, clay-rich sediments along the San Francisco and San Pablo Bays are referred to locally as Bay Mud and can present a variety of engineering challenges due to inherent low strength, compressibility and saturated conditions. Landslides in the region occur in weak, easily weathered bedrock on relatively steep slopes.

The San Francisco Bay Area is a seismically active region, which is situated on a plate boundary marked by the San Andreas Fault System. Several northwest trending active and potentially active faults are included with this fault system. Under the Alquist-Priolo Earthquake Fault Zoning Act, Earthquake Fault Zones were established by the California Division of Mines and Geology along “active” faults, or faults along which surface rupture occurred in Holocene time (the last 11,000 years). In the Bay area, these faults include the San Andreas, Hayward, Rodgers Creek-Healdsburg, Concord-Green Valley, Greenville-Marsh Creek, Seal Cove/San Gregorio and West Napa faults. Other smaller faults in the region classified as potentially active include the Southampton and Franklin faults.

While there are existing geological hazards in the San Francisco Bay Region, there is extensive development and the area has been urbanized. Development within geologically active areas is protected by developing structures in compliance with the California Building Codes.

Regulatory Background

Construction is regulated by the local City or County building codes that provide requirements for construction, grading, excavations, use of fill, and foundation work including type of materials, design, procedures, etc. which are intended to limit the probability of occurrence and the severity of consequences from geological hazards. Necessary permits, plan checks, and inspections are generally required.

The City or County General Plan includes the Seismic Safety Element. The Element serves primarily to identify seismic hazards and their location in order that they may be taken into account in the planning of future development. The California Building Code is the principle mechanism for protection against and relief from the danger of earthquakes and related events.

In addition, the Seismic Hazard Zone Mapping Act (Public Resources Code §§2690 – 2699.6) was passed by the California legislature in 1990 following the Loma Prieta earthquake. The Act required that the California Division of Mines and Geology (DMG) develop maps that identify the areas of the state that require site specific investigation for earthquake-triggered landslides and/or potential liquefaction prior to permitting most urban developments. The act directs cities, counties, and state agencies to use the maps in their land use planning and permitting processes.

Local governments are responsible for implementing the requirements of the Seismic Hazards Mapping Act. The maps and guidelines are tools for local governments to use in establishing their land use management policies and in developing ordinances and review procedures that will reduce losses from ground failure during future earthquakes.

Significance Criteria

Impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.
- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

Discussion of Impacts

VI. a, c, and d. The proposed project is designed to limit emissions of TACs from new and modified stationary sources located throughout the Bay Area. The proposed project is not expected to require any new development. Modifications are expected to be limited to existing commercial, industrial, or institutional facilities. Physical changes would be limited to new air pollution control equipment, including enclosures and no major construction activities are expected to be required as a result of Regulation 2-5.

Any new or modified equipment or buildings in the area must be designed to comply with the California Building Code requirements since the Bay Area is located in a seismically active area. The local cities or counties are responsible for assuring that any new or modified structures comply with the California Building Code as part of the issuance of the building permits and can conduct inspections to ensure compliance. The California Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage.

The California Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The California Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the California Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site.

Any new or modified equipment or buildings at the affected facilities would be required to obtain building permits, as applicable, for all new or modified structures. The affected commercial, industrial, or institutional facilities must receive approval of all building plans and building permits to assure compliance with the latest California Building Code prior to commencing construction activities. The issuance of building permits from the local agency will assure compliance with the California Building Code requirements which include requirements for building within seismic hazard zones. No significant impacts from seismic hazards are expected since any new or modified equipment would be required to comply with the California Building Codes.

VI. b. Since add-on controls will likely be installed at existing developed facilities, during construction of the proposed project, a slight possibility exists for temporary erosion resulting from grading activities, if required (controls included as part of new facilities are not expected to cause erosion or excavating beyond that otherwise resulting from constructing the new facility). These activities are expected to be minor since the existing facilities are generally flat and have previously been graded and paved. Further, wind erosion is not expected to occur to any appreciable extent, because operators at dust generating sites would be required to comply with the best available control measure requirements for fugitive dust emissions. Operators must control fugitive dust through a number of soil stabilizing measures such as watering the site, using chemical soil stabilizers, revegetating inactive sites, etc. The proposed project involves the installation or modification of add-on control equipment at existing facilities, so that grading could be required to provide stable foundations. Potential air quality impacts related to grading are addressed as part of construction air quality impacts. No unstable earth conditions or changes in geologic substructures are expected to result from implementing the proposed project. Accordingly, this impact is not considered significant.

VI. e. Septic tanks or other similar alternative wastewater disposal systems are typically associated with small residential projects in remote areas. The proposed amendments to Regulation 2-5 would affect commercial, industrial, or institutional facilities already connected to appropriate wastewater facilities. Based on these considerations, septic tanks or other alternative wastewater disposal systems are not expected to be impacted by Regulation 2-5.

Conclusion

Based upon these considerations, no significant adverse impacts to geology and soils are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS.				
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☑	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☑	☐

Setting

Global climate change refers to changes in average climatic conditions on the earth as a whole, including temperature, wind patterns, precipitation and storms. Global warming, a related concept, is the observed increase in the average temperature of the earth's surface and atmosphere. One identified cause of global warming is an increase of greenhouse gases (GHGs) in the atmosphere. The six major GHGs identified by the Kyoto Protocol are (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), haloalkanes (HFCs), and perfluorocarbons (PFCs). The GHGs absorb longwave radiant energy reflected by the earth, which warms the atmosphere. GHGs also radiate longwave radiation both upward to space and back down toward the surface of the earth. The downward part of this longwave radiation absorbed by the atmosphere is known as the "greenhouse effect." Some studies indicate that the potential effects of global climate change may include rising surface temperatures, loss in snow pack, sea level rise, more extreme heat days per year, and more drought years.

Events and activities, such as the industrial revolution and the increased combustion of fossil fuels (e.g., gasoline, diesel, coal, etc.), may have contributed to the increase in atmospheric levels of GHGs. Approximately 80 percent of GHG emissions in California are from fossil fuel combustion and over 70 percent of GHG emissions are carbon dioxide emissions. The emission inventory in Table 3-9 focuses on GHG emissions due to human activities only, and compiles estimated emissions from industrial, commercial, transportation, domestic, forestry, and agriculture activities in the San Francisco Bay Area region of California. The GHG emission inventory in Table 3-9 reports direct emissions generated from sources within the Bay Area and estimates future GHG emissions.

TABLE 3-9

Bay Area Greenhouse Gas Emission Inventory Projections (million metric tons CO_2-Equivalent)

SOURCE CATEGORY Year	2005	2009	2012	2015	2020
INDUSTRIAL/COMMERCIAL					
Oil Refineries					
Refining Processes	3.4	3.5	3.6	3.7	3.9
Refinery Make Gas Combustion	4.7	4.9	5.0	5.2	5.4
Natural Gas and Other Gases Combustion	4.8	5.0	5.1	5.3	5.5
Liquid Fuel Combustion	0.1	0.1	0.1	0.1	0.1
Solid Fuel Combustion	1.0	1.0	1.1	1.1	1.1
Waste Management					
Landfill Combustion Sources	0.0	0.0	0.0	0.0	0.0
Landfill Fugitive Sources	1.2	1.2	1.2	1.2	1.2
Composting/POTWs	0.4	0.4	0.4	0.4	0.4
Other Industrial/ Commercial					
Cement Plants	0.9	0.9	0.9	0.9	1.0
Commercial Cooking	0.1	0.1	0.1	0.1	0.2
ODS Substitutes/Nat. Gas Distrib./Other	3.6	5.2	6.3	7.5	9.4
Reciprocating Engines	0.6	0.6	0.6	0.7	0.7
Turbines	0.4	0.4	0.4	0.4	0.4
Natural Gas- Major Combustion Sources	1.6	2.5	2.6	2.7	2.8
Natural Gas- Minor Combustion Sources	8.8	9.2	9.5	9.9	10.4
Coke Coal	1.0	1.0	1.1	1.1	1.2
Other Fuels Combustion	0.3	0.4	0.4	0.4	0.4
Subtotal	32.8	36.3	38.4	40.6	44.2
RESIDENTIAL FUEL USAGE					
Natural Gas	6.4	6.6	6.8	6.9	7.2
LPgas/Liquid Fuel	0.2	0.2	0.2	0.2	0.2
Solid Fuel	0.1	0.2	0.2	0.2	0.2
Subtotal	6.7	6.9	7.1	7.2	7.5
ELECTRICITY/ CO-GENERATION					
Co-Generation	5.5	5.5	5.7	6.0	6.4
Electricity Generation	2.8	3.1	3.2	3.3	3.5
Electricity Imports	6.8	7.3	7.6	7.9	8.3
Subtotal	15.1	15.8	16.5	17.2	18.3
OFF-ROAD EQUIPMENT					
Lawn and Garden Equipment	0.1	0.1	0.1	0.1	0.1
Construction Equipment	1.7	1.9	1.9	2.0	2.2
Industrial Equipment	0.7	0.8	0.8	0.9	1.0
Light Commercial Equipment	0.2	0.2	0.3	0.3	0.3
Subtotal	2.8	3.0	3.2	3.3	3.6
TRANSPORTATION					
Off-Road					
Locomotives	0.1	0.1	0.1	0.1	0.1
Ships	0.7	0.8	0.8	0.9	1.0
Boats	0.6	0.6	0.5	0.5	0.6

TABLE 3-9 (continued)

SOURCE CATEGORY Year	2005	2009	2012	2015	2020
Commercial Aircraft	1.8	2.0	2.1	2.3	2.6
General Aviation	0.2	0.2	0.2	0.3	0.3
Military Aircraft	0.5	0.5	0.5	0.5	0.5
On-Road					
Passenger Cars/Trucks up to 10,000 lbs	26.6	27.1	27.9	29.0	30.9
Medium/Heavy Duty Trucks > 10,000 lbs	3.3	3.3	3.4	3.5	3.7
Urban, School and Other Buses	0.8	0.8	0.8	0.8	0.9
Motor-Homes and Motorcycles	0.2	0.2	0.2	0.2	0.2
Subtotal	34.8	35.6	36.7	38.1	40.7
AGRICULTURE/FARMING					
Agricultural Equipment	0.2	0.2	0.2	0.2	0.2
Animal Waste	0.6	0.6	0.6	0.6	0.6
Soil Management	0.3	0.3	0.3	0.3	0.3
Biomass Burning	0.0	0.0	0.0	0.0	0.0
Subtotal	1.1	1.1	1.1	1.1	1.1
GRAND TOTAL EMISSIONS	**93.4**	**98.7**	**103.0**	**107.5**	**115.4**

Source: BAAQMD, 2010

Regulatory Background

In response to growing scientific and political concern regarding global climate change, California has taken the initiative to address the state's greenhouse gas emissions. California has adopted the Global Warming Solutions Act of 2006, also known as AB 32, which required the state to reduce its GHG emissions to 1990 levels by 2020. In addition, in 2005 Governor Schwarzenegger adopted Executive Order S-3-05, which committed to achieving an 80 percent reduction below 1990 levels by 2050. CARB has implemented these mandates through adoption of regulatory requirements to reduce GHG emissions (among other agency implementation actions). All refineries affected by the proposed new regulations are under CARB's AB32 cap and trade program, which established a limit on GHG emissions for each refinery. GHG emissions over the limit require additional GHG emission reductions or purchase of GHG emission credits from sources that had excess emission credits.

At the federal level, the U.S. EPA has adopted GHG emissions limits for new light-duty cars and trucks. This regulation of mobile sources has in turn triggered New Source Review and Title V permitting requirements for stationary sources. These requirements include using Best Available Control Technology to control emissions from major facilities. In addition, the U.S. EPA is also in the process of adopting New Source Performance Standards for major GHG source categories (currently limited to electric utility generating units).

The U.S. Congress passed "The Consolidated Appropriations Act of 2008" (HR 2764) in December 2007, which required reporting of GHG data and other relevant information from large emission sources and suppliers in the United States. The Rule is referred to as 40 Code of Federal Regulations (CFR) 4 Part 98 - Greenhouse Gas Reporting Program (GHGRP). Facilities that emit 25,000 metric tonnes or more per year of GHGs are required to submit annual reports to U.S. EPA.

Significance Criteria

No GHG thresholds were provided in the BAAQMD 1999 CEQA Guidelines. The 2010 CEQA Guidelines established a project specific GHG significance threshold of 1,100 metric tons of CO_2 equivalent per year (MT CO_2 eq./year) (BAAQMD, 2010). Therefore, in order to provide a conservative air quality analysis, the thresholds recommended in the revised 2010 CEQA Guidelines (BAAQMD, 2010) will be used in the current air quality impacts analysis.

Discussion of Impacts

VII. a-b. Combustion of conventional hydrocarbon fuel results in the release of energy as bonds between carbon and hydrogen are broken and reformed with oxygen to create water vapor and carbon dioxide (CO_2). CO_2 is not a pollutant that occurs in relatively low concentrations as a by-product of the combustion process; CO_2 is a necessary combustion product of any fuel containing carbon. Therefore, attempts to reduce emissions of greenhouse gases from combustion focus on increasing energy efficiency – consuming less fuel to provide the same useful energy output.

The analysis of GHG emissions is a different analysis than for criteria pollutants for the following reasons. For criteria pollutant, significance thresholds are based on daily emissions because attainment or non-attainment is typically based on daily exceedances of applicable ambient air quality standards. Further, several ambient air quality standards are based on relatively short-term exposure effects to human health, e.g., one-hour and eight-hour. Using the half-life of CO_2, 100 years, for example, the effects of GHGs are longer-term, affecting the global climate over a relatively long time frame. GHGs do not have human health effects like criteria pollutants. Rather, it is the increased accumulation of GHGs in the atmosphere that may result in global climate change. Due to the complexity of conditions and interactions affecting global climate change, it is not possible to predict the specific impact, if any, attributable to GHG emissions associated with a single project. Furthermore, the GHG emissions associated with the proposed rule would be small relative to total global or even state-wide GHG emissions. Thus, the significance of potential impacts from GHG emissions related to the proposed project has been analyzed for long-term operations on a cumulative basis, as discussed below.

Implementation of the proposed project is expected to reduce emissions of TACs due to the revision of OEHHA guidelines. Facilities are expected to implement control measures to meet thresholds established by the revised guidelines. The BAAQMD anticipates that of the estimated 100 additional NSR projects that will require an HRA, approximately 60 will need to implement new control measures. Where multiple control measures were potentially viable, the measure that contributed greater GHG emissions was analyzed in order to constitute a worst-case scenario result. Thus, analysis of GHG emissions includes operational emissions for four thermal/catalytic oxidizers and 30-year amortized construction emissions of seven diesel particulate filters, three enclosures, and four thermal/catalytic oxidizers. The increase in GHG emissions associated with these control measures are summarized in Table 3-10. Detailed emission calculations are provided in Appendix A.

TABLE 3-10

GHG Emissions Increases Associated with the Implementation of Control Measures (metric tons/year)

Activity	**CO_2e**
Construction (30-year Amortized)	32.4
Oxidizers	910.1
Total	942.5
BAAQMD Significance Threshold	1,100
Significant?	**No**

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The GHG emissions associated with the proposed rule amendments are expected to be less than the GHG threshold and, therefore, less than significant. Most of the control measures are not expected to result in GHG emissions (other than during the construction phase), including reduction in throughput or operating hours, filters, baghouses, and enclosures.

Conclusion

Based on the above discussion, no significant adverse GHG impacts are expected due to implementation the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☑	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☑	☐
c) Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☑	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☑	☐

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, and potions of western Solano and southern Sonoma Counties. Because the area of coverage is vast (approximately 5,600 square miles), land uses vary greatly and include commercial, industrial, residential, and agricultural uses.

Facilities and operations within the Air District handle and process substantial quantities of flammable materials and acutely toxic substances. Accidents involving these substances can result in worker or public exposure to fire, heat, blast from an explosion, or airborne exposure to hazardous substances.

Fires can expose the public or workers to heat. The heat decreases rapidly with distance from the flame and therefore poses a greater risk to workers at specific facilities where flammable materials and toxic substances are handled than to the public. Explosions can generate a shock wave, but the risks from explosion also decrease with distance. Airborne releases of hazardous materials may affect workers or the public, and the risks depend upon the location of the release, the hazards associated with the material, the winds at the time of the release, and the proximity of receptors.

For all facilities and operations handling flammable materials and toxic substances, risks to the public are reduced if there is a buffer zone between process units and residences or if prevailing winds blow away from residences. Thus, the risks posed by operations at a given facility or operation are unique and determined by a variety of factors.

Regulatory Background

There are many federal and state rules and regulations that facilities handling hazardous materials must comply with which serve to minimize the potential impacts associated with hazards at these facilities.

Under the Occupational Safety and Health Administration (OSHA) regulations [29 Code of Federal Regulations (CFR) Part 1910], facilities which use, store, manufacture, handle, process, or move highly hazardous materials must prepare a fire prevention plan. In addition, 29 CFR Part 1910.119, Process Safety Management (PSM) of Highly Hazardous Chemicals, and Title 8 of the California Code of Regulations, General Industry Safety Order §5189, specify required prevention program elements to protect workers at facilities that handle toxic, flammable, reactive, or explosive materials.

Section 112 (r) of the Clean Air Act Amendments of 1990 [42 U.S.C. 7401 et. Seq.] and Article 2, Chapter 6.95 of the California Health and Safety Code require facilities that handle listed regulated substances to develop Risk Management Programs (RMPs) to prevent accidental releases of these substances, U.S. EPA regulations are set forth in 40 CFR Part 68. In California, the California Accidental Release Prevention (CalARP) Program regulation (CCR Title 19, Division 2, Chapter 4.5) was issued by the Governor's Office of Emergency Services (OES).

RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program.

Affected facilities that store materials are required to have a Spill Prevention Control and Countermeasures (SPCC) Plan per the requirements of 40 Code of Federal Regulations, Section 112. The SPCC is designed to prevent spills from on-site facilities and includes requirements for secondary containment, provides emergency response procedures, establishes training requirements, and so forth.

The Hazardous Materials Transportation (HMT) Act is the federal legislation that regulates transportation of hazardous materials. The primary regulatory authorities are the U.S. Department of Transportation, the Federal Highway Administration, and the Federal Railroad Administration. The HMT Act requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practical moment (49 CFR Subchapter C). The California Department of Transportation (Caltrans) sets standards for trucks in California. The regulations are enforced by the California Highway Patrol.

California Assembly Bill 2185 requires local agencies to regulate the storage and handling of hazardous materials and requires development of a business plan to mitigate the release of hazardous materials. Businesses that handle any of the specified hazardous materials must submit to government agencies (i.e., fire departments), an inventory of the hazardous materials, an emergency response plan, and an employee training program. The information in the business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation.

Contra Costa County has adopted an industrial safety ordinance that addresses the human factors that lead to accidents. The ordinance requires stationary sources to develop a written human factors program that considers human factors as part of process hazards analyses, incident investigations, training, operating procedures, among others.

Significance Criteria

Impacts associated with hazards will be considered significant if any of the following occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

Discussion of Impacts

VIII. a-b. The proposed rule amendments are designed to limit emissions of TACs from new and modified stationary sources in the Bay Area. The proposed project is not expected to require substantial new development. Any new air pollution control equipment or enclosures would be expected to occur within existing commercial, industrial or institutional facilities. The proposed rule amendments are expected to increase the control and capture of TACs, thus limiting TAC emissions and exposure to TACs.

As shown in Table 2.6-1, facility modifications associated with the proposed rule amendments are largely expected to include limiting throughput or hours of operations; increased use of diesel particulate filters; additional enclosures and bag houses, and thermal oxidizers or carbon adsorption systems. The hazards associated with the use of these types of air pollution control equipment and systems are minimal.

- Limiting throughput or hours of operations would not result in increased hazards as no new equipment, hazardous materials uses, or hazards would be generated.
- Diesel particulate filters and baghouses are not expected to result in additional hazards as they would simply filter exhaust.

It is estimated that an additional four thermal oxidizers or carbon adsorption systems may be required to control TAC emissions. Operation of carbon adsorption systems has potential hazards associated with the desorption cycle when there is minor risk for explosion or release of VOC into the atmosphere. Carbon adsorption systems may also represent a fire risk during operation when carbon particles are saturated with volatile organic compounds. The potential hazard impacts would depend on the flammability of the material, concentration of VOC adsorbed into the activated carbon, ambient oxygen levels, characteristics of the carbon adsorption system, and the operating conditions. Carbon adsorption units would concentrate hazardous organic compound into the spent carbon, requiring recycling or disposal.

The risk of explosion or release of VOC from carbon adsorption systems is not expected to be significant. The engineering specifications for a carbon adsorption unit are typically designed to operate within an acceptable range of temperatures for the carbon bed. Good engineering practice means this range of temperatures should not exceed the lower explosive limit (LEL) of the compound(s) being adsorbed. There is little risk of fire if the LEL is not exceeded.

Oxidation systems can be susceptible to compressor failure and flame flashbacks, particularly during startup and shutdown. As a result, oxidation systems could pose potential hazard risks primarily to workers or to a lesser extent the public in the event of explosions or fires. Oxidation systems historically have a good safety record when operated properly according to the manufacturers' instruction. Proper tune-up and maintenance is also important and necessary to avoid failures or explosions. When installed, operated, and maintained properly, oxidation systems are not expected to create fire or explosion hazards to workers or the public in general.

In addition to following good engineering practice for both oxidization systems, thermal oxidizers and carbon adsorption systems, Health and Safety Code §25506 specifically requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the emergency release or threatened release of a hazardous material. Business emergency response plans generally require the following:

- Types of hazardous materials used and their locations;
- Training programs for employees including safe handling of hazardous materials and emergency response procedures and resources.
- Procedures for emergency response notification;
- Proper use of emergency equipment;
- Procedures to mitigate a release or threatened release of hazardous materials and measures to minimize potential harm or damage to individuals, property, or the environment; and
- Evacuation plans and procedures.

Hazardous materials are expected to be used in compliance with established OSHA or Cal/OSHA regulations and procedures, including providing adequate ventilation, using recommended personal protective equipment and clothing, posting appropriate signs and warnings, and providing adequate worker health and safety training. The exposure of employees is regulated by Cal-OSHA in Title 8 of the CCR. Specifically, 8 CCR 5155 establishes permissible exposure levels (PELs) and short-term exposure levels (STELs) for various chemicals. These requirements apply to all employees. The PELs and STELs establish levels below which no adverse health effects are expected. These requirements protect the health and safety of the workers, as well as the nearby population including sensitive receptors.

In general, all local jurisdictions and all facilities using a minimum amount of hazardous materials are required to formulate detailed contingency plans to eliminate, or at least minimize, the possibility and effect of fires, explosion, or spills. In conjunction with the California Office of Emergency Services, local jurisdictions have enacted ordinances that set standards for area and business emergency response plans. These requirements include immediate notification, mitigation of an actual or threatened release of a hazardous material, and evacuation of the emergency area.

The above regulations provide comprehensive measures to reduce hazards of explosive or otherwise hazardous materials. Compliance with these and other federal, state and local regulations and proper operation and maintenance of equipment should ensure the potential for explosions or accidental releases of hazardous materials is not significant. Therefore, the proposed rule amendments are not expected to create a significant hazard to the public or environment.

VIII. c. Schools may be located within a quarter mile of commercial, industrial or institutional facilities affected by the proposed rule modifications. It would be expected that these facilities are taking the appropriate and required actions to ensure proper handling or hazardous materials, substances or wastes near school sites. The proposed rule amendments would not generate hazardous emissions, handling of hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school. Rather the proposed project would be more likely to control TACs from existing facilities near school sites. Therefore, no increase in hazardous emissions from implementation of the proposed new Rule would be expected.

VIII. d. Government Code §65962.5 requires creation of lists of facilities that may be subject to Resource Conservation and Recovery Act (RCRA) permits or site cleanup activities. It is not known if the affected commercial, industrial, and institutional facilities are located on the hazardous materials sites list pursuant to Government Code §65962.5. However, the rule amendments are expected to increase the control of TAC emissions and would not interfere with site cleanup activities or create additional site contamination, and would not create a significant hazard to the public or environment.

VIII. e–f. The proposed rule would not result in a safety hazard for people residing or working within two miles or a public airport or air strip. No impacts on airports or airport land use plans are anticipated from the proposed rule amendments, which are expected to increase the control of TAC emissions. Modifications are expected to be confined to the existing commercial, industrial and institutional land uses. Therefore, no significant adverse impacts on an airport land use plan or on a private air strip are expected.

VIII. g. Emergency response plans are typically prepared in coordination with the local city or county emergency plans to ensure the safety of the public (surrounding local communities), and the facility employees as well. The proposed project would not impair implementation of, or physically interfere with any adopted emergency response plan or emergency evacuation plan. It is expected that the existing affected facilities already have an emergency response plan in place, where required. The addition of air pollution control equipment is not expected to require modification of the existing emergency response plan at the affected facilities. Thus, the proposed rule amendments are not expected to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

VIII. h. It is not known if the affected facilities are adjacent to wildland. However, it is expected that these facilities are taking the appropriate and required actions to ensure proper handling of hazardous or acutely hazardous materials, substances or wastes. The proposed rule amendment is not expected to generate additional development that would place structures closer to wildland areas. The proposed project would also not increase the existing risk of fire hazards in areas with flammable brush, grass, or trees. No substantial or native vegetation typically exists on or near the affected facilities located within commercial, industrial, or institutional areas, so the proposed project is not expected to expose people or structures to wild fires. Therefore, no significant increase in fire hazards is expected at the affected facilities associated with the proposed project.

Conclusion

Based upon these considerations, no significant adverse hazards and hazardous materials impacts are expected from the implementation of proposed rule amendments.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY.				
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☑	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☑	☐
c) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	☐	☐	☐	☑
d) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	☐	☐	☐	☑
e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☑
f) Otherwise substantially degrade water quality?	☐	☐	☑	☐
g) Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☑

i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☑
j)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, and potions of western Solano and southern Sonoma Counties. Because the area of coverage is vast (approximately 5,600 square miles), land uses vary greatly and include commercial, industrial, residential, and agricultural uses. Regulation 2-5 would apply to stationary sources located in facilities which are located within commercial, industrial, or commercial areas in the Bay Area.

Reservoirs and drainage streams are located throughout the area within the BAAQMD's jurisdiction, and discharge into the Bays. Marshlands incised with numerous winding tidal channels containing brackish water are located throughout the Bay Area.

The affected area is located within the San Francisco Bay Area Hydrologic Basin. The primary regional groundwater water-bearing formations include the recent and Pleistocene (up to two million years old) alluvial deposits and the Pleistocene Huichica formation. Salinity within the unconfined alluvium appears to increase with depth to at least 300 feet. Water of the Huichica formation tends to be soft and relatively high in bicarbonate, although usable for domestic and irrigation needs.

Regulatory Background

The Federal Clean Water Act of 1972 primarily establishes regulations for pollutant discharges into surface waters in order to protect and maintain the quality and integrity of the nation's waters. This Act requires industries that discharge wastewater to municipal sewer systems to meet pretreatment standards. The regulations authorize the U.S. EPA to set the pretreatment standards. The regulations also allow the local treatment plants to set more stringent wastewater discharge requirements, if necessary, to meet local conditions.

The 1987 amendments to the Clean Water Act enabled the U.S. EPA to regulate, under the National Pollutant Discharge Elimination System (NPDES) program, discharges from industries and large municipal sewer systems. The U.S. EPA set initial permit application requirements in 1990. The State of California, through the State Water Resources Control Board, has authority to issue NPDES permits, which meet U.S. EPA requirements, to specified industries.

The Porter-Cologne Water Quality Act is California's primary water quality control law. It implements the state's responsibilities under the Federal Clean Water Act but also establishes state wastewater discharge requirements. The Regional Water Quality Control Board administers the state requirements as specified under the Porter-Cologne Water Quality Act, which include storm water discharge permits. The water quality in the Bay Area is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board.

In response to the Federal Act, the State Water Resources Control Board prepared two state-wide plans in 1991 and 1995 that address storm water runoff: the California Inland Surface Waters Plan and the California Enclosed Bays and Estuaries Plan, which have been updated in 2005 as the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. Enclosed bays are indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. San Francisco Bay, and its constituent parts, including Carquinez Strait and Suisun Bay, fall under this category.

The San Francisco Bay Basin Plan identifies the: (1) beneficial water uses that need to be protected; (2) the water quality objectives needed to protect the designated beneficial water uses; and (3) strategies and time schedules for achieving the water quality objectives. The beneficial uses of the Carquinez Strait that must be protected which include water contact and non-contact recreation, navigation, ocean commercial and sport fishing, wildlife habitat, estuarine habitat, fish spawning and migration, industrial process and service supply, and preservation of rare and endangered species. The Carquinez Strait and Suisun Bay are included on the California list as impaired water bodies due to the presence of chlordane, copper, DDT, diazinon, dieldrin, dioxin and furan compounds, mercury, nickel, PCBs, and selenium.

Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

<u>Water Demand</u>:

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.

<u>Water Quality</u>:

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.

- The project results in alterations to the course or flow of floodwaters.

Discussion of Impacts

IX. a and f. The proposed project is designed to limit emissions of TACs from new and modified stationary sources located throughout the Bay Area. The proposed project is not expected to require any new development. Modifications are expected to be limited to existing commercial, industrial, or institutional facilities. Physical changes are expected to be limited to new air pollution control equipment and construction of enclosures. No significant increase in wastewater discharge is expected from the proposed project so no impacts on water quality resources are anticipated from the proposed project.

Minor construction may be necessary to install control systems. Construction would likely require a couple of some off-road equipment, medium-duty truck trips to deliver equipment, and a small construction crew. The construction of enclosures may require some grading and foundations work. Grading and foundation work is not expected to last more than one week per project, therefore, minimal water will be required for dust mitigation. No wet gas scrubbers are expected as a result of the proposed project. All existing and new facilities will still be required to have applicable wastewater discharge permits and storm water pollution prevention plans (SWPPP).

IX. b. No significant increase in water use is expected as a result of the proposed project. The Air District anticipates that facilities will implement various control measures, but no wet gas scrubbers are expected. Thus, water concerns will be limited to construction, which is expected to involve minor construction activities within existing facilities or buildings. Minor water use for construction purposes will not substantially increase water demand or interfere with groundwater recharge or cause any notable change in the groundwater table level.

IX. c, d, and e. The proposed program changes will reduce overall TAC emissions. The proposed project does not have the potential to substantially increase the area subject to runoff since the construction activities are expected to be limited in size and would be located primarily within existing facilities that have already been graded. Additionally, facilities are typically expected to develop a SWPPP to address storm water impacts. The proposed project is also not expected to substantially alter the existing drainage or drainage patterns, result in erosion or siltation, alter the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite as there will be no major construction or significant water use. Therefore, no significant adverse impacts to storm water runoff or existing drainage patterns are expected as a result of the proposed project.

IX. g, h, i, and j. The proposed project does not include the construction of new or relocation of existing housing or other types of facilities and, as such, would not require the placement of housing or other structures within a 100-year flood hazard area. (See also XIII “Population and Housing”). Any construction activities associated with the proposed project would occur within the confines of existing facilities. As a result, the proposed project would not be expected to create or substantially increase risks from flooding; expose people or structures to significant risk of loss, injury or death involving flooding; or increase existing risks, if any, of inundation by seiche, tsunami, or mudflow.

Conclusion

Based upon these considerations, no significant adverse impacts to hydrology and water quality are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☑
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to a general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, and potions of western Solano and southern Sonoma Counties. Because the area of coverage is vast (approximately 5,600 square miles), land uses vary greatly and include commercial, industrial, residential, and agricultural uses. Regulation 2-5 would apply to stationary sources located in facilities which are located within commercial, industrial, or commercial areas in the Bay Area.

Regulatory Background

Land uses are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements.

Significance Criteria

Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by local jurisdictions.

Discussion of Impacts

X. a-c. The proposed project is designed to limit emissions of TACs from stationary sources located in the Bay Area. The proposed project does not include any components that would require major modifications to existing commercial, industrial, or institutional facilities and it would not result in impacts that would physically divide an established community or generate additional development.

The proposed project is not expected to require any new substantial construction or development. New or modified pollution control equipment or enclosures would be located within existing commercial, industrial, or institutional facilities. Construction activities would be limited to the confines of existing facilities which are zoned for commercial, industrial, or institutional land use. New of modified equipment would be limited to the confines of existing facilities and are not expected to affect adjacent land uses, divide an established community, conflict with any applicable land use plan or policy or conflict with any habitat conservation plan.

Conclusion

Based upon these considerations, no significant adverse impacts to land use and planning are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The commercial, industrial, or institutional facilities affected by the proposed project are located in a relatively small portion of the Bay Area.

Regulatory Background

Mineral resources are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements.

Significance Criteria

Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:

- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Discussion of Impacts

XI. a-b. The proposed amendments to Regulation 2-5 are not associated with any action that would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. The proposed project is designed to limit emissions of TACs from stationary sources in the Bay Area. Therefore, no impacts on mineral resources are expected.

Conclusion

Based upon these considerations, no significant adverse impacts to mineral resources are expected as a result of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. NOISE. Would the project:				
a) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐
b) Expose persons to or generate of excessive ground borne vibration or ground borne noise levels?	☐	☐	☑	☐
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, and potions of western Solano and southern Sonoma Counties. Because the area of coverage is vast (approximately 5,600 square miles), land uses vary greatly and include commercial, industrial, residential, and agricultural uses. The proposed project would apply existing facilities which are located within commercial, industrial, or institutional areas in the Bay Area.

Regulatory Background

Noise issues related to construction and operation activities are addressed in local General Plan policies and local noise ordinance standards. The General Plans and noise ordinances generally establish allowable noise limits within different land uses including residential areas, other sensitive use areas (e.g., schools, churches, hospitals, and libraries), commercial areas, and industrial areas.

Significance Criteria

Impacts on noise will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Discussion of Impacts

XII. a, c, and d. The proposed project is designed to limit emissions of TACs from stationary sources in the Bay Area. New and modified equipment are expected to be limited to the commercial, industrial, and institutional facilities. The existing noise environment at each of the affected facilities is typically dominated by noise from existing equipment onsite, vehicular traffic around the facilities, and trucks entering and exiting facility premises. No new major industrial equipment is expected to be required to be installed due to the proposed project so that no noise impacts associated with the operation of the proposed project are expected. Air pollution control equipment is not generally a major noise source. Further, all noise producing equipment most comply with local noise ordnances and applicable OSHA and Cal/OSHA noise requirements. Therefore, industrial operations affected by the proposed new rule are not expected to have a significant adverse effect on local noise control laws or ordinances.

Construction activities associated with the proposed project may generate some noise associated with temporary construction equipment and construction-related traffic. Construction would likely require some truck trips to deliver equipment, a construction crew of up to about 15 workers, and a few pieces of construction equipment (e.g., forklift, welders, backhoes, cranes, and generators). All construction activities would be temporary are expected to occur within the confines of existing commercial, industrial, or institutional facilities so that no significant increase in noise during construction activities is expected.

XII. b. The proposed project is not expected to generate or expose people to excessive ground borne vibration or ground borne noise. No major construction equipment that would generate vibration (e.g., backhoes, graders, jackhammers, etc.) is expected to be required. Therefore, the proposed project is not expected to generate excessive ground borne vibration or noise.

XII. e-f. It is not known if the existing commercial, industrial, or institutional facilities affected by the proposed project are not located within existing airport land use plans. The addition of new or modification of existing air pollution control equipment or enclosures would not expose people residing or working in the project area to excessive noise levels associated with airports, as air pollution control equipment are not typically noise generating equipment. The proposed amendments to Regulation 2-5 would not locate residents or commercial buildings or other sensitive noise sources closer to airport operations. As noted in the previous item, there are no components of the proposed project that would substantially increase ambient noise levels, either intermittently or permanently.

Conclusion

Based upon these considerations, no significant adverse impacts to noise are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	☐	☐	☐	☑
b) Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
c) Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, and potions of western Solano and southern Sonoma Counties. Because the area of coverage is vast (approximately 5,600 square miles), land uses vary greatly and include commercial, industrial, residential, and agricultural uses. Regulation 2-5 would apply to facilities which are located within commercial, industrial, or institutional areas in the Bay Area.

Regulatory Background

Population and housing growth and resources are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements.

Significance Criteria

Impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

Discussion of Impacts

XIII. a. According to the Association of Bay Area Governments (ABAG), population in the Bay Area is currently about 7.2 million people and is expected to grow to about 9.3 million people by 2040 (ABAG and MTC, 2013). The proposed project is not anticipated to generate any significant effects, either directly or indirectly, on the Bay Area's population or population distribution. The proposed amendments to Regulation 2-5 will affect commercial, industrial, or institutional facilities. It is expected that the existing labor pool would accommodate the labor requirements for any new or modified equipment at the facilities. In addition, it is not expected that the affected facilities would need to hire additional personnel to implement the proposed rule. In the event that new employees are hired, it is expected that the existing local labor pool in the Air District can accommodate any increase in demand for workers that might occur as a result of adopting the proposed amendments to Regulation 2-5. As such, adopting the proposed project is not expected to induce substantial population growth.

XIII. b-c. The amendments to Regulation 2-5 could require new or modified pollution control equipment at existing commercial, industrial, or institutional facilities in the Bay Area. The implementation of the proposed project is not expected to result in the creation of any industry/business that would affect population growth, directly or indirectly induce the construction of single- or multiple-family units, or require the displacement of people or housing elsewhere in the Bay Area. Based upon these considerations, significant population and housing impacts are not expected from the implementation of the proposed project.

Conclusion

Based upon these considerations, no significant adverse impacts to population and housing are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES. Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
Fire protection?	☐	☐	☐	☑
Police protection?	☐	☐	☐	☑
Schools?	☐	☐	☐	☑
Parks?	☐	☐	☐	☑
Other public facilities?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, and potions of western Solano and southern Sonoma Counties. Because the area of coverage is vast (approximately 5,600 square miles), land uses vary greatly and include commercial, industrial, residential, and agricultural uses. Amendments to Regulation 2-5 would apply to facilities which are located within commercial, industrial, or institutional areas in the Air District.

Given the large area covered by the BAAQMD, public services are provided by a wide variety of local agencies. Fire protection and police protection/law enforcement services within the BAAQMD are provided by various districts, organizations, and agencies. There are several school districts, private schools, and park departments within the BAAQMD. Public facilities within the BAAQMD are managed by different county, city, and special-use districts.

Regulatory Background

City and/or County General Plans usually contain goals and policies to assure adequate public services are maintained within the local jurisdiction.

Significance Criteria

Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

Discussion of Impacts

XIV. a. The proposed project is designed to reduce emissions of TACs from stationary sources in the Bay Area. Proposed amendments to Regulation 2-5 could require minor construction activities and modifications at existing facilities. The modifications are not expected to require additional service from local fire departments above current levels.

As noted in the "Population and Housing" discussion above, the proposed project is not expected to induce population growth because the local labor pool (e.g., workforce) is expected to be sufficient to accommodate any activities that may be necessary at affected facilities. Additionally, modifications to existing facilities are not expected to require an increase in employees. Therefore, there will be no increase in local population and thus no impacts are expected to local schools or parks.

The proposed project would not result in the need for new or physically altered government facilities in order to maintain acceptable service ratios, response times, or other performance objectives. There will be no increase in population as a result of the adoption of the proposed project, therefore, no need for physically altered government facilities.

Conclusion

Based upon these considerations, no significant adverse impacts to public services are expected from the adoption of the amendments to Regulation 2-5.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. RECREATION. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, and potions of western Solano and southern Sonoma Counties. Because the area of coverage is vast (approximately 5,600 square miles), land uses vary greatly and include commercial, industrial, residential, and agricultural uses. The amendments to Regulation 2-5 would apply to existing facilities which are located within commercial, industrial, or institutional areas within the Air District.

Regulatory Background

Recreational areas are generally protected and regulated by the City and/or County General Plans at the local level through land use and zoning requirements. Some parks and recreation areas are designated and protected by state and federal regulations.

Significance Criteria

Impacts to recreation will be considered significant if:

- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.
- The project adversely affects existing recreational opportunities.

Discussion of Impacts

XV. a-b. As discussed under "Land Use" above, there are no provisions in the amendments to Regulation 2-5 affecting land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments; no land use or planning requirements will be altered by the proposed project. New and modified pollution control equipment or enclosures required to comply with the proposed project would occur within the boundaries of existing facilities which are located in commercial, industrial, or institutional facilities, so there would be no impacts on recreation facilities. The proposed project would not increase or redistribute population and, therefore, would not increase the demand for or use of existing neighborhood and regional parks or other recreational facilities or require the construction of new or the expansion of existing recreational facilities. Therefore, adoption of the proposed project is not expected to have any significant adverse impacts on recreation.

Conclusion

Based upon these considerations, no significant adverse impacts to recreation are expected from the adoption of the amendments to Regulation 2-5.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC. Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☑	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☑	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑
d) Substantially increase hazards because of a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☐	☑
e) Result in inadequate emergency access?	☐	☐	☐	☑
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles). Transportation systems located within the Bay Area include railroads, airports, waterways, and highways. The Port of Oakland and three international airports in the area serve as hubs for commerce and transportation. The transportation infrastructure for vehicles and trucks in the Bay Area ranges from single lane roadways to multilane interstate highways. The Bay Area currently contains over 1,300 directional miles of limited-access highways, which include both interstates and state highways. In addition, the Bay Area has over 33,000 directional miles of arterials and local streets, providing more localized access to individual communities. Together, these roadway facilities accommodate nearly 17 million vehicle trips a day. There are over 11,500 transit route miles of service including heavy rail (BART), light rail (Muni Metro and VTA Light Rail), commuter rail (Caltrain and ACE), diesel and electric buses, cable cars, and ferries. The Bay Area also has an extensive local system of bicycle routes and pedestrian paths and sidewalks. At a regional level, the share of workers driving alone was about 68 percent in 2010. The portion of commuters that carpool was about 11 percent in 2010, while an additional 10 percent utilize public transit. About 3 percent of commuters walked to work in 2010. In addition, other modes of travel (bicycle, motorcycle, etc.), account for three percent of commuters in 2010 (MTC, 2013). Cars, buses, and commercial vehicles travel about 149 million miles a day (2010) on the Bay Area Freeways and local roads. Transit serves about 1.6 million riders on the average weekday (MTC, 2013).

The region is served by numerous interstate and U.S. freeways. On the west side of San Francisco Bay, Interstate 280 and U.S. 101 run north-south. U.S. 101 continues north of San Francisco into Marin County. Interstates 880 and 660 run north-south on the east side of the Bay. Interstate 80 starts in San Francisco, crosses the Bay Bridge, and runs northeast toward Sacramento. Interstate 80 is a six-lane north-south freeway which connects Contra Costa County to Solano County via the Carquinez Bridge. State Routes 29 and 84, both highways that allow at-grade crossings in certain parts of the region, become freeways that run east-west, and cross the Bay. Interstate 580 starts in San Rafael, crosses the Richmond-San Rafael Bridge, joins with Interstate 80, runs through Oakland, and then runs eastward toward Livermore. From the Benicia-Martinez Bridge, Interstate 680 extends north to Interstate 80 in Cordelia. Interstate 780 is a four lane, east-west freeway extending from the Benicia-Martinez Bridge west to I-80 in Vallejo. Proposed Regulation 9-14 will affect the Phillips 66 Carbon Plant with is located east of Highway 80, off the John Muir Highway (Route 4) on Franklin Canyon Road in Rodeo, California.

Regulatory Background

Transportation planning is usually conducted at the state and county level. Planning for interstate highways is generally done by the California Department of Transportation.

Most local counties maintain a transportation agency that has the duties of transportation planning and administration of improvement projects within the county and implements the Transportation Improvement and Growth Management Program, and the congestion management plans (CMPs). The CMP identifies a system of state highways and regionally significant principal arterials and specifies level of service standards for those roadways.

Significance Criteria

Impacts on transportation/traffic will be considered significant if any of the following criteria apply:

- A major roadway is closed to all through traffic, and no alternate route is available.
- The project conflicts with applicable policies, plans or programs establishing measures of effectiveness, thereby decreasing the performance or safety of any mode of transportation.
- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.

Discussion of Impacts

XVI. a-b. Construction: The proposed project is designed to limit emissions of TACs from stationary sources in the Bay Area. New or modified pollution control equipment is expected to be located in commercial, industrial, or institutional facilities and may require construction activities. Construction impacts were considered for the control measures found in Table 2-6.1. Control measures that do not require equipment, such as reducing operating time, are not expected to generate any additional traffic. The BAAQMD expects that three facilities per year are expected to meet reductions by implementing either a baghouse or an enclosure. The construction of enclosures is expected to require the most construction equipment and workers. It has been estimated to require up to 34 delivery and/or disposal trucks and up to about 45 construction worker trips on a peak construction day (during the building construction phase for enclosures). Construction activities would be expected at existing commercial, industrial and institutional land uses and would be temporary. The proposed project is not expected to require modification to circulation for temporary construction activities.

Operational: Waste products may be generated from the use of several types of control technologies. Wastes could include: spent carbon generated from the carbon adsorption process; spent metal catalysts from the catalytic oxidation process; and dry solids from filtration controls. The majority of wastes will likely need to be transported to disposal or recycling facilities. The catalysts in catalytic oxidizers need to be replaced every few years so this potential waste product was considered to contribute to the waste transport impacts.

For a "worst case" analysis, it was assumed that about 18 facilities per year would be required to install a control device to comply with the proposed rule amendments. These facilities at any given day would generate an additional one-two truck trips per day in the entire Air District for delivery and disposal. These potential truck trips are not expected to significantly adversely affect circulation patterns on local roadways near affected facilities. In addition, this volume of additional daily truck traffic is negligible over the entire area of the Air District. Finally, the number waste disposal transport trips substantially over estimates the number of anticipated trips because owners/operators at affected facilities may use other types of add-on control equipment and most are expected to limit throughput rates or operating times which would have no impact on traffic. No increase in worker traffic is expected as the operation of air pollution control equipment of the type expected under the proposed rule amendments is not expected to require any additional employees. Therefore, operational traffic under the proposed rule amendments is expected to be less than significant.

XVI. c. The proposed project is not expected to involve the delivery of materials via air so no increase in air traffic is expected. The addition of new or modified air pollution control equipment is not expected to change air traffic patterns or result in a change in location that results in substantial safety risks.

XVI. d-e. The proposed project is not expected to increase traffic hazards or create incompatible uses. The proposed project does not involve construction of any roadways or other transportation design features, so no changes to current roadway designs that would increase traffic hazards are expected. Emergency access at the commercial, industrial, and institutional facilities affect by the proposed rule amendments is not expected to be impacted by the proposed project. Each affected facility is expected to continue to maintain their existing emergency access. The proposed rule amendments are not expected to increase vehicle trips or to alter the existing long-term circulation patterns. The proposed project is not expected to require a modification to circulation, thus, no long-term impacts on the traffic circulation system are expected to occur.

XVI. f. The proposed project is not expected to affect the performance of mass transit or non-motorized travel to street, highways and freeways, pedestrian or bicycle paths. No conflicts with any congestion management programs, to include level of service and travel demand measures, or other standards established by county congestion management agencies for designated roads or highways are expected. No changes are expected to parking capacity at or in the vicinity of affected facilities as the proposed project only pertain to equipment located within existing industrial facilities. Therefore, no significant adverse impacts resulting in changes to traffic patterns or levels of service at local intersections are expected.

Conclusion

Based upon these considerations, no significant adverse impacts to transportation and traffic are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVII. UTILITIES/SERVICE SYSTEMS. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☑	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☑	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements needed?	☐	☐	☑	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☑	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project’s solid waste disposal needs?	☐	☐	☑	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☑	☐

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, and potions of western Solano and southern Sonoma Counties. Because the area of coverage is vast (approximately 5,600 square miles), land uses vary greatly and include commercial, industrial, residential, and agricultural uses. The amendments to

Regulation 2-5 would apply to facilities which are located within commercial, industrial, or institutional areas in the Bay Area.
Given the large area covered by the BAAQMD, public utilities are provided by a wide variety of local agencies. The affected commercial, industrial, or institutional facilities are supported by wastewater and storm water treatment facilities and treated wastewater is discharged under the requirements of NPDES permits.

Water is supplied to affected facilities by several water purveyors in the Bay Area. Solid waste is handled through a variety of municipalities, through recycling activities, and at disposal sites.

Hazardous waste generated within the Bay Area, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facilities. Two such facilities are the Chemical Waste Management Inc. (CWMI) Kettleman Hills facility in King's County, and the Safety-Kleen facility in Buttonwillow (Kern County). Hazardous waste can also be transported to permitted facilities outside of California. The nearest out-of-state landfills are U.S. Ecology, Inc., located in Beatty, Nevada; USPCI, Inc., in Murray, Utah; and Envirosafe Services of Idaho, Inc., in Mountain Home, Idaho. Incineration is provided at the following out-of-state facilities: Aptus, located in Aragonite, Utah and Coffeyville, Kansas; Rollins Environmental Services, Inc., located in Deer Park, Texas and Baton Rouge, Louisiana; Chemical Waste Management, Inc., in Port Arthur, Texas; and Waste Research & Reclamation Co., Eau Claire, Wisconsin.

Regulatory Background

City and/or County General Plans usually contain goals and policies to assure adequate utilities and service systems are maintained within the local jurisdiction.

Significance Criteria

The proposed project impacts on utilities/service systems will be considered significant if:

- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.
- An increase in demand for utilities impacts the current capacities of the electric utilities.
- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use a substantial amount of potable water.
- The project increases demand for water by more than 263,000 gallons per day.
- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

Discussion of Impacts

XVII. a, b, d, and e. The proposed project is designed to limit emissions of TACs from stationary sources in the Bay Area. The facilities affected by the proposed amendment to Regulation 2-5 already exists and already use water, generate wastewater, treat wastewater, and discharges wastewater under existing wastewater discharge permits. The potential water use and wastewater impacts associated with implementation of proposed project are addressed under Hydrology and Water Quality (see Section IX a.) and have been determined to be less than significant.

XVII. c. Implementation of the proposed project may require new or modified pollution control equipment within the confines of existing facilities. These modifications would not alter the existing drainage system or require the construction of new storm water drainage facilities. Nor would the proposed project create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. Therefore, no significant adverse impacts on storm drainage facilities are expected.

XVII. f-g. The amendments to Regulation 2-5 would reduce TAC emissions from existing commercial, industrial, or institutional facilities. The baghouses and catalytic oxidizers will generate solid waste, but they are not expected require annual replacement events. The baghouses and spent catalyst are only expected to generate a few tons of waste per change out. It is assumed that any hazardous material will be taken to the U.S. Ecology Beatty Nevada hazardous waste facility for treatment and disposal. U.S. Ecology, Inc. is currently receiving waste, and is in the process of extending the operational capacity for an additional 35 years (U.S. Ecology, 2015). Clean Harbors in Grassy Mountain, Utah is also available to receive hazardous waste and is expected to continue to receive waste for an additional 70 years (Clean Harbors, 2015). Therefore, the proposed project impacts on hazardous waste landfills are less than significant.

The proposed project is not expected to generate any significant increase in solid waste. Therefore, no significant adverse impacts are expected to solid waste as a result of the proposed project.

Conclusion

Based upon these considerations, no significant adverse impacts to utilities/service systems are expected from the adoption of the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☑
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☐	☑	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☑	☐

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

Discussion of Impacts

XVIII. a. The proposed project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory, as discussed in the previous sections of the CEQA checklist. The proposed project is designed to reduce TAC emissions from commercial, industrial and institutional facilities in the Bay Area, thus providing a beneficial air quality impact and improvement in air quality. As discussed in Section IV, Biological Resources and Section V, Cultural Resources, no significant adverse impacts are expected to biological or cultural resources.

XVIII. b-c. The proposed project is designed to reduce TAC emissions from commercial industrial and institutional facilities in the Bay Area, thus providing a beneficial air quality impact and improvement in air quality. The estimated increase in emissions associated with the construction and operation of additional air pollution control equipment is minor (see Tables 3-6 and 3-7). The proposed project is expected to reduce TAC emissions, thus reducing the potential health impacts. The proposed project does not have adverse environmental impacts that are limited individually, but cumulatively considerable when considered in conjunction with other regulatory control projects. The proposed rule amendments are not expected to have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly. No significant adverse environmental impacts are expected.

CHAPTER 4

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Appendix A:
Air Quality Analysis

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Diesel Particulate Filter Construction Equipment Emissions

Phase	Equipment	Horsepower	Amount	Days	Hours/Day	Total Hours	Emission Factors (lb/hr)[1]						Emissions (lb)						
							VOC	CO	NOx	SOx	PM10	CO2e[2]	VOC	CO	NOx	SOx	PM10	PM2.5	CO2e[2]
Building Construction	Generator	50	1	3	8	24	0.04	0.23	0.19	0.00	0.02	0.01	0.86	5.58	4.53	0.01	0.40	0.39	0.23
Building Construction	Forklift	Comp	1	3	1.33	4	0.02	0.21	0.23	0.00	0.02	0.01	0.09	0.86	0.90	0.00	0.07	0.07	0.04
Building Construction	Welder (Electric)	0	1	3	3.33	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total													**0.95**	**6.44**	**5.43**	**0.01**	**0.47**	**0.46**	**0.26**

(1) Off-Road 2011. CO emissions from SCAQMD, 2006 : http://www.aqmd.gov/ceqa/handbook/offroad/offroadEF07_25.xls

(2) Carbon Dioxide Equivalents (CO_{EQ}) are based on fuel use and default emission factors for diesel. Metric tons.

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Enclosure Construction Equipment Emissions

							Emission Factors (lb/hr)[1]						Emissions (lb)						
Phase	Equipment	Horsepower	Amount	Days	Hours/Day	Total Hours	VOC	CO	NOx	SOx	PM10	CO2e[2]	VOC	CO	NOx	SOx	PM10	PM2.5	CO2e[2]
Paving	Cement and Mortar Mixers	50	1	10	8	80	0.04	0.08	0.19	0.00	0.02	0.01	2.86	6.10	15.09	0.03	1.33	1.32	0.75
Paving	Pavers	Comp	1	10	8	80	0.04	0.51	0.52	0.00	0.03	0.03	3.28	40.59	41.87	0.09	2.29	2.27	2.29
Paving	Rollers	Comp	2	10	8	160	0.03	0.39	0.31	0.00	0.02	0.02	5.08	62.61	49.33	0.11	3.19	3.16	2.62
Paving	Tractors/Loaders/Backhoe	Comp	1	10	8	80	0.03	0.37	0.36	0.00	0.02	0.02	2.44	29.33	28.67	0.06	1.89	1.87	1.54
Paving	Paving Equipment	Comp	1	10	8	80	0.03	0.42	0.44	0.00	0.02	0.02	2.73	33.32	35.49	0.08	1.88	1.86	1.99
Architectural Coating	Air Compressors	50	1	10	6	60	0.04	0.22	0.19	0.00	0.02	0.01	2.15	13.25	11.32	0.02	1.00	0.99	0.56
Building Construction	Generator Sets	50	1	220	8	1760	0.04	0.23	0.19	0.00	0.02	0.01	62.99	409.42	332.07	0.69	29.24	28.95	16.51
Building Construction	Cranes	Comp	1	220	8	1760	0.07	0.42	0.91	0.00	0.04	0.04	115.04	730.84	1600.24	2.58	75.52	74.76	62.22
Building Construction	Forklifts	Comp	2	220	7	3080	0.02	0.22	0.23	0.00	0.02	0.01	68.38	671.77	693.88	1.23	52.38	51.86	29.54
Building Construction	Tractor/Loader/Backhoe	Comp	1	220	7	1540	0.03	0.37	0.36	0.00	0.02	0.02	46.91	564.61	551.81	1.23	36.44	36.07	29.56
Building Construction	Welders	0	3	220	8	5280	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Graders	Comp	1	3	8	24	0.07	0.58	1.01	0.00	0.04	0.04	1.74	14.03	24.29	0.04	1.08	1.07	0.98
Site Preparation	Tractors/Loaders/Backhoes	Comp	1	3	7	21	0.03	0.37	0.36	0.00	0.02	0.02	0.64	7.70	7.52	0.02	0.50	0.49	0.40
Site Preparation	Scrapers	Comp	1	3	8	24	0.14	0.87	2.08	0.00	0.09	0.09	3.33	20.91	49.91	0.09	2.06	2.04	2.26
Grading	Rubber Tired Dozers	Comp	1	6	6	36	0.13	0.93	1.62	0.00	0.08	0.05	4.60	33.48	58.26	0.08	2.95	2.92	1.89
Grading	Tractors/Loaders/Backhoes	Comp	2	6	7	84	0.03	0.37	0.36	0.00	0.02	0.02	2.56	30.80	30.10	0.07	1.99	1.97	1.61
Grading	Graders	Comp	1	6	8	48	0.07	0.58	1.01	0.00	0.04	0.04	3.49	28.05	48.59	0.08	2.16	2.14	1.97
Total													**328.22**	**2696.81**	**3578.44**	**6.50**	**215.89**	**213.73**	**156.69**

(1) Off-Road 2011. CO emissions from SCAQMD, 2006 : http://www.aqmd.gov/ceqa/handbook/offroad/offroadEF07_25.xls

(2) Carbon Dioxide Equivalents (CO_{2e}) are based on fuel use and default emission factors for diesel. Metric tons.

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Oxidizer Construction Equipment Emissions

Phase	Equipment	Offroad Category	Horsepower	Amount	Days	Hours/Day	Total Hours	Emission Factors (lb/hr)[1]						Emissions (lb)						
								VOC	CO	NOx	SOx	PM10	CO2e[2]	VOC	CO	NOx	SOx	PM10	PM2.5	CO2e[2]
Site Preparation	Rubber Tired Dozers	Comp	Comp	1	8	7	56	0.13	0.93	1.62	0.00	0.08	0.05	7.15	52.08	90.63	0.12	4.59	4.54	2.94
Site Preparation	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes	Comp	1	8	7	56	0.03	0.37	0.36	0.00	0.02	0.02	1.71	20.53	20.07	0.04	1.32	1.31	1.07
Paving	Pavers	Pavers	Comp	1	8	7	56	0.04	0.51	0.52	0.00	0.03	0.03	2.30	28.41	29.31	0.07	1.60	1.59	1.60
Paving	Cement and Mortar Mixers	Other Construction Equipment	50	1	8	6	48	0.04	0.08	0.19	0.00	0.02	0.01	1.72	3.66	9.06	0.02	0.80	0.79	0.45
Paving	Rollers	Rollers	Comp	1	8	7	56	0.03	0.39	0.31	0.00	0.02	0.02	1.78	21.91	17.27	0.04	1.12	1.11	0.92
Equipment Installation	Cranes	Cranes	Comp	1	5	8	40	0.07	0.42	0.91	0.00	0.04	0.04	2.61	16.61	36.37	0.06	1.72	1.70	1.41
Equipment Installation	Forklifts	Forklifts	Comp	1	5	7	35	0.02	0.22	0.23	0.00	0.02	0.01	0.78	7.63	7.89	0.01	0.60	0.59	0.34
Equipment Installation	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes	Comp	1	5	8	40	0.03	0.37	0.36	0.00	0.02	0.02	1.22	14.67	14.33	0.03	0.95	0.94	0.77
Equipment Installation	Generator Sets	Other Construction Equipment	50	1	5	7	35	0.04	0.23	0.19	0.00	0.02	0.01	1.25	8.14	6.60	0.01	0.58	0.58	0.33
Total														**20.52**	**173.65**	**231.51**	**0.41**	**13.27**	**13.14**	**9.83**

(1) Off-Road 2011. CO emissions from SCAQMD, 2006 : http://www.aqmd.gov/ceqa/handbook/offroad/offroadEF07_25.xls

(2) Carbon Dioxide Equivalents (CO_{EQ}) are based on fuel use and default emission factors for diesel. Metric tons.

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Daily Construcion Vehicles Trips

DPF

Phase	Trip Type	Vehicles
Equipment Installation	Commuters	4
Equipment Installation	Delivery	1
Equipment Installation	HHDT	0

Enclosures

Phase	Trip Type	Vehicles
Paving	Commuters	15
Paving	Delivery	0
Paving	HHDT	0
Architectural Coating	Commuters	8
Architectural Coating	Delivery	0
Architectural Coating	HHDT	0
Site Preparation	Commuters	8
Site Preparation	Delivery	0
Site Preparation	HHDT	0
Building Construction	Commuters	42
Building Construction	Delivery	16
Building Construction	HHDT	0
Grading	Commuters	10
Grading	Delivery	0
Grading	HHDT	34

Oxidizers

Phase	Trip Type	Vehicles
Site Preparation	Commuters	4
Site Preparation	Delivery	1
Site Preparation	HHDT	2
Paving	Commuters	4
Paving	Delivery	2
Paving	HHDT	2
Equipment Installation	Commuters	4
Equipment Installation	Delivery	1
Equipment Installation	HHDT	1

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Diesel Particulate Filter On-Road Construction Emissions (1)

Phase	Trip Type	Trip Length	Trips	VMT	VOC (lb/hr)	CO(lb/hr)	NOx (lb/hr)	SOx(lb/hr)	PM (lb/hr)	Fugitive PM (2)	CO2e (lb/mile)(3)	VOC (lbs)	CO(lbs)	NOx (lbs)	SOx(lbs)	PM10 (lbs)	PM2.5 (lbs)	CO2e (tonnes)
Equipment Installation	Commuters	24.8	12	297.6	0.000	0.002	0.001	0.000	0.000	0.000	0.825	0.015	0.644	0.173	0.002	0.098	0.043	0.111
Equipment Installation	Delivery	14.6	2	29.2	0.001	0.003	0.008	0.000	0.001	0.000	2.697	0.017	0.077	0.247	0.001	0.030	0.018	0.036
Equipment Installation	HHDT	40	0	0	0.000	0.003	0.007	0.000	0.000	0.002	2.975	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total												**0.032**	**0.720**	**0.420**	**0.003**	**0.128**	**0.062**	**0.147**

(1) Emfac2014 emission factors for the San Francisco Bay Area District.

(2) Emission Calculations for travel on paved roads from EPA AP-42 Section 13.2.1, January 2011

$E = k(sL)^{0.91} \times (W)^{1.02}$

Where: k = 0.0022 lb/VMT for PM10, sL = road silt loading (gms/m2)

(0.03 for major/collector roads), W = weight of vehicles (2.5 tons for light; 5.5 for medium trucks, and 24 for heavy trucks)

(3) Carbon Dioxide Equivalence (CO_E) = $CO_2 + CH_4 * 21 + N2O*310$

where CO2 emissions factors are from Emfac2011. CH4 and N2O emissions factors are from Direct Emissions from Mobile Combustion Sources, EPA 2008.

where light vehicle are gasoline light duty trucks.

where medium/heavy duty vehicle are diesel heavy duty trucks.

	2017		
Chemical	**Light**	**Medium**	**Heavy**
CO2 (lb/mi)	0.8141	2.6938	2.9713
CH4 (g/mi)	0.0148	0.0051	0.0051
N2O (g/mi)	0.0157	0.0048	0.0048
CO2e (lb/mi)	0.825	2.697	2.975

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Enclosures On-Road Construction Emissions (1)

Phase	Trip Type	Trip Length	Trips	VMT	VOC (lb/hr)	CO(lb/hr)	NOx (lb/hr)	SOx(lb/hr)	PM (lb/hr)	Fugitive PM (2)	CO2e (lb/mile)(3)	VOC (lbs)	CO(lbs)	NOx (lbs)	SOx(lbs)	PM10 (lbs)	PM2.5 (lbs)	CO2e (tonnes)
Paving	Commuters	24.8	150	3720	0.000	0.002	0.001	0.000	0.000	0.000	0.825	0.191	8.044	2.165	0.030	1.226	0.543	1.393
Paving	Delivery	14.6	0	0	0.001	0.003	0.008	0.000	0.001	0.000	2.697	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Paving	HHDT	40	0	0	0.000	0.003	0.007	0.000	0.000	0.002	2.975	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Architectural Coating	Commuters	24.8	80	1984	0.000	0.002	0.001	0.000	0.000	0.000	0.825	0.102	4.290	1.155	0.016	0.654	0.290	0.743
Architectural Coating	Delivery	14.6	0	0	0.001	0.003	0.008	0.000	0.001	0.000	2.697	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Architectural Coating	HHDT	40	0	0	0.000	0.003	0.007	0.000	0.000	0.002	2.975	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Site Preparation	Commuters	24.8	24	595.2	0.000	0.002	0.001	0.000	0.000	0.000	0.825	0.031	1.287	0.346	0.005	0.196	0.087	0.223
Site Preparation	Delivery	14.6	0	0	0.001	0.003	0.008	0.000	0.001	0.000	2.697	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Site Preparation	HHDT	40	0	0	0.000	0.003	0.007	0.000	0.000	0.002	2.975	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Building Construction	Commuters	24.8	9240	2E+05	0.000	0.002	0.001	0.000	0.000	0.000	0.825	11.761	495.541	133.373	1.855	75.513	33.477	85.804
Building Construction	Delivery	14.6	3520	51392	0.001	0.003	0.008	0.000	0.001	0.000	2.697	29.564	135.359	434.195	1.329	52.440	32.509	62.877
Building Construction	HHDT	40	0	0	0.000	0.003	0.007	0.000	0.000	0.002	2.975	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Grading	Commuters	24.8	60	1488	0.000	0.002	0.001	0.000	0.000	0.000	0.825	0.076	3.218	0.866	0.012	0.490	0.217	0.557
Grading	Delivery	14.6	0	0	0.001	0.003	0.008	0.000	0.001	0.000	2.697	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Grading	HHDT	40	200	8000	0.000	0.003	0.007	0.000	0.000	0.002	2.975	3.478	20.099	57.456	0.231	21.468	6.101	10.795
Total												**45.204**	**667.838**	**629.556**	**3.478**	**151.987**	**73.225**	**162.392**

Assumes 5000 cu.yd of overburden moved in 25 trucks.

(1) Emfac2014 emission factors for the San Francisco Bay Area District.

(2) Emission Calculations for travel on paved roads from EPA AP-42 Section 13.2.1, January 2011

$E = k(sL)^{0.91} \times (W)^{1.02}$

Where: k = 0.0022 lb/VMT for PM10, sL = road silt loading (gms/m2)

(0.03 for major/collector roads), W = weight of vehicles (2.5 tons for light; 5 for medium trucks,

and 24 for heavy trucks)

(3) Carbon Dioxide Equivalence (CO_E) = CO_2 + CH_4 * 21 + N2O*310

where CO2 emissions factors are from Emfac2011. CH4 and N2O emissions factors are from Direct Emissions from Mobile Combustion Sources, EPA 2008.

where light vehicle are gasoline light duty trucks.

where medium/heavy duty vehicle are diesel heavy duty trucks.

	2017		
Chemical	Light	Medium	Heavy
CO2 (lb/mi)	0.8141	2.6938	2.9713
CH4 (g/mi)	0.0148	0.0051	0.0051
N2O (g/mi)	0.0157	0.0048	0.0048
CO2e (lb/mi)	0.825	2.697	2.975

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Oxidizer On-Road Construction Emissions (1)

Phase	Trip Type	Trip Length	Trips	VMT	VOC (lb/hr)	CO(lb/hr)	NOx (lb/hr)	SOx(lb/hr)	PM (lb/hr)	Fugitive PM (2)	CO2e (lb/mile)(3)	VOC (lbs)	CO(lbs)	NOx (lbs)	SOx(lbs)	PM10 (lbs)	PM2.5 (lbs)	CO2e (tonnes)
Site Preparation	Commuters	24.8	32	793.6	0.000	0.002	0.001	0.000	0.000	0.000	0.825	0.041	1.716	0.462	0.006	0.262	0.116	0.297
Site Preparation	Delivery	14.6	4	58.4	0.001	0.003	0.008	0.000	0.001	0.000	2.697	0.034	0.154	0.493	0.002	0.060	0.037	0.071
Site Preparation	HHDT	40	10	400	0.000	0.003	0.007	0.000	0.000	0.002	2.975	0.174	1.005	2.873	0.012	1.073	0.305	0.540
Paving	Commuters	24.8	32	793.6	0.000	0.002	0.001	0.000	0.000	0.000	0.825	0.041	1.716	0.462	0.006	0.262	0.116	0.297
Paving	Delivery	14.6	10	146	0.001	0.003	0.008	0.000	0.001	0.000	2.697	0.084	0.385	1.234	0.004	0.149	0.092	0.179
Paving	HHDT	40	10	400	0.000	0.003	0.007	0.000	0.000	0.002	2.975	0.174	1.005	2.873	0.012	1.073	0.305	0.540
Equipment Installation	Commuters	24.8	20	496	0.000	0.002	0.001	0.000	0.000	0.000	0.825	0.025	1.073	0.289	0.004	0.163	0.072	0.186
Equipment Installation	Delivery	14.6	4	58.4	0.001	0.003	0.008	0.000	0.001	0.000	2.697	0.034	0.154	0.493	0.002	0.060	0.037	0.071
Equipment Installation	HHDT	40	1	40	0.000	0.003	0.007	0.000	0.000	0.002	2.975	0.017	0.100	0.287	0.001	0.107	0.031	0.054
Total												**0.623**	**7.307**	**9.466**	**0.048**	**3.209**	**1.111**	**2.235**

(1) Emfac2014 emission factors for the San Francisco Bay Area District.

(2) Emission Calculations for travel on paved roads from EPA AP-42 Section 13.2.1, January 2011

$E = k(sL)^{0.91} \times (W)^{1.02}$

Where: k = 0.0022 lb/VMT for PM10, sL = road silt loading (gms/m2)

(0.03 for major/collector roads), W = weight of vehicles (2.5 tons for light; 5.5 for medium trucks,

and 24 for heavy trucks)

(3) Carbon Dioxide Equivalence (CO_E) = CO_2 + CH_4 * 21 + N2O*310

where CO2 emissions factors are from Emfac2011. CH4 and N2O emissions factors are from Direct Emissions from Mobile Combustion Sources, EPA 2008.

where light vehicle are gasoline light duty trucks.

where medium/heavy duty vehicle are diesel heavy duty trucks.

	2017		
Chemical	**Light**	**Medium**	**Heavy**
CO2 (lb/mi)	0.8141	2.6938	2.9713
CH4 (g/mi)	0.0148	0.0051	0.0051
N2O (g/mi)	0.0157	0.0048	0.0048
CO2e (lb/mi)	0.825	2.697	2.975

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Peak Monthly Fugitive PM Construction Emissions

Grading Operations	Pieces of Equipment Operating	Hours of Operation	PM10 Emission Factor (lb/hour)	Water Control Factor[5]	Daily PM10 Emissions (lb/day)	Annual PM10 Emissions (tons/yr)
Construction Activities[1]	**1**	**8**	0.348	0.39	1.08	0.0054

Stockpiles	Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor[5]	Daily PM10 Emissions (lb/day)	Annual PM10 Emissions (ton/yr)
Construction Activities[2]	**500**	0.00005	0.39	0.0100	0.0001

Assumptions: 1cubic yard trench spoils = 1 ton

WIND EROSION Disturbed Area and Temporary Stockpiles	Acreage Disturbed Per Day	PM10 Emission Factor (lb/day/acre)	Daily PM10 Emissions (lb/day)	Annual PM10 Emissions (ton/yr)
Construction Activities[3]	**0.5**	0.220	0.110	0.0006

Filling and Dumping	Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor[5]	Daily PM10 Emissions (lb/day)	Annual PM10 Emissions (ton/yr)
Truck Filling[4]	**500.0**	5.15E-05	0.39	1.00E-02	0.0001
Truck Dumping	**500.0**	5.15E-05	0.39	1.00E-02	0.0001

Assumes 5000 cu.yd moved over 10 days.

TOTAL PM10 Pounds/day	Daily	Annual
(Controlled Emissions)	1.2248	0.00612

(1) Emissions (lbs/hr) = $[0.75 \times (G^{1.5})/(H^{1.4}) \times J$
where G = silt content (7.5%), H = moisture content (15.0%) and J = hrs of operation (EPA AP-42 Table 11.9-1 for bulldozing overburden).

(2) Emissions (lbs/ton) = $0.00112 \times [(G/5)^{1.3}/(H/2)^{1.4}] \times I/J$
where G=mean wind speed (4.1 mph), H=moisture content of surface material (15%); I=lbs of dirt handled per day; and J=2,000 lbs/ton.

(3) Emissions (lbs/day/acre) = $1.7 \times [(G/1.5)*(365\text{-}H)/235] \times I/15 \times J$
where G = silt content (7.5%); H = days with >0.01 inch of rain (zero days); I = percentage of time wind speed exceeds 12 mph (0.5%) and J= fraction of TSP (0.5).

(4) Used SCAQMD Table 9-9 Default emission factors.

(5) Mitigated Emissions assume that watering 3 times per day controls emissions by 61 percent (Uncontrolled Emissions x 0.39).

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Oxidizer Operational Emissions

Pollutant	**VOC**	**CO[2]**	**NOx[3]**	**SOx**	**PM10**	**PM2.5**	**CO_2**	**N_2O**	**CH_4**	**CO2e**
Emission Factor[1]	7.00	0.30	0.04	0.60	7.50	7.50	120000.00	0.64	2.30	120246.70
Emission Factor Units	lb/mmscf	lb/mmbtu	lb/mmbtu	lb/mmbtu	lb/mmscf	lb/mmscf	lb/mmscf	lb/mmscf	lb/mmscf	lb/mmscf
Heater Duty mmbtu/hr	3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	2.00	2.00
Operational Time (hr/day)	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Daily Emissions (lb)	**0.48**	**21.31**	**2.63**	**0.04**	**0.51**	**0.51**	**5485.71**	**0.03**	**0.11**	**5496.99**
Annual Emissions (tons)	**0.09**	**3.89**	**0.48**	**0.01**	**0.09**	**0.09**	**908.23**	**0.00**	**0.02**	**910.10**

(1) Default emission factors for natural gas combustion for external combustion sources. SCAQMD Annual Emissions Reporting.

(2) Based on 400 ppm.

(3) Based on 30 ppm.

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Construction Emission Summary[1]

Control Measure	Projects/Year	Days	VOC	CO	NOx	SOx	PM10	PM2.5
DPF	7	3	0.33	2.39	1.95	0.00	0.20	0.17
Enclosures	3	239	1.56	14.08	17.61	0.04	1.63	1.22
Oxidizers	5	21	0.03	0.35	0.45	0.00	0.15	0.05
Total			**1.92**	**16.81**	**20.01**	**0.05**	**1.98**	**1.45**
BAAQMD CEQA Thresholds			**54**	**NE**	**54**	**NE**	**82**	**54**
Significant?			**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

(1) Reported in tons per year.

Appendix A
Bay Area Air Quality Management District
Regulation 2, Rule 5
Air Quality Analysis
Operational Emission Summary[1]

Equipment	VOC	CO	NOx	SOx	PM10	PM2.5	CO2e[2]
Construction (Amortized)	NA	NA	NA	NA	NA	NA	32.38
Diesel Particulate Filters	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Enclosures	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oxidizers	0.09	3.89	0.48	0.01	0.09	0.09	910.10
Total	**0.09**	**3.89**	**0.48**	**0.01**	**0.09**	**0.09**	**942.47**
BAAQMD Threshold	10.00	NE	10.00	NE	15.00	10.00	10000.00
Significant?	**NO**	**NA**	**NO**	**NA**	**NO**	**NO**	**NO**

(1) Reported in tons per year.

(2) Reported in tonnes per year.

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

PROPOSED AMENDMENTS TO:

BAAQMD REGULATION 2, RULE 5:

NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

Staff Report

December 2016

APPENDIX F

Comments and Responses

I. INTRODUCTION

As discussed in the December 2016 Staff Report for Regulation 2, Rule 5, the Air District published the revised draft amendments to Regulation 2, Rule 5 (dated September 2016) on the Air District's web site on October 26, 2016. The Air District accepted comments on these proposed amendments through November 28, 2016.

The Air District received four written comments on the proposed Regulation 2, Rule 5 amendments and one written comment on the Air District's proposed HRA Guidelines. The comments will be identified in this document as indicated below.

Booth	–	November 22, 2016 Email from Mr. Richard B. Booth
CCEEB	–	November 28, 2016 Letter from Mr. Bill Quinn, CCEEB Chief Operating Officer and Bay Area Partnership Project Manager, California Council for Environment and Economic Balance
Phillips66	–	November 28, 2016 Letter from Mr. Don Bristol, Environmental Director, Phillips 66, San Francisco Refinery
Valero	–	November 28, 2016 Letter from Ms. Susan K. Gustofson, Staff Environmental Engineer, Valero, Benicia Refinery
WSPA	-	November 23, 2016 Letter from Ms. Catherine Raheis-Boyd, President, Western States Petroleum Association

All comments are included at the end of this document.

II. COMMENTS AND RESPONSES

The Air District's summary of each issue and response to each issue are provided below.

Findings (Comments from: *WSPA*)

Comment: WSPA notes that California Health & Safety Code section 40727 requires the District to make six statutory findings (necessity, authority, clarity, consistency, non-duplication, and reference) in connection with rule adoption or amendment and claims the District's analyses are "uniformly cursory and do not provide the detail required by law."

Response: As Section 40727 makes clear, the findings are made by the Air District's Board of Directors in light of the entire record before it. Though the Reg. 2-5 staff report does conclude with summary statements asserting that the proposed rule amendments meet the statutory findings, the report includes information supporting the necessity finding. The other findings require little explanation and are typically set forth in the Board resolution adopting the amendments. However, to respond to the WSPA comment, the Air District provides the following additional detail regarding each finding.

According to Section 40727, " '[n]ecessity' means a need exists for the regulation, or for its amendment ... as demonstrated by the record ....” The staff report explains at length on pages 10 through 19 that the rule is being updated to reflect statewide guidance developed by the California Office of Environmental Health Hazard Assessment (OEHHA) intended to ensure that health risk assessments under the rule reflect scientific developments in the field.

To make the "authority" finding, the Board must find that the rule or amendment is permitted or required by law. The Air District has broad authority to control air pollution from stationary sources as set forth in California Health & Safety Code sections 39002, 39013, and 40000. In particular, the California Supreme Court has held that Sections 39002 and 40000 provide authority for local air district regulation of toxic air contaminants. (*Western Oil & Gas Assn. v. Monterey Bay Unified Air Pollution Control Dist*. (1989) 49 Cal. 3d 408.) The Air District also derives authority for the toxics NSR program from Health & Safety Code section 39659 (allowing districts to establish procedures for issuing permits for the regulation of hazardous air pollutants which have been listed as toxic air contaminants), section 41700 (prohibiting discharge of air contaminants that cause injury or endanger health), section 42300 (authorizing districts to require permits for the construction or alteration of sources of air contaminants), and section 42301 (prohibiting issuance of permits to sources that do not comply with Division 26 of the Health and Safety Code, which includes section 41700).

The "clarity" finding requires a determination that the rule is written "so that its meaning can be easily understood...." Although WSPA points to its confusion about a section of the rule (see comment and response regarding Section 2-5-102.1), that section is renumbered and is not changed by the proposed amendments. If read alone and without reference to the rest of the rule, the provision could be confusing. But provisions of all rules must be read together with other parts of the rule, and reading the other provisions would eliminate any confusion, as explained in the Air District's response on this point.

The "consistency" finding requires the Board to find that the rule does not conflict with state or federal law. Though the District has legal authority to control TAC emissions, it has no legal obligation under federal or state law to maintain a toxics NSR program, and there are no similar or parallel provisions of state or federal law. As a result, the rule does not conflict with state or federal law.

The "nonduplication" finding requires a determination that the rule does not impose the same requirements as a state or federal regulation. Given that there are no similar state or federal regulations, there can be no duplication.

The "reference" finding requires citation to the provisions of law that the Air District "implements, interprets, or makes specific in adopting, amending, or repealing a regulation." In adopting amendments to Regulation 2, Rule 5, the District is implementing, interpreting, and making specific the provisions of Health & Safety Code section 40001 (rules to achieve ambient air quality standards), and section 40702 (rules that are necessary and proper to execute the powers and duties granted to it).

Applicability (Comments from: *WSPA*)

Comment: WSPA states that rule language is ambiguous regarding rule applicability because "[p]roposed section 2-5-102.1 could be interpreted as requiring that projects that went through Regulation 2-5 permitting since July 1, 2005 are now subject to the newly revised rule as well." As a result, according to WSPA, "the rule language does not meet the 'clarity' requirements under Cal. Health & Safety Code § 40727(3)...."

Response: Section 2-5-102.1 is not proposed new rule language. It is a provision that has been in the rule since its original adoption in 2005. The section is being renumbered from 2-5-112.1 to 2-5-102.1. The section was described in the staff report for the 2005 original adoption of the rule as follows: "This section was added to clarify that the District would not 'look-back' and retroactively apply new standards to sources that had been properly permitted." The clarifying section was added at the request of the California Council for Environmental and Economic Balance.

Section 2-5-102.1 (formerly 2-5-112.1) cannot reasonably be interpreted to subject an unmodified source that already has a permit to new requirements when the section is read in the context of the rule. For the section to apply, a source must be a "new or modified source." A "new source of toxic air contaminants" is defined in Section 2-5-215.1 as "[a] source constructed or proposed to be constructed that never had a valid District authority to construct or permit to operate..." or as a source that has not held a permit during a period of non-operation of at least a year, or as a relocated source. A "modified source of a toxic air contaminant" is defined in Section 2-5-214 as an "existing source that undergoes a physical change, change in method of operation, or increase in throughput ...." As a result, the rule cannot apply to existing unmodified sources that have already been through permitting. There is nothing ambiguous about the section when read in context.

Technical Feasibility of Rule 2-5 Risk Limits and Consistency with OEHHA HRA Guidelines (Comments from: *WSPA*)

Comment: WSPA states that because Regulation 2, Rule 5, both in its current and proposed form, imposes through Section 2-5-302 a not-to-exceed risk limit, it is inconsistent with the 2015 ARB Risk Management Guidelines, which state that, under some circumstances, it may be appropriate to allow for approval of projects that exceed risk limits.

Response: Regulation 2, Rule 5 has always imposed an upper risk limit. As discussed in the Air District response regarding the "authority" finding, the Air District has extremely broad authority to construct its toxics NSR program in the manner it chooses, provided there is a rational basis for the program elements. WSPA's concern seems to come from its belief that, because of changes in risk calculation procedures, projects are likely to have higher calculated risk, and more projects would not be able to meet the risk limit.

As discussed in Section V of the Staff Report, the Air District's analysis of toxic new source review HRAs conducted for projects subject to the current rule found that the vast majority of the projects will comply with the current risk limits (when using the Air District's proposed health risk calculation procedures) with no project changes at all. At least two thirds of the projects evaluated in the last 5 years had cancer risks that were less than 7 in a million, which would result in cancer risks less than 10 in a million using the new procedures. Data for the last year (December 2015 through November 2016) shows that this compliance rate with no necessary project changes has increased to 85%, primarily due to Tier IV diesel engine availability, another 8% of the projects were GDFs that were permitted up to 10 in a million threshold (even when the proposed project resulted in cancer risks that were well below this limit). The remaining 7% of the projects had a projected health risk that was greater than 10 in a million using the new HRA Guidelines. Specifically, this 7% included 18 projects out of 244 completed applications: 13 diesel engine projects, 2 crematories, and 3 SVEs. Based on compliance choices for other similar projects, operators for these types of projects typically comply with Rule 2-5 risk limits by refining HRAs, increasing stack heights, reducing operating rates, or reducing maximum permitted throughput rates. All of these options are feasible low cost alternatives.

Since BAAQMD expects that projects will comply with the current risk limits by (a) needing no project changes, (b) using more refined HRAs, or (c) using low cost risk reduction measures, such as reducing operating or throughput rates or increasing stack heights, the Air District believes that no changes in the Rule 2-5 risk thresholds are necessary.

Re-Assess Risk Action Levels in Light of Actions Taken by Other Districts (Comments from: *WSPA*)

Comment: The Air District should re-assess risk action levels, as other air Districts have done. For example, San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) updated their Risk Management Policy by increasing the maximum cancer risk limit for new and modified permits from 10 in a million to 20 in a million.

Response: SJVUAPCD's risk limit decisions must be considered in context with their proposed risk calculation procedures. SJVUAPCD is using several more conservative health risk calculation procedures than those proposed by BAAQMD. For example, BAAQMD is proposing to use an exposure duration of 30 years while SJVUAPCD uses an exposure duration of 70 years. BAAQMD is proposing to use the CARB 95/80 breathing rate policy (95th percentile breathing rates for age groups less than 2 years and 80th percentile breathing rates for age groups of 2 years and up), while SJVUAPCD is proposing to use the 95th percentile breathing rates for all age groups. BAAQMD will allow use of spatial averaging for chronic impacts, and SJVUAPCD will not use spatial averaging.

The net impact of these and other differences in health risk calculation procedures is that using SJVUAPCD procedures will result in significantly higher calculated cancer risks for a given project than using the proposed BAAQMD health risk calculation procedures. While SJVUAPCD concluded that, based on their risk calculation procedures, an increase in the risk limit was necessary, BAAQMD staff have found that the current Rule 2-5 risk limits are achievable when using BAAQMD's proposed health risk calculation procedures.

Interactions of Rule 2-5 with other NSR Rules and Proposed Rule 11-18 (Comments from: *CCEEB, Phillips66, Valero, and WSPA*)

Comment: The Air District should address potential interactions between Rule 2-5 and the recently amended NSR rules (Regulation 2, Rules 1 and 2) and the proposed Regulation 11, Rule 18. The Air District should postpone Rule 2-5 to ensure coordination with the Air District's proposed Rule 11-18 and the potential future revisions to Rules 2-1 and 2-2 that may be necessary to address EPA comments on these rules.

Response: Adding abatement equipment, source alterations, source modifications, and source replacements are subject to Air District permit requirements. NSR would be applied in cases where it is triggered. For the purposes of toxic NSR (Rule 2-5), a change at the source to comply with Rule 11-18 would normally be exempt from toxic NSR per 2-5-114, because the purpose of the change is to reduce toxicity weighted emissions.

Although Rule 2-5 and Rule 11-18 are both health risk based rules that will use the same HRA guidelines, these rules will generally apply to different sources and different projects.

Rule 2-5 applies to new and modified sources and is implemented during the permit application review process that is required for new and modified sources. As discussed below, a source must first be deemed to be either "new" or "modified", as defined in Sections 2-5-215 and 2-5-214, before Rule 2-5 requirements would apply. On the other hand, Rule 11-18 applies to existing sources at facility. Most commonly, projects conducted pursuant to proposed Rule 11-18 result in *alterations* of existing equipment or additions of abatement equipment, neither of which would trigger Rule 2-5. These types of projects would also normally qualify for accelerated permit review.

Section 2-1-234 defines a modification of a source for the purposes of criteria pollutant new source review, and Section 2-5-214 defines a modification of a source for the purposes of toxic new source review. First, a source must include a physical change,

change in the method of operation, change in throughput rate or production rate, or other similar change. Next, this *change* must result in either an increase in the potential to emit (234.1) or an increase over the actual emissions baseline that constitutes a major modification (234.2). Adding an abatement device to a source does not constitute a modification of the source, unless the source is also *changed* as define in 2-1-234. A hardware change at a source that is intended to reduce toxic emissions is not likely to result in any increases in emissions by either calculation method. Such changes would constitute an alteration of the source rather than a modification.

A facility could conceivable combine a request for an alteration pursuant to Rule 11-18 with a request for a throughput increase or other physical change that constitutes a modification. Under these circumstances, the source change would appropriately be deemed a modification and subject to NSR. In this limited case, a source could become subject to TBACT instead of TBARCT, if the health risks due to the facility's *modification* exceed a TBACT threshold.

It is possible that a conversion from one material to another (such as from a carcinogen to a non-carcinogen) could result in emission increases of the less toxic material. In this case, toxic NSR would be triggered to ensure that the non-cancer emissions meet Rule 2-5 limits. This is appropriate as the Air District does not want to trade one type of health risk issue for another.

During implementation of Rule 11-18, Rule 2-5 would be triggered if the facility decided to install new TAC emitting sources to replace existing ones. In this case, the new sources would appropriately be subject to permitting requirements and TBACT, if the new source risks exceed a TBACT threshold.

One commenter suggested that TBARCT be included in Rule 2-5. TBACT and TBARCT are two different concepts that were developed separately for two different regulations. TBACT is more akin to BACT, in that it applies only to new or modified sources and includes controls that are technologically feasible. TBARCT is a retrofit control technology that applies to existing or altered sources. TBARCT includes consideration of retrofit control costs, which would not be the same for a new or modified project that is designed with such technology from the beginning.

On an individual source basis, a source will likely be governed by only one of these rules (Rule 2-5 or Rule 11-18) at a time for any given project. Thus, a source could be subject to TBACT, TBARCT, or neither of these. On a relative scale, TBACT is more stringent than TBARCT. If a source was recently installed or recently modified and met TBACT at the time of evaluation, then TBARCT for that source is not expected to be any more stringent than this earlier TBACT determination. Under proposed Rule 11-18, TBARCT will consider the existing level of control for a source as well as the cost and effectiveness of additional controls. The TBARCT concept and applicability will be discussed in more detail in the Staff Report for Rule 11-18.

Comment: Various additional comments were made about the need for Rule 11-18 and the Air District's proposed risk action levels in Rule 11-18.

Response: These comments concern Rule 11-18. Staff will provide responses to these issues in the Staff Report for Rule 11-18.

Socioeconomic Impacts (Comments from: *CCEEB, Phillips66, WSPA*)

Comment: The socioeconomic analysis estimated significant compliance costs for a number of economic sectors. The Air District should not adopt a rule that creates significant economic impacts.

Response: Rule 2-5 applies to a wide variety of potential future projects and not to existing operations. Likewise, the Air District's consultant that prepared the socioeconomic impact analysis considered a wide variety of potential projects. To simplify calculations, the consultant considered a worst case scenario involving the use of the most expensive control equipment option and the assumption that the business would shut down rather than install such controls. As indicated in Section VI of the Staff Report, each of the potential project cases that resulted in significant costs also had lower cost risk reduction options available, such as reducing operating limits, altering stack parameters, or installing other lower cost controls. Based on past experiences with projects that initially do not meet project health limits, the Air District has found that applicants readily accept these lower cost risk reduction measures rather than closing their business. Therefore, the Air District finds that the worst case scenario that resulted in significant socioeconomic impacts is highly unlikely to occur.

Comment: The Socioeconomic Impact Report does not assess cost of conducting HRAs or complying with TBACT.

Response: The additional costs of the Air District's risk screen fees are low in comparison to the potential costs of controls that are described in the Socioeconomic Impact Report. These small additional costs are not expected to have any impact on the conclusions described in this report.

Figure 5 in the Staff Report identifies potential risk reduction and emission control measures. These measures could be required to meet either the project risk limits or TBACT.

Comment: Table 3 in Appendix D does not include any major refinery projects.

Response: To develop Table 3, the Air District evaluated all health risk assessments conducted during 2010-2015. The Air District identified 27 projects located at petroleum refineries. Many of these projects involved new or modified diesel engines or other combustion devices, and some involved tank modifications. All but one of these projects resulted in health risks of less than 2 in a million cancer risk and did not trigger TBACT. The one project at a refinery that had a cancer risk greater than 7 in a million and that could be impacted by the proposed rule change was for a reformer modification. The annual average number of refinery projects that could be impacted by these Rule 2-5 changes was found to be 0.2 projects per year. Due to this small number of potential projects, this source category type was not included in Table 3.

Section 406 (Comments from: *CCEEB, Phillips66 and WSPA*)

Comment: There was no outreach made to affected industry on the most recent version of the Rule 2-5 amendments, such as the new Section 406.

Response: The proposed revisions to Rule 2-5 (including changes from the January draft of this proposed rule amendment) were made in response to comments provided by industry on the January 2016 draft. The proposed revisions were discussed with the commenters in May 2016. The Air District received no additional comments from industry on these changes until these November comments.

The recent revisions either retained aspects that are in the current rule (i.e. kept Table 2-5-1 in the rule) or provided an alternative to the current project risk limit that allowed for consideration of concurrent risk reductions, as requested by industry. Considering the minor nature of these additional changes and that the Air District discussed these changes with the commenters, additional workshops were not deemed necessary.

Comment: Consideration of contemporaneous risk reductions should be extended to all projects.

Response: The intention of Section 2-5-406 is to allow the consideration of contemporaneous risk reductions for only certain projects, specifically, projects involving modifications of sources that were installed before 1987 (pre-1987 sources), where the pre-1987 emissions alone would cause the project to exceed the project health risk thresholds. It is appropriate to allow consideration of contemporaneous risk reductions for these particular projects, because the pre-1987 emissions from these modified sources are not included in the current regulation.

For all other projects, the total combined emissions from new and modified sources in the project are currently subject to the Regulation 2-5 health risk limits of 10 in a million cancer risk and 1.0 acute and chronic hazard indices.

The restrictions in Section 2-5-406.1 are necessary to ensure that the Air District does not allow back sliding compared to our current regulation.

Comment: Section 2-5-406 is confusing and too restrictive. As written it would prevent projects that would reduce risks at existing receptors.

Response: Section 2-5-406.2 describes the main information needed to conduct the contemporaneous health risk reduction demonstration. Because of the complexity of this demonstration, the Air District was not able to include all information necessary for every possible situation. Section 2-5-303 and the definitions in Section 2-5-228 and 2-5-229 clearly state that qualifying projects include consideration of contemporaneous alterations and equipment shut-downs.

Section 216 (Comments from: *Phillips66 and WSPA*)

Comment: Including the total permitted emissions from a modified source (proposed Rule 2-5) instead of just the emissions increases since 1987 (current Rule 2-5) could result in denial of a project that results in emission reductions. The Air District has not provided a sufficient basis for this change.

Response: As discussed in Section IV.C. of the Staff Report, the Air District is including the total permitted emissions from modified sources in the HRA for a project to be more transparent about the health impacts of that project and to simplify calculations procedures. The HRA results report the source risk and project risk, but these reports often do not clearly distinguish whether these risks are based on total permitted emissions from a source or only the emission increases for a modified source. In most cases, the Rule 2-5 HRAs are based on total permitted emissions for the project. Thus, the public may assume that an HRA involving a pre-1987 modified source is based on total permitted emissions for that source when it has in the past been based on only the emission increases. The Air District is making this rule change to eliminate potentially misleading information. In addition, it is often difficult to correctly determine post-1987 emission increases for a project, because the pre-1987 TAC emission levels are not available and are difficult to estimate.

This comment [that inclusion of total permitted emissions for modified source in the HRA could result in denial of a project that results in overall risk reduction] is the reason that the Air District added Sections 228, 229, 303, and 406 to Rule 2-5. These new sections will allow the Air District to consider any contemporaneous risk reductions that occur in conjunction with a modification of a pre-1987 source, if this modified source is causing the project to exceed the project risk thresholds.

In addition, a source can be exempted from the Rule 2-5 TBACT requirement and project risk limits if the changes at that source result in a net reduction in toxicity weighted emissions. In this case, the source changes would be treated as an alteration and the source would not be subject to the HRA requirements.

Comment: There is no assessment of the District's proposed project definition change (extending the look-back period from 2 years to 3 years).

Response: Section V of the Staff Report includes impacts due to all proposed rule changes including this definition change.

Net Project Emissions Should Be Considered (Comments from: *Valero*)

Comment: Where post-project actual emissions are projected to be lower than pre-project actual emissions, that project should be exempt from Rule 2-5 TBACT requirements. Rule 11-18 provides sufficient backstop to achieve reduced toxic emissions.

Response: The commenter suggests that an exemption from Rule 2-5 be available for projects that result in no increases in toxicity weighted emissions. This is similar to another commenter's request that contemporaneous risk reduction be applied to all projects.

Section 2-5-114 states: "The provisions of Section 2-5-401 shall not apply to a modified source, if the post modification toxicity weighted emissions are less than or equal to the pre-modification toxicity weighted emissions." Section 114 exempts a modified source from the health risk assessment requirements and, by extension, from new evaluation of TBACT requirements, if the change at the source results in no increases in toxicity weighted emissions.

Under the current rule, a project includes all new or modified sources in an application. Thus, if a source is being replaced with a new source, the HRA would include the emission increases from the new source, but would give no credit related to the emission or risk reductions achieved by shutting down the old source. This satisfies the goals of the Air District's toxic new source review program, by ensuring that health risks from new sources are as low as possible and that, over time, facility health risks are reduced when older equipment is replaced with new equipment.

If the Air District extended the Section 114 exemption to the entire project and the new source had lower emissions than the existing source, then the new source would not trigger an HRA and would not be subject to TBACT. The new source could have much higher health impacts than it would under the Air District's current Rule 2-5. Under this scenario, little if any actual reductions in health risk would occur.

Allowing the entire project to be exempt from Rule 2-5 TBACT and project risk limits would result in significant back-sliding compared to the Air District's current Rule 2-5 requirements.

Comments on Air District approach to Gas Stations (WSPA)

Response: The Air District is delaying the implementation of the HRA Guidelines for gas stations because the Air District's analysis of the potential impacts of these guideline changes on GDFs is not complete, and CARB has recently proposed updated emission factors for GDFs. Also, CARB in coordination with CAPCOA is planning to update the Industrywide Guidelines for Gasoline Dispensing Facilities. Industrywide guidelines create uniform procedures and recommendations for efficiently addressing source categories that have numerous facilities. The Air District will need additional time to evaluate the combined influences of the new emission factors and new HRA guidelines on GDFs and to consider the anticipated updates to the Industrywide Guidelines for GDFs. This delay necessitates the description of the separate HRA procedure that will apply to gas stations, while the Air District is conducting additional evaluation of this source category.

Comment: There are no details regarding how the quantitative conclusions were arrived at. (WSPA)

Response: The Air District evaluated all of the toxic NSR HRAs conducted for Bay Area projects during 2010-2015 to assess the number and types of projects that may be impacted by this proposed rule change. The quantitative conclusions are based on this assessment.

Comment: There is no assessment of the extent to which TBACT controls are sufficient to meet project risk limits versus the extent to which projects may be denied due to project risk limits. (WSPA)

Response: As discussed in other responses, based on the Air District's review of five years of HRA data, the majority of the projects will meet the project risk limits with no project changes necessary. The types of projects that may require controls or additional risk reduction measures are presented in Figure 5 of the Staff Report. For diesel engine projects, the Air District estimated that about 15% of these projects (7 out of 48 projects) may need TBACT level controls, such as diesel particulate filters. For all other project types, the Air District estimated that about 67% of the projects (8 out of 12 projects) may require add on controls, which would constitute a TBACT level of control. Generally, TBACT level of controls are expected to be sufficient to ensure compliance with project risk limits. Other less expensive risk reduction measures may also be employed to meet project risk limits. Rarely, a project may require both TBACT controls and additional risk reduction measures to meet project risk limits. Denial of a project based on failure to meet a project risk limit is extremely rare and typically only occurs when an applicant fails to install TBACT.

Comment: Engines less than 50 bhp may be exempt from health risk assessment under Regulation 2, Rule 5 but are still subject to permitting under Regulation 2, Rule 1. In addition, some permit exempt sources other than < 50 bhp engines may have emissions that exceed a trigger level. (WSPA)

Response: Currently, equipment that would normally qualify for a permit exemption pursuant to Regulation 2, Rule 1, Sections 114-128, will need to undergo an HRA, pursuant to Section 2-1-319.2, to verify that it satisfies the requirements of 2-1-316, if the emissions from that equipment exceeds a Table 2-5-1 acute or chronic trigger level.

Due to the wide prevalence of engines smaller than 50 bhp, the small likelihood of non-compliance with 2-1-316 for such small engines, and the low Table 2-5-1 trigger level for diesel PM, the Air District is proposing to forgo the HRA review for these less than 50 bhp engines. Thus, engines smaller than 50 bhp would not need an HRA to retain the permit exemption. The Air District prefers to focus resources on larger sources.

Other source types that meet exemptions in Sections 114-128 will continue to be subject to 2-1-319 and 2-1-316 if the emissions exceed the Table 2-5-1 trigger levels. These sources will be evaluated as they come to the attention of the District.

Comment: Actual to Potential analysis in 2-5-601 could result in an increase in toxicity weighted emissions for a source that is being altered to reduce risk. (WSPA)

Response: The source must first qualify as a modified source per 2-5-214 before it would be subject to Rule 2-5. A toxic emission reduction would be deemed an alteration and not a modification unless the project resulted in the emission of a new compound (such as replacing a carcinogen with a non-carcinogen). In this case, the Air District would only subject the non-carcinogen emissions to toxic NSR.

Comment: The District should clarify that Sections 2-5-302 and 2-5-303 are alternatives. (WSPA)

Response: Section 2-5-115 indicates that qualifying contemporaneous health risk reduction projects are subject to 2-5-303 and exempt from 2-5-302.

Comment: WSPA believes that GHG impacts from this rule amendment will be greater than the 1100 MT CO2e/year significance threshold and cites GHG emission increases due to fuel economy losses caused by diesel particulate filters as an example of GHG emission increases that have been overlooked. (WSPA)

Response: The CEQA analysis for this proposed rule amendment evaluates the additional GHG impacts that may result from the rule amendments. The existing rule requires TBACT and sets project risk limits. The rule amendments will have the effect of increasing the cancer risk. As discussed in the staff report and other responses, most projects will comply with the amended rule with no changes to the project. Larger projects will already be subject to TBACT requirements and are not likely to require any additional control equipment. Therefore, the need to modify a project or install additional control equipment as a result of this rule amendment is only likely to impact smaller projects that would not be subject to TBACT under the current rule. Based on the Air District's analysis of recent HRAs, the Air District identified types of sources that may be impacted by this rule amendment, and the types of controls that may be required (see Figure 5 in the Staff Report). The potentially impacted sources have multiple control options. Thermal/catalytic oxidizers are the only control option that directly emits GHG emissions and would therefore be an appropriate worst case control option for GHG emissions. The Air District believes that the potential addition of three 2

MM BTU/hour thermal oxidizers is representative of a worst case result of this proposed rule amendment.

As shown in Figure 5 of the Staff Report, the Air District expects that diesel particulate filters will be chosen as a control option in only about 15% of the projects impacted by this rule amendment. Based on past projects, the much more common control option for diesel engine projects is to reduce the allowable operating hours, which would in turn reduce fuel usage and GHG emissions. Any potential increases in GHG emissions due to diesel particulate filter usage would be far less than the GHG emission reductions resulting from the far more common control option of reducing allowable operating hours.

Comment: TBACT or Tier 4 post combustion particulate filters cannot be used on NFPA certified fire pump engines. The Regulation 2-5-111 HRA exemption for < 50 bhp engines should be extended to fire pump engines. (CCEEB)

Response: The Air District has reviewed the HRAs conducted for fire pump engines during the last four years (41 applications). Most of these projects were evaluated at the current maximum allowable reliability related operating time of 50 hours per year rather than the minimum operating time of 34 hours per year required by NFPA. All but 3 applications (93% of the applications) resulted in a cancer risk of less than 7 in a million and would have a cancer risk of less than 10 in a million using the new procedures. The three projects that had a cancer risk of more than 7 in a million were all evaluated using an older screening procedure (ISCST3 air dispersion modeling using SCREEN3 meteorological data). All three projects would result in a cancer risk of less than 10 in a million by: (a) limiting the allowable reliability related testing to the minimum time required by NFPA (34 hours/year), (b) using current air dispersion modeling procedures (AERMOD with approved meteorological data for that area), and (c) using the new health risk calculations procedures with refinements such as spatial averaging. Based on this data review, the Air District expects that fire pump engines will be able to meet the project risk limits using the proposed health risk calculation procedures, while also meeting the minimum reliability related testing time required by NFPA. Therefore, an exemption for fire pump engines is not necessary.

Table 2-5-1 (Comments from: *Valero and WSPA*)

Comment: Confirm that future changes to Table 2-5-1 will have full regulatory review prior to being amended.

Response: Yes, future changes to Table 2-5-1 will be conducted in accordance with standard rule amendment procedures.

Comment: The District's calculation methodologies are subject to revision; for example, OEHHA lowered reference exposure levels for benzene.

Response: The Air District identifies the calculation methodologies and the health effects values in Rule 2-5 and Table 2-5-1. Amendments to these values will require an amendment to Rule 2-5.

HRA Guidelines (Comments from: *Booth, CCEEB, and Valero*)

Comment: Clarify how the various health risk calculation parameters can be implemented using CARB's HARP program.

Response: The Air District's HRA guidelines identify the appropriate parameters (either directly or by reference to the OEHHA HRA Guidelines). The methods of inputting these parameters into the HARP program is more appropriately handled in an implementation document.

Comment: Short term projects should follow OEHHA Guidance

Response: OEHHA Guidance on short term projects recommends that project duration be no less than 6 months. However, this guidance also states: "… the risk manager may want to consider a lower cancer risk threshold for risk management for very short term projects." OEHHA explains that "There is valid scientific concern that the rate of exposure may influence the risk – in other words, a higher exposure to a carcinogen over a short period of time may be a greater risk than the same total exposure spread over a much longer time period. In addition, it is inappropriate from a public health perspective to allow a lifetime acceptable risk to accrue in a short period of time (e.g., a very high exposure to a carcinogen over a short period of time resulting in a 1 ×10-5 cancer risk). Thus, consideration should be given for very short term projects to using a lower cancer risk trigger for permitting decisions."

The Air District carefully considered OEHHA's strong recommendation to have a lower risk threshold for very short term projects. However, OEHHA provided no guidance on an appropriate risk threshold for such projects. The Air District evaluated typical short term projects and compared the TAC concentrations that would be allowed by the current HRA guidelines and Rule 2-5 limits to the TAC concentrations that would be allowed for various project terms using the new HRA guidelines and a proposed project risk limit of 10 in a million cancer risk. The Air District found that project terms of 6 months to 2 years would allow higher TAC concentrations that those allowed by the current procedures. A minimum project term of 3 years would ensure that TAC concentrations allowed by the new procedures would be no higher than the TAC concentrations allowed by the current procedures. The Air District determined that this minimum 3-year project term would be equally protective of public health as a lower project risk limit for short term projects.

Comment: Spatial averaging criteria as described in the District HRA Guidelines: "Grid shape, size, and location are subject to Air District approval," are subjective and should be refined.

Response: This statement was taken out of context. The entire paragraph in the Air District's proposed HRA Guidelines related to spatial averaging is provided below.

"After the points of interest have been identified by the air dispersion modeling analysis, the ground level air concentration for each maximum impact point may be refined by using the arithmetic mean of the receptor concentrations identified within a spatial average grid instead of the single maximum impact point concentration. The modeler shall generally center the spatial average grid around the maximum impact point, but the modeler shall also consider facility boundaries, possible receptor locations, and predominant wind direction. This grid shall be of an appropriate shape, shall be no larger than 400 square meters, and shall have a receptor spacing within the grid of no less than 5 meters. Grid shape, size, and location are subject to Air District approval."

The Air District indicates that the grid shall be no larger than 400 square meters with a receptor spacing of no less than 5 meters, which is consistent with OEHHA HRA Guidelines. The last statement was included to allow grids other than square shaped grids or smaller grids, if appropriate, based on the building location under evaluation. Likewise, it may be appropriate to evaluate a grid that is not centered around the maximum impact point, but is instead skewed to one side or another to include likely receptor movements.

AGENDA: 11

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 29, 2016

Re: Regulation 6, Rule 3: Wood Burning Devices and Winter Spare the Air Messaging Program

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

In July 2008, the Board of Directors adopted Regulation 6, Rule 3: Wood Burning Devices. Since the rule was passed, efforts have focused on both outreach and enforcement. The rule was amended by the Board on October 21, 2015 to further protect Bay Area residents from the public health impacts of fine particulates generated from burning wood or solid fuels as a source of primary or supplemental heat, or for ambiance. All amendments that become effective this winter were designed to strengthen provisions and improve enforceability. The upcoming wood smoke regulatory season will run from November 1, 2016, through February 28, 2017.

Wood-burning devices include fireplaces, fire pits, wood stoves, pellet stoves, and any other wood-fired heating device. There are an estimated 1.4 million fireplaces and wood-burning devices in the Bay Area; and in the winter, more than 30% of $PM_{2.5}$ air pollution is attributed to wood-burning. Although Regulation 6, Rule 3 has successfully reduced wintertime $PM_{2.5}$ emissions regionally by about 2,660 tons per year (tpy), wood smoke continues to cause unhealthy air, to exceed the $PM_{2.5}$ federal health standard, and negatively impact local air quality.

In addition to the adopted rule changes, on September 2, 2015, the Board allocated $3 million from the Air District's reserves to fund an incentive program to aid Bay Area homeowners and landlords to change to cleaner heating devices.

The 2016-2017 Winter Spare the Air campaign features the same strong message from last season and links the serious health impacts from wood smoke to those of cigarette smoke. Advertising that clearly illustrates this link and has resonated so well with the public will be refreshed for the upcoming winter season.

DISCUSSION

The amendments to Regulation 6, Rule 3 are scheduled to go into effect on November 1, 2016.

The Wood Smoke Reduction Incentive Program was developed to improve local air quality and reduce wintertime particulate matter pollution by helping Bay Area homeowners and landlords replace their wood-burning heating devices with cleaner options.

Program funds were reserved to ensure that 40% of the monies available were prioritized for Highly Impacted Residents (HIR), which include low-income residents, residents located in areas highly affected by wood smoke, and households whose wood-burning device is their sole source of heat.

The Program began accepting applications on Friday, August 26, 2016.

The Winter Spare the Air campaign will highlight changes to the wood burning rule, publicize the benefits of changing out old fireplaces and continue to focus on the localized health impacts from wood smoke. Staff will present an overview of this year's materials and campaign strategy.

BUDGET CONSIDERATIONS/FINANCIAL IMPACTS

Funding for the Regulation 6, Rule 3 Wood Burning Devices enforcement, advertising and incentives is included in the Fiscal Year 2016-2017 budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Lisa Fasano
Reviewed by: Wayne Kino

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Eric Mar and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 29, 2016

Re: Update on Regulation 12, Rule 16: Petroleum Refining Facility-Wide Emissions and Regulation 11, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

At the July 20, 2016 Board meeting, the Board of Directors directed staff to conduct a full regulatory analysis of two options in one Environmental Impact Report (EIR) to address concerns about the impact of emissions from refineries: a proposal by staff to significantly reduce toxic risk from refineries and hundreds of other sources throughout the Bay Area (draft Regulation 11, Rule 18 or "Rule 11-18") and a proposal by Communities for a Better Environment (CBE) and associated organizations to limit greenhouse gas (GHG) and specific criteria pollutant emissions from refineries (draft Regulation 12, Rule 16 or "Rule 12-16"). Staff presented a timeline for this effort culminating in Board consideration of the rules in May 2017.

Staff is fully developing both rules and is on track to bring them to the Board for consideration by May of 2017. The draft rules, Notice of Preparation/Initial Study for the EIR were released for public review and comment on October 14, 2016. A draft staff report was released on October 27, 2016. Staff held Open Houses on Rule 11-18 across the Bay Area November 9, 2016 through November 17, 2016, and will continue to meet with key stakeholders throughout the rule development process regarding both draft rules. A brief description of the draft rules is provided below.

Regulation 12, Rule 16: Petroleum Refining Facility-Wide Emissions Limits:

At the July 20, 2016 meeting, the Board of Directors directed staff to develop regulatory language that represents a proposal by CBE to limit specific emissions from petroleum refining facilities and three support facilities using numeric limits on GHG, particulate matter (PM), oxides of nitrogen (NOx) and sulfur dioxide (SO_2) at defined historic levels. Staff continues to work with CBE to make sure that the regulatory language accurately reflects their policy proposal. Staff has identified a number of issues regarding this draft rule and discussed these issues with CBE. These concerns were explained in detail in the staff report released on October 27, 2016. CBE has indicated that they do not want to make any changes to their proposal in order to address these concerns.

Regulation 11, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities:

In order to address concerns regarding health impacts for communities located near refineries and other facilities, staff is developing a rule that would significantly reduce toxic emissions from sources such as refineries, metal melting facilities, and stationary diesel generators. Rule 11-18 would apply to all facilities whose emissions of toxic air contaminants may result in a significant risk to nearby residents and workers. Rule 11-18 would achieve significant reductions of toxic air contaminants by setting a cap on the allowable risk for all facilities across the Bay Area. Air District staff would perform Health Risk Assessments (HRAs) to identify risk levels at facilities with potential to exceed the cap and then require appropriate measures to reduce risk to acceptable levels.

DISCUSSION

Staff is currently on schedule to bring these rules to the Board for consideration in May 2017. However, due to comments from impacted facilities, staff may recommend that the evaluation of Rule 11-18 be extended. An extension of the timeline for Rule 11-18 would not impact the schedule for Rule 12-16. Recent and upcoming milestones are as follows:

- August 19, 2016: Project description for EIR posted for public review and comment.
- October 14, 2016: Publication of draft rules, and Initial Study for the EIR
- October 19, 2016: Update to the Board of Directors
- October 27, 2016: Publication of draft staff report
- November 9, 2016: Rule 11-18 Open House in Richmond
- November 10, 2016: Rule 11-18 Open House in Oakland
- November 14, 2016 (afternoon): Rule 11-18/Rule 12-16 EIR Scoping Meeting in San Francisco
- November 14, 2016 (evening): Rule 11-18 Open House in San Francisco
- November 15, 2016: Rule 11-18 Open House in San Jose
- November 16, 2016 (afternoon): Rule 11-18/Rule 12-16 EIR Scoping Meeting in Martinez
- November 16, 2016 (evening): Rule 11-18 Open House in Martinez
- November 17, 2016: Rule 11-18 Open House in Fremont
- December 2, 2016: End of initial comment period for draft rules and EIR Initial Study
- March 3, 2017: Publication of rules, staff analysis, socioeconomic analysis, EIR
- May 17, 2017: Board Hearing

BUDGET CONSIDERATIONS/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Eric Stevenson
Reviewed by: Jean Roggenkamp