



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

BOARD OF DIRECTORS
REGULAR MEETING
DECEMBER 15, 2010

A meeting of the Bay Area Air Quality Management District Board of Directors will be held at 9:45 a.m. in the 7th Floor Board Room at the Air District Headquarters, 939 Ellis Street, San Francisco, California.

**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.

BOARD OF DIRECTORS REGULAR MEETING

A G E N D A

WEDNESDAY
DECEMBER 15, 2010
9:45 A.M.

BOARD ROOM
7TH FLOOR

CALL TO ORDER

Opening Comments
Roll Call
Pledge of Allegiance

Chairperson, Brad Wagenknecht
Clerk of the Boards

PROCLAMATION/COMMENDATIONS

The Board of Directors will recognize outgoing Directors, Chris Daly and Pamela Torliatt, for their dedicated leadership and service to protecting air quality in the Bay Area.

PUBLIC COMMENT PERIOD

Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3
Members of the public are afforded the opportunity to speak on any agenda item. All agendas for regular meetings are posted at District headquarters, 939 Ellis Street, San Francisco, CA, at least 72 hours in advance of a regular meeting. At the beginning of the regular meeting agenda, an opportunity is also provided for the public to speak on any subject within the Board's subject matter jurisdiction. Speakers will be limited to three (3) minutes each.

BOARD MEMBERS' COMMENTS

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)

LEADERSHIP DEVELOPMENT PROGRAM RECOGNITION

The Board of Directors will recognize employees who graduated from the Air District's first Leadership Development Program (LDP).

CONSENT CALENDAR (ITEMS 1 – 5)

1. Minutes of December 1, 2010

Staff/Phone (415) 749-

L. Harper/5073
lharp@baaqmd.gov

2. Communications

J. Broadbent/5052
jbroadbent@baaqmd.gov

Information only.

3. Transportation Fund for Clean Air (TFCA) Report on Regional Fund Expenditures and Effectiveness for Fiscal Year 2009/10

D. Breen/5041

dbreen@baaqmd.gov

As is required by California Health and Safety Code Section 44241.5, staff requests that the Board of Directors receive and file a report on TFCA Regional Fund expenditures and their effectiveness in improving air quality for projects closing in Fiscal Year 2009/10.

4. Consider Authorization of Contract for Geospatial Computer Services

J. Chiladakis/4750

jchiladakis@baaqmd.gov

The Board of Directors will consider authorizing the Executive Officer/APCO to enter into a contract for upgrading District geospatial computer servers not to exceed a sum of \$187,000.

5. Consider Authorization of Contract for Training Materials and Training Implementation

J. Chiladakis/4750

jchiladakis@baaqmd.gov

The Board of Directors will consider authorizing the Executive Officer/APCO to enter into a contract to develop training materials and implement training for District staff and permit holders on new operational procedures and computer systems not to exceed a sum of \$346,000.

COMMITTEE REPORTS AND RECOMMENDATIONS

6. Report of the **Legislative Committee** Meeting of December 6, 2010

CHAIR: S. GARNER

J. Broadbent/5052

jbroadbent@baaqmd.gov

The Committee recommends Board of Directors' approve a 2011 legislative agenda.

7. Report of the **Budget and Finance Committee** Meeting of December 8, 2010

CHAIR: C. GROOM

J. Broadbent/5052

jbroadbent@baaqmd.gov

The Committee recommends Board of Directors' accept an EPA grant and award a contract for data management system services for ambient air quality and meteorological data.

8. Report of the **Stationary Source Committee** Meeting of December 13, 2010

CHAIR: G. UILKEMA

J. Broadbent/5052

jbroadbent@baaqmd.gov

PRESENTATION(S)

9. Update on Implementation of the District's California Environmental Quality Act (CEQA) Guidelines and Consideration of a Recommendation to Set the Effective Date for the Threshold of Significance for Risks and Hazards for New Receptors at May 1, 2011

J. Broadbent/5052

jbroadbent@baaqmd.gov

The Board of Directors will receive an update on the implementation of the District's CEQA Guidelines and thresholds of significance adopted by the Board of Directors at its June 2, 2010 meeting, and will consider a recommendation to set the effective date for the threshold of significance for risks and hazards for new receptors at May 1, 2011.

PUBLIC HEARING(S)

10. Public Hearing to Consider Adoption of Proposed Amendments to Regulation 9, Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries; and Adoption of a CEQA Negative Declaration

H. Hilken/4642

hhilken@baaqmd.gov

The Board of Directors will consider proposed amendments to Regulation 9; Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries which will modify and add new NOx limits for CO boilers, simplify compliance calculation procedures, and extend the applicability of the rule to smaller devices to reduce emissions of NOx, CO, secondary particulate matter and greenhouse gasses from devices subject to the rule.

CLOSED SESSION

11. **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(s):

California Building Industry Association v. Bay Area AQMD, San Francisco Superior Court, Case No. RG 10548693

OPEN SESSION

OTHER BUSINESS

12. Report of the Executive Officer/APCO
13. Chairperson's Report
14. Time and Place of Next Meeting – 9:45 A.M. Wednesday, January 19, 2011 – The David Brower Center, 2150 Allston Way, Berkeley, CA 94704. The regularly scheduled Board of Directors meeting on January 5, 2011 is cancelled.
15. Adjournment

CONTACT EXECUTIVE OFFICE - 939 ELLIS STREET SF, CA 94109

(415) 749-5130
FAX: (415) 928-8560
BAAQMD homepage:
www.baaqmd.gov

- To submit written comments on an agenda item in advance of the meeting.
- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.
- To request special accommodations for those persons with disabilities. Notification to the Executive Office should be given at least 3 working days prior to the date of the meeting so that arrangements can be made accordingly.
- 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 Air District's headquarters at 939 Ellis Street, San Francisco, CA 94109, at the time such writing is made available to all, or a majority of all, members of that body. Such writing(s) may also be posted on the Air District's website (www.baaqmd.gov) at that time.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET, SAN FRANCISCO, CALIFORNIA 94109
(415) 771-6000

EXECUTIVE OFFICE:
MONTHLY CALENDAR OF DISTRICT MEETINGS

DECEMBER 2010

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Stationary Source Committee Meeting <i>(At the Call of the Chair)</i>	Monday	13	9:30 a.m.	Board Room
Board of Directors Regular Meeting <i>(Meets 1st & 3rd Wednesday of each Month)</i>	Wednesday	15	9:45 a.m.	Board Room
Joint Policy Committee Special Meeting	Friday	17	10:00 a.m.	MTC Auditorium 101 – 8 th Street Oakland, CA 94607
Board of Directors Mobile Source Committee <i>(Meets 4th Thursday each Month)</i> - RESCHEDULED TO NOVEMBER 18, 2010 at 9:30 a.m.	Thursday	25	9:30 a.m.	4 th Floor Conf. Room

JANUARY 2011

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
CANCELLED: Board of Directors Regular Meeting <i>(Meets 1st & 3rd Wednesday of each Month)</i>	Wednesday	5	9:45 a.m.	Board Room
Advisory Council Retreat <i>(2nd Wednesday of each Month)</i>	Wednesday	12	9:00 a.m.	Board Room
Board of Directors Personnel Committee <i>(At the Call of the Chair)</i>	Wednesday	12	1:30 p.m.	4 th Floor Conf. Room
Board of Directors Regular Meeting / Retreat <i>(Meets 1st & 3rd Wednesday of each Month)</i>	Wednesday	19	9:45 a.m.	David Brower Center 2150 Allston Way Berkeley, CA 94704
Board of Directors Mobile Source Committee <i>(Meets 4th Thursday each Month)</i>	Thursday	27	9:30 a.m.	4 th Floor Conf. Room

FEBRUARY 2011

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Regular Meeting <i>(Meets 1st & 3rd Wednesday of each Month)</i>	Wednesday	2	9:45 a.m.	Board Room
Board of Directors Regular Meeting <i>(Meets 1st & 3rd Wednesday of each Month)</i>	Wednesday	15	9:45 a.m.	Board Room
Board of Directors Mobile Source Committee <i>(Meets 4th Thursday each Month)</i>	Thursday	24	9:30 a.m.	4 th Floor Conf. Room

HL – 11/30/10 (9:45 a.m.)

P/Library/Forms/Calendar/Calendar/Moncal

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Brad Wagenknecht and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 7, 2010

Re: Board of Directors Draft Meeting Minutes

RECOMMENDED ACTION:

Approve attached draft minutes of the Board of Directors Regular Meeting of December 1, 2010.

DISCUSSION

Attached for your review and approval are the draft minutes of the Board of Directors Regular Meeting of December 1, 2010.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
(415) 749-5000

Board of Directors Regular Meeting
December 1, 2010

DRAFT MINUTES

CALL TO ORDER: Chairperson Brad Wagenknecht called the meeting to order at 9:48 a.m.

Roll Call: Chairperson Brad Wagenknecht; Secretary John Gioia; and Directors Chris Daly, Susan Garner, Carole Groom, Scott Haggerty, Jennifer Hosterman, David Hudson, Ash Kalra, Carol Klatt, Eric Mar, Nate Miley, Mark Ross, James Spering, Pamela Torliatt, Gayle B. Uilkema, Ken Yeager, and Shirlee Zane

Absent: Vice Chair Bates, Directors Harold Brown, Dan Dunnigan, and Liz Kniss

PLEDGE OF ALLEGIANCE: Chairperson Wagenknecht led the Pledge of Allegiance.

PUBLIC COMMENTS:

Andrea Papanastassiou, Director for Real Estate Development, Eden Housing, thanked the Board and District staff for the recommendation to delay implementation of new thresholds until May 1, 2011. She discussed examples of screening and development of affordable housing, and asked that screening criteria be removed from the website while additional stakeholder work is being done.

Nyese Joshua, Bayview Hunters Point, submitted a letter into the record regarding a fire on November 16, 2010 at Sims Metal, 300 20th Street, in Potrero Hill. She requested a further review and hearing by the District of the incident.

Mr. Broadbent explained that the City and County of San Francisco act as first responders. Staff prepared an incident report and can follow up with the speaker on what the District has done and learned.

Director Zane asked that the District provide clear communication to the public in terms of how incidents are handled.

Evan Reeves, Policy Director, Center for Creative Land Recycling, discussed concerns regarding the new CEQA risk and hazard thresholds for receptor projects. He said staff acknowledged concerns regarding failure rates and is working on refinements. He asked that screening tables be removed from the website.

BOARD MEMBER COMMENTS:

Director Daly relayed his personal experience living next to a freeway and asked housing advocates to locate and build affordable housing in cleaner areas.

Mr. Broadbent explained that staff will be recommending changing the effective date for hazard and risk thresholds at the December 15, 2010 Board meeting. He recognized the need for more time to be able to work with organizations that rely on guidelines, and staff will be recommending moving the date to January 1, 2011.

Director Torliatt asked for an additional option in the December 15, 2010 staff report to continue with the May 1, 2011 policy and not extend the deadline.

Director Spring reiterated the fact that a full review will be undertaken after one full year after adopting the thresholds.

PROCLAMATION(S)/AWARDS

The Board of Directors recognized the following employees who have completed milestones of twenty-five (25), thirty (30), thirty-five (35), and forty (40) years of service with the Air District during this first half of the calendar year:

- 30 Years: Nora Lew, Richard Lew, and Lynn Miller
- 25 Years: Jim Hesson, Janice Hom, Wayne Kino, and Jane Lundquist

CONSENT CALENDAR (Items 1-7):

1. **Minutes of November 3, 2010 Regular Meeting;**
2. **Communications;**
3. **District Personnel on Out-of-State Business Travel;**
4. **Proposed Regulatory Agenda for 2011;**
5. **Set a Public Hearing on December 15, 2010 to Consider Adoption of Proposed Amendments to Regulation 9, Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries; and Adoption of a CEQA Negative Declaration;**
6. **Consider Adjusting the Air District's Medical Contribution Declared to California Public Employee's Retirement System (CalPERS);**
7. **Consider Establishing the New Classification of Executive Secretary I/II**

Board Action: Director Torliatt made a motion to approve Consent Calendar Items 1, 2, 3, 4, 5 6, and 7; Director Hosterman seconded the motion; unanimously approved without objection.

COMMITTEE REPORTS AND RECOMMENDATIONS

8. **Report of the Personnel Committee Meeting of November 17, 2010**
Vice Chair: C. Groom

The Personnel Committee met on Wednesday, November 17, 2010 without a quorum and deferred the minutes of August 25, 2010 to the next Personnel Committee meeting.

The Committee then held interviews of candidates to fill unexpired terms of office for two Advisory Council Members under the *Community Planning* and the *Architect* categories.

The consensus of the Committee was for the Board of Directors to:

- 1) Re-appoint incumbent Advisory Council Members whose terms expire December 31, 2010, except for the *Engineer* category member whose interest will be re-confirmed;
- 2) Appoint Sam Altshuler to the Advisory Council, under the *Engineer* category, to a term of office effective January 1, 2011 through December 31, 2012; and
- 3) Appoint Elizabeth Lutzker to the Advisory Council, under the *Public Health Agency* category, to a term of office, effective January 1, 2011 through December 31, 2012.

The next meeting of the Personnel Committee is at the call of the Chair.

Board Action: Director Groom made a motion to approve the Personnel Committee's report and consensus proposals of the Personnel Committee; Director Uilkema seconded the motion; carried unanimously without opposition.

9. Report of the Mobile Source Committee Meeting of November 18, 2010

Chair: S. Haggerty

The Mobile Source Committee met on Thursday, November 18, 2010 without an established quorum and, by consensus of those members present, accepted the minutes of the October 28, 2010 Mobile Source Committee meeting.

The Committee discussed and considered recommending Board of Directors' approval of the Carl Moyer Program projects with proposed grant awards over \$100,000. Recommended projects will replace six pieces of off-road equipment, resulting in the reduction of 5.8 tons of criteria pollutants per year. The consensus of Committee members was for the Board of Directors to approve the Year 12 Carl Moyer Program/MSIF projects with proposed grant awards greater than \$100,000, and authorize the Executive Officer/APCO to enter into agreements for the recommended Carl Moyer Program projects.

The Committee received an informational update on the Electric Vehicle Charging Infrastructure Deployment Program and reviewed the schedule for EV deployment in the Bay Area, regional efforts to support EV deployment, including the District's Charging Infrastructure Incentive Program, as well as outreach and assistance to local government regarding charging infrastructure permitting processes. Committee members asked that the initial focus be placed on residential home charging units.

The Committee then considered proposed revisions to Transportation Fund for Clean Air (TFCA) County Program Manager Fund Policies for Fiscal Year (FY) 2011/2012. The Committee discussed the recommended revisions as well as comments received and staff responses. The Committee member consensus was that the Board of Directors approve the proposed policy revisions to govern allocation of FY 2011/2012 TFCA County Program Manager funds.

The Committee then discussed and considered approval for Transportation Fund for Clean Air (TFCA) Regional Funds for Shuttle, Ridesharing and Vanpool projects. The Committee reviewed the application process, evaluation of applications, emissions reductions, and the 13 projects that meet

Board adopted policies. The consensus of Committee members was for the Board of Directors to approve TFCA Shuttle, Ridesharing and Vanpool projects listed in Attachment 1; and authorize the Executive Officer/APCO to enter into agreements for the recommended TFCA projects.

The next meeting of the Mobile Source Committee will be at the Call of the Chair.

Board Action: Director Haggerty made a motion to approve the report and consensus proposals of the Mobile Source Committee; Director Spering seconded the motion; carried unanimously without opposition.

10. Report of the Executive Committee Meeting of November 22, 2010

Chair: B. Wagenknecht

The Executive Committee met on Monday, November 22, 2010 and approved the minutes of October 20, 2010.

The Committee received a Quarterly Report from Hearing Board Chair, Tom Dailey.

The Committee then discussed reimbursing travel costs for Board Members interested in attending the Air and Waste Management's People to People Program 2011 delegation to India. After a lengthy discussion, the Committee agreed to approve reimbursement in the amount of \$2,500 per Board Member, and not to exceed \$10,000 in total.

The Committee also discussed and considered recommending proceeding with a Request for Proposal for a "Stand Alone" option for transactional and financial advisory services surrounding a potential relocation. Based on this discussion, the Committee recommended staff delay proceeding with a Request for Proposal for six months.

The Committee then discussed the implementation of the District's California Environmental Quality Act (CEQA) Guidelines. In addition, the Committee was informed of staff's plan to recommend the Board postpone the effective date for the risk and hazards threshold new receptors, which will be presented at the December 15, 2010 Board of Directors meeting.

The next meeting of the Executive Committee will be at the Call of the Chair.

Director Discussion/Comments:

Director Zane voiced opposition to the expenditure of funds for attendance to the Air and Waste Management's (A&WMA's) People to People Program 2011 delegation to India. She made a motion to deny the recommendation and suggested funds be spent on public outreach and website improvements. Director Mar seconded the motion.

Director Haggerty supported the motion without stipulating the use of funds. He said if the trip is worthwhile, it should be paid for in its entirety. By not paying for it, the message is sent that it is not worthwhile at all, and supported Mr. Broadbent's attendance.

Director Zane amended her motion to remove stipulating where funds should be spent, and supported Mr. Broadbent's attendance to the conference.

Directors discussed the value of the trip, leaving funds unencumbered, Board Member interest in attending the conference, limits on travel, whether or not to limit attendance to one Board Member, support for the Executive Officer/APCO's attendance, the policy and events relating to the trip planned two years ago which was put on hold, and setting Board policy for compensation of \$2,500 maximum per person and no more than \$10,000 in total.

Board Action: Director Zane made a substitute motion to limit expense to \$2,500 and no more than \$10,000 in total and authorize the Executive Director/APCO to attend the A&WMA's People to People Program 2011 delegation to India for this trip only; Director Mar seconded the motion, which carried by the following roll call vote (11-5-2-3): Ayes: Groom, Haggerty, Hudson, Kalra, Klatt, Mar, Ross, Spering, Uilkema, Yeager, Zane. Noes: Daly and Gioia; Abstain: Garner and Hosterman. Absent: Bates, Brown, Dunnigan.

Board Action: Director Uilkema made a motion to approve the report of the Executive Committee; Director Torliatt seconded the motion; carried unanimously without opposition.

11. Report of the Climate Protection Committee Meeting of November 29, 2010

Chair: P. Torliatt

The Climate Protection Committee met on Monday, November 29, 2010 and approved the Climate Protection Committee minutes of May 19, 2010.

The Committee received a status report and background on the implementation of AB 32 measures, and an update on the cap-and-trade program which is scheduled for adoption by the Air Resources Board on December 16 and 17, 2010. The Committee reviewed applicability of the cap-and-trade program, the issuance and costs of allowances, baseline emissions and the capped level of emissions, as well as outstanding issues relating to conflict of interest requirements for GHG verifiers. The Committee and District staff will continue to participate in and track program development.

The Committee received an update on the status of projects funded through the \$3 million Climate Protection Grant Program. Details on selected grants and results from project implementation were presented for a variety of projects in the areas of youth outreach, climate planning, regional strategies, regionalizing best practices, and fostering innovation.

The Committee then considered initiation of a Climate Leadership Award Program and recommends that the Board of Directors establish an annual Climate Leadership Award Program in the name of Dr. Stephen Schneider, and to present the first award to Dr. Terry Root, in honor of Dr. Stephen Schneider, Stanford biology professor and leading researcher in climate protection. Nominating and selection criteria for the program, including a timeline to accept nominations and making selections will be developed by staff and returned to the Committee for review.

The next meeting of the Climate Protection Committee is at the Call of the Chair.

Board Action: Director Torliatt made a motion to approve the report and recommendations of the Climate Protection Committee; Director Garner seconded the motion; carried unanimously without opposition.

PRESENTATION

12. Strategic Facilities Planning Project Presentation Provided by CB Richard Ellis

Mr. Broadbent gave an overview on the District's obsolete building, significant deferred maintenance, and efforts which began in 2008 to search for a new headquarters location. He said next steps and recommendations are to authorize the Executive Officer/APCO to proceed with the next phase and issuance of a joint RFP.

Raul Campos, Managing Director, CB Richard Ellis, reviewed deferred maintenance costs to renovate the existing building, totaling \$11.3 million. He discussed Phase I and the steps initiated in the process which had involved release of an initial RFP for strategic facilities planning in October 2008, HOK contracting to perform the work in 2009, the visioning process undertaken, and data gathering.

Phase II involved exploring alternative headquarter solutions for the Air District, MTC and ABAG which was completed and presented to the Ad Hoc Committee on October 1, 2010. Study findings were then presented to the three governing boards of each agency for action, and MTC and ABAG both approved moving forward with next steps.

Mr. Campos then reviewed the Scope of Work which involved three segments: Needs Analysis, Scenario Planning, and Strategy Development. He identified key issues relating to the building and renovation, costs over the next 10 years for continued tenancy, lack of accommodation for further growth space for MTC and ABAG, disposition values, strategy drivers, fit drivers, and cost drivers for all agencies, the San Francisco and Oakland office markets, cost comparisons of scenarios for lease versus own options, and transit commute effects for San Francisco and Oakland.

Key findings include:

1. Consolidate occupancy
 - a. Supports strategic drivers and promotes interagency synergy
 - b. Benefits from economies of scale
 - c. Carbon footprint reduction of 40% or more
2. San Francisco and Oakland are appropriate locations
 - a. Consolidation in either San Francisco or Oakland with close proximity to BART and other transportation will have little adverse impact on any of the agencies
 - b. Currently, existing opportunities exist in both markets
3. Develop specific options in the Market
 - a. Engage outside support to run a competitive process with existing options
 - b. Team to negotiate a non-binding "letter of intent" with best option
 - c. Provide board with results for review and approval of next steps

Recommendation/Next Steps:

- Authorize the Executive Officer/APCO to proceed with the next phase of the Strategic Facilities Planning Project for a joint regional government facility strategy with the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG); to include the issuance of a Joint Request for Proposal;
- The Outcome of the Market Options will be presented to the Strategic Facilities Planning Ad Hoc Committee for review and approval by each Governing Board

Director Comments/Questions:

Director Haggerty referred to Slide 13, and said he believes the first quarter of 2012 is optimistic but questioned whether the markets would bottom out at beginning of 2012. Mr. Campos stated they looked at every single building that had space on and off the market, and concluded that there are options in both the Oakland and San Francisco markets, including foreclosures. Director Haggerty cited an example of purchasing buildings at courthouse steps, and suggested this be monitored and not completely ruled out.

Director Hosterman questioned costs to renovate the District headquarters, and that two locations in Oakland exist that meet criteria but are not immediately adjacent to MTC and ABAG.

Director Ross confirmed with Mr. Campos that the disposition values in Slide 11 reflect “as is” conditions and include no tenant improvements. He questioned whether BART had been contacted for the first right of refusal. Mr. Campos stated the intent of this phase of work is having a strategy agreed upon prior to engaging groups. Director Ross confirmed the lead time for inspections and due diligence will take approximately three months, that there is a significant challenge in leasing the current District headquarters building, and the preference is owning and engaging in a co-location effort.

Directors discussed the numbers of employees at each location, shared facilities, and noted that financing options would be discussed in the next phase. Direction was given that staff hold off on pursuing a “Stand Alone” option for six months.

Director Miley confirmed that consideration was given to raw land and new construction, which is reflected on Slide 14, as build to suit. Mr. Campos said the next phase will further identify differences and opportunities, and testing them for qualitative and quantitative issues. An RFP will go out to building owners for ownership and leasing inquiry, with the primary objective to own. All buildings will be reviewed for their debt structure, capital, price, foreclosures, and once responses are received back, they can determine what works best.

Director Zane referred to Slide 14, Financial Analysis, and questioned an estimate in terms of average interest rates over a 15-year period in owning versus leasing. Mr. Campos replied that the net present analysis, time, value and interest rates are calculated in, and that they are reflective of annual numbers over a 10 year period.

Director Sperring questioned if a campus approach would be reviewed. Mr. Campos said these types of buildings and locations could be included; however, there are none currently available near urban or transit centers.

Director Haggerty recognized and clarified the geographic diversity and membership of the Strategic Facilities Ad Hoc Committee.

Board Action: Director Haggerty made a motion to authorize the Executive Officer/APCO to proceed with the next phase of the Strategic Facilities Planning Project for a joint regional government facility strategy with the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG); to include the issuance of a Joint Request for Proposal; and the outcome of the market options will be presented to the Strategic Facilities Planning Ad Hoc Committee for review and approval by each Governing Board; Director Uilkema seconded the motion; unanimously approved without objection.

CLOSED SESSION:

The Board of Directors adjourned to Closed Session at 12:00 p.m.

13. 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(s):

- A.) Peter Rogosin v. Bay Area AQMD, San Francisco Superior Court, Case No. CGC-08-478154
- B.) Thomasina Mayfield v. Bay Area AQMD, San Francisco County Superior Court, Case No. CGC-09-484213
- C.) Andrea Gordon v. Bay Area AQMD, San Francisco County Superior Court, Case No. CGC-10-497722
- D.) Duraflame, Inc. v. Bay Area AQMD, California Court of Appeal, First Appellate District, Civil Case No. A128062

SIGNIFICANT EXPOSURE TO LITIGATION

Pursuant to Government Code Section 54956.9(b), a need exists to meet in Closed Session to discuss two potential litigation matters against the District.

OPEN SESSION

The Board of Directors reconvened in Open Session at 12:13 p.m. District Counsel Brian Bunger announced that the Board of Directors met in Closed Session and no reportable action was taken.

OTHER BUSINESS

- 14. Report of the Executive Officer/APCO:** Mr. Broadbent reported on the calling of the first Winter Spare the Air night.
- 15. Chairperson's Report**

Chairperson Wagenknecht announced that the District's first Leadership Development Program (LDP) class is graduating next Tuesday, December 7, 2010 from 10:00 a.m. to 2:00 p.m. at St. Mary's Cathedral. The Board is invited to attend. He announced cancellation of the January 5, 2011 meeting, and said the next regular Board meeting will be held on January 19, 2011 at the David Brower Center in Berkeley for the Board's Annual Retreat.

- 16. Time and Place of Next Meeting:** Regular Meeting - Wednesday, December 15, 2010, 9:45 a.m., Board Room, 939 Ellis Street, San Francisco, CA 94109

17. **Adjournment:** The Board of Directors meeting adjourned at 12:15 p.m.

Lisa Harper
Clerk of the Boards

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Brad Wagenknecht and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 7, 2010

Re: Board Communications Received from December 1 through December 15, 2010

RECOMMENDED ACTION:

Receive and file.

DISCUSSION

A list of Communications directed to the Board of Directors received by the Air District from December 1, 2010 through December 15, 2010, if any, will be at each Board Member's place at the December 1, 2010 Board meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Wagenknecht and
Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 6, 2010

Re: Fiscal Year (FY) 2009/2010 Transportation Fund for Clean Air (TFCA)
Report on Regional Fund Expenditures and Effectiveness

RECOMMENDED ACTION

Receive and file the Fiscal Year (FY) 2009/2010 Transportation Fund for Clean Air (TFCA) Report on Regional Fund Expenditures and Effectiveness found in Attachment A.

BACKGROUND

In 1991, the California State Legislature authorized the Air District to impose a \$4 surcharge on motor vehicles registered within the San Francisco Bay Area to fund projects that reduce on-road motor vehicle emissions. The Air District has allocated these funds to eligible projects through the Transportation Fund for Clean Air (TFCA). The statutory authority for the TFCA and requirements of the program are set forth in California Health and Safety Code Sections 44241 and 44242.

Sixty percent (60%) of TFCA funds are awarded directly by the Air District through a grant program known as the Regional Fund. The remaining forty percent (40%) of TFCA funds are forwarded to the designated agency within each Bay Area county and distributed by these agencies through the Program Manager Fund. Portions of the TFCA Regional Fund are allocated to eligible programs implemented directly by the Air District, including the Smoking Vehicle Program and the Spare the Air Program. The balance is allocated on a competitive basis to eligible projects proposed by project sponsors.

State law requires that the Board hold an annual public hearing to review the expenditure of TFCA funds to determine their effectiveness in improving air quality.

DISCUSSION

The report, provided in Attachment A, summarizes TFCA Regional Fund expenditures on projects and programs that concluded during FY 2009/2010, and the effectiveness of these projects and programs. Key findings of the report include the following:

- TFCA funds were allocated to eligible projects and programs, consistent with the legislation that authorizes the TFCA program.
- The TFCA Regional Fund expenditures for projects and programs that concluded in FY 2009/2010 totaled \$15.54 million: \$11.94 million for projects, \$2.19 million for Air District programs, and \$1.41 million in administrative costs.

- These projects and programs reduced criteria pollutant emissions over their lifetimes by an estimated 2,636 tons, including 197 tons of reactive organic gases (ROG), 2,307 tons of nitrogen oxides (NO_x), and 132 tons of particulate matter (PM₁₀). The lifetime reduction of carbon dioxide (CO₂), a greenhouse gas, was approximately 150,514 tons.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Geraldina Grünbaum
Reviewed by: Karen M. Schkolnick

Attachment



Bay Area Air Quality Management District

FISCAL YEAR 2009/2010

**TRANSPORTATION FUND
FOR
CLEAN AIR (TFCA)**

**REPORT ON REGIONAL FUND
EXPENDITURES AND EFFECTIVENESS**

939 Ellis Street, San Francisco, CA 94109
www.baaqmd.gov

December 2010

Background

This Report summarizes expenditures for TFCA Regional Fund projects that concluded during fiscal year 2009/2010 (FY 2009/10).

Highlights of the Report

- ◆ **TFCA funds were allocated to eligible recipients for eligible projects and programs, consistent with the legislation that authorizes the TFCA.**
- ◆ **The TFCA Regional Fund expenditures for projects and programs that concluded in FY 2009/10 totaled \$15.54 million, including \$11.94 million for projects, \$2.19 million for Air District programs, and \$1.41 million in administrative costs and indirect costs.**
- ◆ **The lifetime emission reductions achieved by these projects and programs are estimated to be 197 tons of reactive organic gases (ROG), 2,307 tons of oxides of nitrogen (NO_x), and 132 tons of particulate matter (PM₁₀). Combined lifetime emission reductions for the three pollutants total 2,636 tons.**
- ◆ **The lifetime reduction in carbon dioxide (CO₂, a greenhouse gas) from these projects is approximately 150,514 tons.**

Introduction

On-road motor vehicles, including cars, trucks, and buses, constitute the most significant source of air pollution in the San Francisco Bay Area. Vehicle emissions contribute to unhealthy levels of ozone (summertime "smog") and particulate matter.

The TFCA

In 1991, the California State Legislature authorized the Air District to impose a \$4 surcharge on motor vehicles registered within the San Francisco Bay Area to fund projects that reduce on-road motor vehicle emissions. The Air District has allocated these funds to its Transportation Fund for Clean Air (TFCA) to fund eligible projects. The statutory authority for the TFCA and requirements of the program are set forth in California Health and Safety Code Sections 44241 and 44242.

Sixty percent (60%) of TFCA funds are awarded directly by the Air District through a grant program known as the Regional Fund. The remaining forty percent (40%) of TFCA funds are forwarded to the designated agency within each Bay Area county and distributed by these agencies through the Program Manager Fund. Portions of the TFCA Regional Fund are allocated to eligible programs implemented directly by the Air District, including the Smoking Vehicle Program and the Spare the Air Program. The balance is allocated on a competitive basis to eligible projects proposed by project sponsors.

The Air District Board of Directors has adopted criteria for the evaluation and ranking of project applications for TFCA Regional Funds. Cost-effectiveness, expressed in terms of TFCA dollars per ton of reduced emissions, is the most important criterion for ranking projects.

TFCA-funded projects have many benefits, including the following:

- ♦ Reducing air pollution, including toxic particulate matter;
- ♦ Conserving energy and helping to reduce emissions of carbon dioxide, a greenhouse gas;
- ♦ Reducing traffic congestion; and
- ♦ Improving water quality by decreasing contaminated runoff from roadways.

State legislation restricts TFCA funding to the following types of projects:

- ♦ **Implementation of ridesharing programs**
- ♦ **Clean fuel school and transit bus purchases or leases**
- ♦ **Feeder bus or shuttle service to rail and ferry stations and to airports**
- ♦ **Arterial traffic management**
- ♦ **Rail-bus integration and regional transit information systems**
- ♦ **Demonstrations in congestion pricing of highways, bridges and public transit**
- ♦ **Low-emission vehicle projects**
- ♦ **Smoking vehicles program**
- ♦ **Vehicle buy-back scrappage program**
- ♦ **Bicycle facility improvement projects**
- ♦ **Physical improvements that support "smart growth" projects**

Expenditures

This Report covers Regional Fund projects and programs with expenditures that concluded during FY 2009/10.

The TFCA Regional Fund expenditures for projects and programs that concluded in FY 2009/10 totaled \$15.54 million. This total includes \$2.19 million for programs administered by the Air District and \$11.94 million in grants to other organizations for projects. Based on TFCA Regional Fund revenues of \$13.17 million for FY 2009/10 (total TFCA revenues, including Program Manager, were \$21.94 million), the Air District expended \$1.41 million in administrative and audit costs. Appendix A lists expenditure details.

Effectiveness

Air District staff calculates the emissions reduced over the life of projects that receive TFCA funding.

Projects and programs concluding in FY 2009/10 reduced criteria pollutant emissions over their lifetimes by an estimated total of 2,636 tons. This total is the sum of ozone precursors (197 tons of ROG and 2,307 tons of NO_x) and particulate matter (132 tons of PM₁₀). The lifetime reduction of carbon dioxide (CO₂), a greenhouse gas, was approximately 150,514 tons.

The cost-effectiveness of TFCA projects is calculated by dividing the TFCA funds allocated to projects by the lifetime criteria pollutant emissions reductions (ROG, NO_x, and weighted PM₁₀ combined). The result is TFCA dollars per ton of reduced emissions.

It should be noted that emissions reduced and cost-effectiveness for the two Bicycle Facility Projects (BFP) listed in Appendix A are not included in this report. This is based on a streamlining effort that benchmarks project award amounts in the BFP to the historical cost effectiveness of similar projects to ensure that these projects meet the Board-established TFCA cost-effectiveness.

A summary of expenditures, emission reductions, and cost-effectiveness values is provided in Table 1.

Table 1: Results of Projects with Calculated Emission Reductions

<i>Category</i>	<i># of Projects</i>	<i>TFCA \$ Expended</i>	<i>% of TFCA \$ Expended</i>	<i>Emission Reduction (tons)⁽¹⁾</i>	<i>% of Emission Reductions</i>	<i>Cost Effectiveness (\$/ton)⁽²⁾</i>
Shuttle/Feeder Bus/Rideshare	18	\$7,114,700	50.3%	2,320.1	88.0%	\$1,971
Arterial Management	1	\$500,000	3.5%	60.6	2.3%	\$2,090
Smoking Vehicle	1	\$902,234	6.4%	63.2	2.4%	\$2,634
Heavy-Duty Vehicles	26	\$2,820,582	19.9%	100.0	3.8%	\$4,551
Smart Growth	3	\$712,318	5.0%	21.2	0.8%	\$7,474
Diesel Repowers & Retrofits	3	\$653,753	4.6%	36.5	1.4%	\$8,507
Spare the Air	1	\$1,291,963	9.1%	30.4	1.2%	\$8,902
<u>Bicycle Facilities</u>	<u>3</u>	<u>\$143,365</u>	<u>1.0%</u>	<u>4.0</u>	<u>0.2%</u>	<u>\$10,620</u>
TOTAL⁽³⁾	56	\$14,138,916	100%	2,635.9	100%	

(1) Lifetime emission reductions of ROG, NO_x, and PM₁₀ combined.

(2) Consistent with the current California Air Resources Board methodology to calculate cost-effectiveness for the Carl Moyer Program, PM emissions were weighted by a factor of 20 to account for their harmful impacts on human health.

(3) Totals may vary due to rounding.

APPENDIX A: TFCA Regional Fund Projects Concluding in FY 2009/10

Project #	Sponsor	Project Title	TFCA \$ Expended
02R51	City of East Palo Alto	Bay Road Traffic Calming & Streetscape Improvements	\$248,063.00
03R18	City of Sunnyvale	Pedestrian Improvements - Frances Street Corridor	\$429,000.00
03R51	Santa Clara Valley Transportation Authority	Bicycle Racks - Santa Clara County	\$39,155.34
03R54	Alameda County CMA	Arterial Management - Increase Transit Priority International Boulevard/East 14th Street	\$500,000.00
04R22	Port of Oakland	Heavy-Duty Vehicle Replacement -- 5 CNG transit buses (Air BART)	\$290,000.00
04R48	City of Sunnyvale	In-Pavement Crosswalk Warning Lights	\$35,255.35
05R35	County of Contra Costa	Retrofit 21 Heavy-duty Diesel Vehicles	\$258,800.87
05R62	City of Berkeley	City of Berkeley Transportation Alternatives Marketing and Outreach Project	\$44,216.00
06R34	Amador Valley Industries, LLC	Purchase Two (2) Compressed Natural Gas Solid Waste Collection Vehicles	\$100,000.00
06R37	Pleasanton Garbage Service, Inc.	Purchase Four (4) Compressed Natural Gas Solid Waste Collection Vehicles	\$200,000.00
06R45	Ravenswood City School District	Repower Three (3) Heavy-duty Diesel School Buses	\$142,984.21
06R48	San Francisco International Airport	Retrofit Twenty-seven (27) Diesel Shuttle Vehicles	\$279,414.72
06R55	Diamond Tank Lines	Retrofit Two (2) Heavy-duty Diesel Trucks	\$42,792.50
06R59	Mercury Tours	Retrofit Ten (10) Diesel Buses	\$157,142.45
06R63	Royal Coach Lines	Retrofit Sixteen (16) Diesel Buses	\$217,195.65
06R65	Sheedy Drayage	Retrofit Six (6) Heavy-duty Diesel Trucks	\$42,792.50
06R74	City of Berkeley	West Berkeley Shuttle Service	\$20,237.08
06R75	City of Redwood City	Redwood City Community Shuttle Service	\$7,407.74
06R82	Metropolitan Transportation Commission	Regional Rideshare Program	\$882,224.70
06R90	Santa Clara Valley Transportation Authority	Shuttle Bus Services - ACE Commuter Rail	\$877,044.48
06R92	University of California, San Francisco	UCSF Mission Bay BART Powell Street Shuttle	\$44,404.00

07BFP11	Presidio Trust	Presidio Promenade & Park Boulevard Trail	\$82,110.00
07R12	City of Berkeley	West Berkeley Shuttle	\$25,000.00
07R18	Metropolitan Transportation Commission	Regional Rideshare Program	\$920,009.10
07R19	Peninsula Corridor Joint Powers Board	Caltrain Weekday Shuttle Bus Service	\$1,034,355.00
07R21	San Joaquin Regional Rail Commission	LAVTA ACE-BART Shuttle Service Pleasanton ACE and Dublin/Pleasanton BART Stations	\$50,000.00
07R22	San Joaquin Regional Rail Commission	LAVTA ACE-BART Shuttle Service-between Pleasanton ACE and Stoneridge Business Park/West Pleasanton	\$44,000.00
07R34	Foster Farms Dairy	Retrofit 17 Heavy Duty Trucks - Level 3 Devices	\$309,349.78
07R62	South San Francisco Scavenger Co	Purchase One Heavy Duty CNG Truck	\$69,749.81
08BFP02	Santa Clara VTA	E-Locker Retrofit Program	\$22,100.00
08R06	San Jose State University - Associated Students	SJSU Transportation Demand Management Program	\$100,000.00
08R07	City of Redwood City	Redwood City Caltrain Shuttle Service	\$13,785.89
08R12	Metropolitan Transportation Commission	Regional Rideshare Program	\$1,000,000.00
08R13	San Joaquin Regional Rail Commission	LAVTA ACE-BART Shuttle Service-between Pleasanton ACE and Dublin/Pleasanton BART station (Route 54)	\$48,016.03
08R14	San Joaquin Regional Rail Commission	LAVTA ACE Shuttle Service-between Pleasanton ACE and Stoneridge Business Park/West Pleasanton (Route 53)	\$44,000.00
08R15	Santa Clara Valley Transportation Authority	ACE Shuttle Bus Program	\$960,000.00
08R16	Peninsula Corridor Joint Powers Board	Caltrain Weekday Shuttle Service	\$1,000,000.00
08R23	Friedman Brothers Hardware	Retrofit Eleven (11) Heavy Duty Vehicles	\$140,115.15
08R24	California Shingle & Shake	Retrofit Seven Heavy Duty Vehicles	\$120,447.18
08R25	Challenge Dairy Products, Inc.	Retrofit Thirteen Heavy Duty Vehicles	\$157,196.67

08R28	City of Santa Clara	Retrofit Five Heavy Duty Vehicles	\$35,597.90
08R29	County of Contra Costa	Retrofit Four Heavy Duty Trucks - Level 3 Devices	\$70,000.00
08R31	Gan-Trans, Ltd.	Retrofit Five Heavy Duty Vehicles	\$101,680.00
08R36	Hansen Transport, Inc.	Retrofit Two Heavy Duty Vehicles	\$27,161.74
08R37	Independent Construction	Retrofit 11 Heavy Duty Vehicles	\$99,347.77
08R41	North Bay Construction	Retrofit 5 Heavy Duty Trucks - Level 3 Device	\$32,494.45
08R45	Pozas Brothers Trucking	Retrofit 11 Heavy Duty Diesel Vehicles	\$84,474.18
08R49	Rich Ladeira Trucking, Inc.	Repower and retrofit 1 heavy-duty vehicle	\$62,224.00
08R54	Delta Steel Erectors	Retrofit 1 Heavy Duty Vehicle--Level 3 Device	\$14,910.00
08R67	City of Santa Rosa	Purchase 1 hybrid gasoline-electric bus	\$166,000.00
08R79	Gurinder Pannu	Repower + Retrofit 1 Heavy Duty Vehicle	\$69,620.00
08R81	Farwest Sanitation	Retrofit 10 Heavy Duty Vehicles	\$155,827.64
08R85	County of Contra Costa	Retrofit Four Heavy Duty Vehicles	\$10,246.42
08R88	Challenge Dairy Products, Inc.	Retrofit Two Heavy Duty Vehicles	\$16,769.40
Subtotal Projects			\$11,944,718.70

	BAAQMD	Smoking Vehicle Program	\$902,234.49
	BAAQMD	Spare the Air	\$1,291,963.08
Subtotal Air District Programs			\$2,194,197.57

	BAAQMD	Administration	\$1,405,960.59
Grand Total			\$15,544,876.86

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
 Memorandum

To: Chairperson Wagenknecht and Members
 of the Board of Directors

From: Jack P. Broadbent
 Executive Officer/APCO

Date: December 15, 2010

Re: Contract for Improving District Geospatial Computer Systems

RECOMMENDED ACTION:

Authorize the Executive Officer/APCO to enter into an agreement for procurement of computer geospatial infrastructure not to exceed a sum of \$187,000 as is included in the District Fiscal Year Ending (FYE) 2011 budget.

DISCUSSION

The District seeks to modernize its geospatial infrastructure by upgrading to modern geodatabase servers that can allow for rapid geospatial searches on information related to sensitive receptors, air quality permits, and compliance information.

Competitive quotes were obtained and Farallon Geographics Inc. has been selected as the primary vendor to develop and implement the infrastructure.

Vendor	Includes 1 year Maintenance	Includes Server Setup and Configuration	Local Vendor	Cost
Farallon Geographics	Yes	Yes	Yes	\$187,000
Microsoft	No	No	No	\$308,000
Vexcel Corporation	No	No	No	\$237,000

BUDGET CONSIDERATION/FINANCIAL IMPACT

This expenditure is included in the Air Districts' FYE 2011 budget, and no further impact is anticipated.

Respectfully submitted,

Jack P. Broadbent
 Executive Officer/APCO

Prepared by: John Chiladakis
 Reviewed by: Jeffrey McKay

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Wagenknecht and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 15, 2010

Re: Contract for Training Materials and Training Implementation

RECOMMENDED ACTION:

Authorize the Executive Officer/APCO to enter into an agreement for the development and implementation of training materials not to exceed a sum of \$346,000 as is included in the District Fiscal Year Ending (FYE) 2011 budget.

DISCUSSION

The District is nearing completion of the Production System project. The software is currently being beta tested with District Staff and will be moving to testing with permit holders next month. In order to enable District staff and District permit holders to effectively use the new software systems, the District seeks to develop training materials and implement a training program.

Competitive quotes were obtained and Emerson Human Capital inc. has been selected as the primary vendor to develop and implement the training program.

Vendor	Includes on-line Learning	Includes Instructor Implementation	Local Vendor	Cost
Emerson Human Capital	Yes	Yes	Yes	\$346,000
Radcliff Consultants	No	No	No	\$468,000
RWS Performance Solutions	Yes	No	No	\$324,000

BUDGET CONSIDERATION/FINANCIAL IMPACT

This expenditure is included in the Air Districts' FYE 2011 budget, and no further impact is anticipated.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: John Chiladakis
Reviewed by: Jeffrey McKay

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson, Brad Wagenknecht and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 8, 2010

Re: Report of the Legislative Committee Meeting of December 6, 2010

RECOMMENDED ACTIONS

The Committee recommends Board of Directors' approval of the following:

Approve a potential legislative agenda for 2011 that protects existing Air District programs, and co-sponsor a bill with the Metropolitan Transportation Commission that would require employers to provide pre-tax commute benefits similar to requirements in San Francisco, Berkeley and Richmond.

BACKGROUND

The Legislative Committee met on Monday, December 6, 2010. The Committee considered and received the following reports and recommendations:

- A) Potential Legislative Agenda for 2011
- B) Possible Impacts of Proposition 26 on the District

Attached is the staff report presented in the Legislative Committee packet.
Committee Chair Susan Garner will give an oral report of the meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACTS

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Lisa Harper
Approved by: Jennifer C. Cooper

Attachment(s)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Garner and Members
of the Legislative Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 23, 2010

Re: Potential Legislative Agenda for 2011

RECOMMENDED ACTION:

Recommend a legislative agenda to the Board of Directors.

BACKGROUND

The 2011-2012 session of the California Legislature begins on December 6, 2010. While there will be many new faces among the 120 members, some of the same issues that plagued the State in 2010 are expected to dominate affairs at the Capitol in 2011. Staff believes that the ongoing economic malaise and the huge budget deficit will have a huge effect both on what legislation is introduced, as well as its fate.

DISCUSSION

California's ongoing economic woes will mean that the Legislature will be reluctant to enact measures that have the potential to cause job loss, or hurt businesses that are perceived to be struggling financially. The business community will likely continue to have the ear of a generally sympathetic Legislature. Thus, bills that cut emissions but have high costs to businesses are unlikely to fare well this year.

California's budget problems will be an even more significant factor in deciding the fate of legislation. The Legislative Analyst has indicated that the deficit for the next fiscal year may be \$25.4 billion, and more probably \$28 billion. Given that the total General Fund is roughly \$90 billion, this is a problem of massive dimensions. Furthermore, the Legislative Analyst has warned that such deficits will likely continue for a number of years, and that many of the short-term tactics employed this year and last to address the deficit are no longer possible.

On November 2, 2010, voters passed Proposition 25, allowing a budget to be enacted with a simple majority vote of the Legislature (instead of a two-thirds vote). However, Proposition 26 also passed. As will be discussed in Agenda Item 5, Proposition 26 requires a two-thirds legislative vote on a host of revenue-raising measures that previously had only required a majority vote. Thus, budget cuts can be made with a

majority vote, but revenue increases require a two-thirds vote. Staff believes that this situation will result in unprecedented cuts to State programs, and a new effort to take or borrow any local government revenues that are not constitutionally protected. Thus staff recommends that the District's primary legislative agenda in the upcoming year be to protect existing programs and revenues from rollbacks and cuts.

Staff have begun investigating legislative proposals for the District to consider sponsoring in 2011, and will verbally present promising ideas to the Committee for its consideration.

BUDGET CONSIDERATION/FINANCIAL IMPACT:

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Thomas Addison
Reviewed by: Jean Roggenkamp

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Garner and Members
of the Legislative Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 23, 2010

Re: Possible Impacts of Proposition 26 on the District

RECOMMENDED ACTION:

None; informational item.

DISCUSSION

On November 2, 2010, over 52% of California voters passed Proposition 26. This constitutional amendment broadens the definition of what constitutes a tax, and would require a two-thirds vote of either the Legislature or the people to impose some fees that currently require a majority vote. Primary backers of the measure included oil companies such as Chevron and the California Chamber of Commerce. Supporters of the measure outspent opponents by roughly three to one.

The District, along with cities, counties, the State, legislators, lobbyists, and a host of interest groups, is attempting to understand just what the implications of this measure are for both its budget and existing and future programs. While some earlier analyses have been done, more are underway, and virtually all observers believe that ultimately it is the judicial system that will determine what the measure means in practice, and that this process will take years of litigation.

Nevertheless, District staff and counsel have begun the process of attempting to understand the consequences of Proposition 26. In the section of the measure applying to local governments, which includes the District, a tax is newly defined as any “levy, charge, or exaction of any kind” except for a list of things specifically exempted. These exemptions are:

- A charge imposed for a specific benefit, government service, or product directly to or for the payor that is not provided those not charged, and which does not exceed the reasonable costs to the local government of conferring the benefit
- A charge imposed for the reasonable regulatory costs for issuing licenses and permits, performing investigations, inspections, and audits, and the administrative enforcement and adjudication thereof
- A fine, penalty, or other monetary charge imposed as a result of a violation of law

- A charge imposed for the purchase, rental, or lease of local government property

Everything not on the list above would require a two-thirds vote of the people prior to its enactment. Furthermore, the District now “bears the burden of proving by a preponderance of evidence that any levy, charge, or exaction is not a tax, that the amount is no more than necessary to cover the reasonable costs of the governmental activity, and the manner in which those costs are allocated to a payor bear a fair or reasonable relationship to the payor’s burdens on, or benefits received from, the governmental activity.”

District staff will present to the Committee its preliminary thoughts on the possible implications of Proposition 26 on potential legislative proposals, as well as on the District’s current fees and programs, and potential new programs.

BUDGET CONSIDERATION/FINANCIAL IMPACT:

No direct impact.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Thomas Addison
Reviewed by: Jean Roggenkamp

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Brad Wagenknecht and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 9, 2010

Re: Report of the Budget & Finance Committee Meeting of December 8, 2010

RECOMMENDED ACTION

The Committee recommends Board of Directors' approval of the following:

Accept an U.S. EPA grant and award a contract for Data Management System Services for Ambient Air Quality and Meteorological Data.

BACKGROUND

The Budget & Finance Committee met on Wednesday, December 8, 2010. The Committee received the following reports and recommendations:

- A) Consideration of Accepting an EPA Grant and Awarding a Contract for Continued Development of Data Management System Services;
- B) Possible Impacts of Proposition 26 on the District;
- C) First Quarter Financial Report – Fiscal Year 2010-11; and
- D) Air District Financial Overview

Attached are the staff reports presented in the Budget and Finance Committee packet.

Chairperson Carole Groom will give an oral report of the meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT:

- A) Staff recommends that the FY 2010 – 11 Technical Division Budget be increased by \$200,000 with the acceptance of the NEIEN grant and spent entirely through a contract with STI. The project will not require any funding from the General Fund.
- B) None

C) None

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Lisa Harper
Approved by: Jennifer C. Cooper

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Groom and Members
of the Budget and Finance Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 24, 2010

Re: Consider Acceptance of EPA Grant and Award of Contract for Continued
Development of Data Management System for Ambient Air Quality and
Meteorological Data

RECOMMENDED ACTION:

Recommend that the Board of Directors amend the FY 2010 - 11 budget to recognize a \$200,000 EPA Grant from the National Environmental Information Exchange Network (NEIEN), and award a \$200,000 contract to Sonoma Technology, Inc. for Phase III development of the Data Management System (DMS) for ambient air quality and meteorological data.

DISCUSSION

Using EPA grant funding, the District completed Phase I and II development of the DMS to replace several antiquated air quality and meteorological databases. The District initially chose Sonoma Technology, Inc. (STI) for the Phase I work based on their experience with similar database structures developed for EPA's AirNOW and various California Air Resources Board special studies. The Budget and Finance Committee approved acceptance of an additional EPA grant award and contract with STI for Phase II development at its December 5, 2005 meeting. The District is ready to begin Phase III which will be completed with further funding from an NEIEN Grant. DMS is currently in use automatically collecting, quality-checking, and distributing real-time hourly and sub-hourly data to Air District web pages, AirNOW, and other public venues. The DMS has reduced staff time and resources needed to prepare final regulatory data and allow earlier submittal to EPA's Air Quality System. In order to provide additional features, services and documentation, avoid delays and increased costs, an understanding of the complex specifications and knowledge of the District's current DMS is required. STI acquired this knowledge and experience working on Phase I and II of the project, and, as a result, staff recommends STI be the sole source vendor for continued DMS development work.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Staff recommends that the FY 2010 – 11 Technical Division Budget be increased by \$200,000 with the acceptance of the NEIEN grant and spent entirely through a contract with STI. The project will not require any funding from the General Fund.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Eric Stevenson
Reviewed by: Jean Roggenkamp and Jeffrey McKay

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Groom and Members
of the Budget and Finance Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 23, 2010

Re: Possible Impacts of Proposition 26 on the District

RECOMMENDED ACTION:

None; informational item.

DISCUSSION

On November 2, 2010, over 52% of California voters passed Proposition 26. This constitutional amendment broadens the definition of what constitutes a tax, and would require a two-thirds vote of either the Legislature or the people to impose some fees that currently require a majority vote. Primary backers of the measure included oil companies such as Chevron and the California Chamber of Commerce. Supporters of the measure outspent opponents by roughly three to one.

The District, along with cities, counties, the State, legislators, lobbyists, and a host of interest groups, is attempting to understand just what the implications of this measure are for both its budget and existing and future programs. While some earlier analyses have been done, more are underway, and virtually all observers believe that ultimately it is the judicial system that will determine what the measure means in practice, and that this process will take years of litigation.

Nevertheless, District staff and counsel have begun the process of attempting to understand the consequences of Proposition 26. In the section of the measure applying to local governments, which includes the District, a tax is newly defined as any “levy, charge, or exaction of any kind” except for a list of things specifically exempted. These exemptions are:

- A charge imposed for a specific benefit, government service, or product directly to or for the payor that is not provided those not charged, and which does not exceed the reasonable costs to the local government of conferring the benefit
- A charge imposed for the reasonable regulatory costs for issuing licenses and permits, performing investigations, inspections, and audits, and the administrative enforcement and adjudication thereof
- A fine, penalty, or other monetary charge imposed as a result of a violation of law

- A charge imposed for the purchase, rental, or lease of local government property

Everything not on the list above would require a two-thirds vote of the people prior to its enactment. Furthermore, the District now “bears the burden of proving by a preponderance of evidence that any levy, charge, or exaction is not a tax, that the amount is no more than necessary to cover the reasonable costs of the governmental activity, and the manner in which those costs are allocated to a payor bear a fair or reasonable relationship to the payor’s burdens on, or benefits received from, the governmental activity.”

District staff will present to the Committee its preliminary thoughts on the possible implications of Proposition 26 on potential legislative proposals, as well as on the District’s current fees and programs, and potential new programs.

BUDGET CONSIDERATION/FINANCIAL IMPACT:

No direct impact.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Thomas Addison
Reviewed by: Jean Roggenkamp

BAY AREA AIR QUALITY MANGEMENT DISTRICT

Memorandum

To: Chairperson Groom and Members
of the Budget and Finance Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 18, 2010

Re: First Quarter Financial Report – Fiscal Year 2010-11

RECOMMENDED ACTION:

Informational report. Receive and file.

DISCUSSION

Finance staff will present an update on the District’s financial results for the first quarter of the 2010-11 fiscal year. The following information summarizes those results.

GENERAL FUND BUDGET: STATEMENT OF REVENUE

Comparison of Budget to Actual Revenue

- County receipts \$211,815 (1%) of budgeted revenue.
- Permit Fee receipts \$12,373,220 (49%) of budgeted revenue.
- Title V Permit Fees \$2,102,939 (63%) of budgeted revenue.
- Asbestos Fees \$472,964 (30%) of budgeted revenue.
- Toxic Inventory Fees \$220,515 (33%) of budgeted revenue.
- Penalties and Settlements \$546,452 (36%) of budgeted revenue.
- Miscellaneous Revenue \$7,873 (7%) of budgeted revenue.
- Interest Revenue \$69,544 (25%) of budgeted revenue.

GENERAL FUND BUDGET: STATEMENT OF EXPENDITURES

Comparison of Budget to Actual Expenditures

- Salaries and Benefits \$9,192,838 (20%) of budgeted expenditures.
- Operational Services and Supplies \$3,076,869 (15%) of budgeted expenditures.
- Capital Outlay \$1,059,168(31%) of budgeted expenditures

INVESTMENT BALANCES

Cash and Investments in County Treasury:

General Fund	\$21,406,975
TFCA	\$54,929,394
MSIF	\$29,030,184
Carl Moyer	\$7,790,935
CA Goods Movement	\$3,189,530
	<u>\$116,347,019</u>

Investments Held as:

Fixed Income Investments	34% of total investment pool
Short Term Investments	66% of total investment pool

FUND BALANCES

	<u>6/30/2009</u> <u>Audited</u>	<u>6/30/2010</u> <u>Unaudited</u>	<u>6/30/2011</u> <u>Projected</u>
Imprest Cash	\$ 500	-	-
Building and Facilities	1,731,690	1,731,690	4,731,690
PERS Funding	2,300,000	1,900,000	1,500,000
Radio Replacement	75,000	75,000	75,000
Capital Equipment	130,425	130,425	1,219,818
Contingencies	400,000	-	-
Post Employment Benefits	-	-	2,000,000
Worker's Compensation	1,000,000	1,000,000	1,000,000
Economic Uncertainties	9,277,570	7,816,963	130,660
TOTAL SPECIAL RESERVES	<u>\$ 14,915,185</u>	<u>\$ 12,654,078</u>	<u>\$ 10,657,168</u>
UNDESIGNATED	<u>411,797</u>	<u>411,797</u>	<u>411,797</u>
TOTAL FUND BALANCES	<u>\$ 15,326,982</u>	<u>\$ 13,065,875</u>	<u>\$ 11,068,965</u>

BUDGET CONSIDERATION/FINANCIAL IMPACT

No impact on Fiscal Year 2010/2011 budget

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: David Glasser
Reviewed by: Jack M. Colbourn

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Groom and Members
of the Budget and Finance Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 1, 2010

Re: Air District Financial Overview

RECOMMENDED ACTION

Receive and file.

DISCUSSION

Entering the FYE 2012 budget season, the Air District continues to be financially sound and possesses adequate reserves. However, challenges continue as the District experiences the effects of reduced business activity, reduction in county revenues, and low rates of investment return. Staff will present a summary of this status.

BUDGET CONSIDERATION/FINANCIAL IMPACT

No budget impact.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Jeffrey McKay

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Brad Wagenknecht and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 8, 2010

Re: Report of the Stationary Source Committee Meeting of December 13, 2010

RECOMMENDED ACTION

Receive and file.

BACKGROUND

The Stationary Source Committee will meet on Monday, December 13, 2010 and will consider and receive the following reports:

- A) Status Report on petroleum Refinery Flare Minimization Plan Annual Updates;
- B) Status Report on Lennar BVHP Redevelopment Project;
- C) Report on the District's Odor Evaluation Technical Conference; and
- D) Proposed Regulation 11, Rule 17: Limited Use Stationary Agricultural Engines

Attached are the staff reports to be presented to the Stationary Source Committee for your review.

Chairperson Gayle Uilkema will give an oral report of the meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Lisa Harper
Approved by: Jennifer C. Cooper

Attachment(s)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Uilkema and Members
of the Stationary Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 13, 2010

Re: Status Report on the Flare Minimization Plan Third Annual Updates under
Regulation 12, Rule 12: Flares at Petroleum Refineries

RECOMMENDED ACTION:

Informational Report. Receive and file.

BACKGROUND

In order to minimize the frequency and magnitude of flaring at petroleum refineries, the District Board of Directors adopted Regulation 12-12: Flares at Petroleum Refineries on July 20, 2005. The regulation recognizes that refinery flares are first and foremost a safety device and it allows refineries to develop plans to continuously minimize flaring without compromising safety. The regulation prohibits the non-emergency use of a refinery flare unless that use is consistent with an approved Flare Minimization Plan (FMP).

Each Flare Minimization Plan must include:

- Information regarding the design and operation of the facility as it relates to flaring;
- Description of the prevention measures previously taken that permanently capture current emission reductions and planned measures to further reduce flare emissions at the refinery; and
- Commitments to implement all additional feasible prevention measures expeditiously.

The regulation functions as a continuous improvement process by requiring the refineries to update their FMP annually to incorporate any new feasible prevention measures identified as a result of investigations into the primary cause and contributing factors for significant flaring events.

DISCUSSION

The District's flare regulations have been making progress in reducing the frequency and magnitude of flaring as indicated by downward trends in the total emissions of non-methane hydrocarbons and sulfur dioxide. Emissions of methane and total volume of

vent gas flared have also been trending downward with the exception of 2009. The 2009 increases in the volume of vent gas flared and methane emissions, which were discussed at the committee's May 13, 2010 meeting, were related to major maintenance activities associated with the Clean Fuels Project at the ConocoPhillips refinery and one flaring event at Shell refinery due to a process upset.

The Flare Minimization Plan third annual updates were submitted Oct 1, 2010 and include flaring analysis for the time period July 1, 2009 through June 30, 2010. All future annual updates will continue to cover a 12-month flaring analysis period and contain any modifications or amendments to flaring prevention measures to address significant flaring events during the period.

The District uses a robust engagement process for evaluating Flare Minimization Plans. In addition to working with each refinery, district staff considers all public comments received for each plan. Throughout the Flare Minimization Plan engagement process, the District staff focuses on ensuring all feasible prevent measures identified as a result of the investigations into the reasons for flaring are expeditiously implemented. The engagement with refineries centers on the following main areas: Vent gas source reduction efforts; Fuel gas balance between gas generators and consumers; Vent gas compressor capacities and reliability; low flow events; and Sour gas scrubbing capabilities.

While emissions and volumes from petroleum refinery flares have been showing steady decreases since 2004 for most pollutants, the Air District does not expect these trends to continue due to the periodic emergency flaring as well as the cyclic nature of maintenance activity at refineries. It is not uncommon for maintenance turnarounds to occur on 3 to 5-year intervals, or longer. Emergency flaring is expected to occur periodically due to flares primary function as a safety device. However, investigations of causes for emergency flaring will result in additional prevention measures that can minimize the frequency and magnitude of this type of flaring through the continuous improvement process that is required by the flare control regulation.

The District is committed to the goal of continuous improvement in minimizing petroleum refinery flaring and will continue to work with all stakeholders to achieve progress through the petroleum refinery Flare Minimization Plans.

The Committee will receive a status report on the petroleum refinery Flare Minimization Plan third annual updates.

BUDGET CONSIDERATION / FINANCIAL IMPACT:

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Doug Tolar
Reviewed by: Kelly Wee

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Uilkema and Members
of the Stationary Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 6, 2010

Re: Status Report on Lennar BVHP Parcel A Redevelopment Project

RECOMMENDED ACTION:

Informational Report. Receive and file.

BACKGROUND

The Stationary Source Committee has requested periodic status updates on selected Bay Area facilities. Lennar BVHP, LLC (Lennar) obtained approval from the Board of Supervisors of the City and County of San Francisco and the San Francisco Redevelopment Agency in 2005 to construct approximately 1,600 attached single family homes on Parcel A of the BVHP Shipyard as part of the redevelopment project for the area. Parcel A is located in an area that contains naturally-occurring asbestos (NOA). Grading and construction activities at the site are subject to requirements of the California Air Resources Board's Asbestos Airborne Toxic Control Measure (ACTM) for Construction, Grading, Quarrying, and Surface Mining Operations (NOA ATCM), which is intended to limit the public's exposure to NOA. BVHP community members have expressed concerns over health effects resulting from the construction activities at the Parcel A site. Air District staff last presented an update to the Stationary Source Committee regarding the Lennar BVHP Project on July 13, 2009.

DISCUSSION

Lennar has completed most of the major grading and earth movement associated with the Parcel A redevelopment project. To date, paved roads have been built on Parcel A and the San Francisco Public Utilities Commission is currently installing electrical cable lines throughout the Parcel. Foundations for the future residential structures on-site have not been poured yet. Water trucks continue to water surrounding streets, and the project continues to perform air monitoring for NOA. Daily on-site inspections by District field-staff continues.

In an effort to improve public health protection from any potential airborne asbestos, the Air District required Lennar to revise its Asbestos Dust Mitigation Plan (ADMP). The revised ADMP was approved on August 4, 2009 and includes:

- Fourteen (14) additional NOA dust mitigation measures that addressed specific activities that could potentially cause dust emissions;
- The addition of four (4) community air monitors that augmented the Air District monitoring network, providing (8) air monitors to track project emissions and ensure levels remain below established significance levels for the project; criteria;
- Incorporation of U.S. Environmental Protection Agency dust mitigation suggestions into the revised Plan.

As of December 1, 2010 there have been no elevated readings recorded by the air monitors on-site since February 26, 2010 that required work to stop in order to reduce emission levels. Based on ambient asbestos monitoring data and using state risk assessment protocols, risk levels are well below established significance levels for projects in the Air District.

In the spring of 2010, the community expressed concern about airborne concentrations of naturally occurring heavy metals, such as chromium, arsenic and manganese from the project site. These naturally occurring metals are part of the geologic makeup of the soils and bedrock of the area. Parcel A had essentially no heavy metals contamination with the exception of lead contamination from lead paint associated with Navy housing, which was cleaned up. The U. S. EPA, Department of Toxic Substances Control (DTSC), and Regional Water Quality Control Board (RWQCB) oversaw the environmental clean-up of Parcel A and certified the site safe for development. District staff evaluated hundreds of third-party soil sample reports along with particulate matter monitoring data, estimated health risks from airborne metals using U.S EPA risk assessment protocols, and concluded that there is no significant health risks associated from the inhalation of airborne metals at Parcel A.

On July 27, 2010, the San Francisco Board of Supervisors granted final approval on all remaining amendments to the Environmental Impact Report (“EIR”) prepared for the remaining Parcels. The next step is for Lennar to secure funding to commence construction following transfer of the Parcels from the Federal government to the City and County of San Francisco.

District staff will provide a status report to the Committee on the Lennar Bayview Hunters Point Parcel A Project. Additionally, the attached facility Fact Sheet provides background information, regulatory history, and a summary of public comments/issues.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: John Marvin

Reviewed by: Kelly Wee

Attachments: Lennar Fact Sheet
Hunter's Point Shipyard Parcel A Monitors Fact Sheet



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

LENNAR BAYVIEW HUNTERS POINT
Parcel A' Redevelopment Project
San Francisco, CA 94124

FACT SHEET

December 6, 2010

Background

- In 2005, the Board of Supervisors of the City and County of San Francisco and the San Francisco Redevelopment Agency approved the transfer of Parcel A' of the Bayview Hunters Point Shipyard to Lennar BVHP, LLC ("Lennar") for a redevelopment project in which Lennar plans to construct approximately 1,600 attached single family homes.
- Parcel A' is located in an area that contains naturally occurring asbestos (NOA), which is a term used for several types of fibrous minerals found in ultramafic and serpentine rock. Grading and construction activities at the site are subject to requirements of CARB's Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations ("the ATCM"), which is intended to limit the public's exposure to NOA.
- The ATCM requires that construction and grading operations be conducted in accordance with an Asbestos Dust Mitigation Plan (ADMP) that has been approved by the local air district. ADMPs must contain dust mitigation measures addressing topics such as the control of dust tracked out from the construction site, and the limitation of dust emissions from the offsite transportation of excavated soil. The ATCM also allows air districts to require that an ADMP provide for ambient air monitoring for asbestos.
- On October 7, 2005, the Air District approved the ADMP, which Lennar submitted pursuant to the ATCM. The ADMP includes all the dust mitigation measures the ATCM mandates, and further requires Lennar to conduct air monitoring for asbestos and establishes specific action levels based on air monitoring results. The ADMP includes, among other mitigation measures, measures to suppress dust during earth moving activities; prevent track-out of dust onto public roads; limit the emission of dust from soil storage piles and during offsite soil transport; and stabilize the ground after construction.
- In order to protect public health, the District incorporated into the ADMP requirements that Lennar take action to reduce the concentration of asbestos in the air around Parcel A' when the ADMP-required air monitors indicate asbestos concentrations

Lennar Bayview Hunters Point Fact Sheet

December 6, 2010

have reached either of two action levels. The District based the action levels on health risk assessment protocols established by the State Office of Environmental Health Hazard Assessment (OEHHA). The first action level in the ADMP is set at 1,600 asbestos structures per cubic meter and requires that Lennar notify the District and implement more stringent dust control measures. The second action level in the ADMP is set at 16,000 asbestos structures per cubic meter and requires Lennar to stop work until asbestos levels decline.

- The District considers the action levels established in the approved ADMP to be conservative and health protective because they are based on annual average concentrations and assume continuous exposure over a 70-year lifetime. Exceeding the action levels on an occasional basis will not cause any significant increase in health risk pursuant to OEHHA guidelines.
- The District issued the following two Notices of Violation (NOVs) to Lennar alleging violations of the ADMP: NOV#A46068, issued 9/9/06, alleges a failure to properly conduct air monitoring for a period of time, and a failure to provide a gravel truck wheel wash bed at an exit road. NOV#A46075, issued 10/26/07, alleges the overfilling of trucks with material and a failure to maintain wheel wash beds free of accumulated material. Both NOVs were settled on August 12, 2008, without litigation, in accordance with California Health and Safety Code section 42403(b), for a civil penalty of \$515,000. The District received full payment of the civil penalty in early September 2008. Since, the District issued a Notice to Comply to Lennar in January 2009 for inadequate track-out prevention and control.

Public Comments/Issues

- Bayview Hunters Point (BVHP) community members have expressed concerns over health effects resulting from construction activities at the Parcel A' site. District staff met with Minister Christopher Mohammad and other representatives of BVHP to discuss issues and concerns surrounding the Parcel A' project on numerous occasions starting in November 2007. Community engagement meetings have been held to help the public better understand the District's regulatory program with respect to this project site.
- Through a competitive bid process, IQAir North America, Inc., an air purification manufacturer, was awarded the contract for the "Improved Indoor Air Quality Pilot Project at Six Bayview Hunters Point Schools". The project, funded by a portion of the penalty settlement money (approximately \$300,000), provides improved indoor air quality by upgrading existing HVAC systems with high-performance panel air filters or installing stand-alone filtration systems in classrooms without suitable HVAC systems. IQAir North America has completed air filtration upgrades at two Bayview Hunters Point schools. Air filtration upgrades are expected to be completed

Lennar Bayview Hunters Point Fact Sheet

December 6, 2010

at an additional three schools early in 2011. The sixth school is slated for closure and will not be upgraded.

- District staff met with Bayview Hunters Point Community members to discuss potential projects to be funded from the remaining penalty settlement money. A representative of the Prescott Joseph Center for Community Enhancement gave a presentation at this meeting in response to community interest in expanding the Breathmobile mobile asthma clinic to schools in Bayview Hunters Point.

Project Status

- Lennar has completed most of the major grading and earth movement entailed with the Parcel A' redevelopment project. Current construction activity is associated with completion of utilities infrastructure installation as Lennar moves toward commencing building construction. The San Francisco Public Utilities Commission commenced installation of electrical cable lines. The next phase will include temporary electrical power for building construction and installation of street lights.
- A revised Asbestos Dust Mitigation Plan (ADMP) was approved on August 4, 2009 that improved the public health protection from any potential airborne asbestos. The revised ADMP expands the monitoring network to 9 ambient asbestos monitors to improve the public health protection for the community and incorporates 14 additional dust mitigation measures to prevent airborne emissions.
- The District invited U.S. Environmental Protection Agency Region IX to review the District approved ADMP and associated air monitoring plan to ensure it is appropriately conservative and protective of public health. In its final June 9, 2010 report, U.S. EPA concluded that the implementation and enforcement of the Asbestos Dust Mitigation Plan are effectively minimizing dust asbestos exposure and the Air District project oversight is appropriate.
- Based on ambient asbestos monitoring data, and using risk assessment protocols established by Office of Environmental Health Hazard Assessment (OEHHA), in December 2010 the District estimated the cancer health risk associated with NOA released by construction and grading activity at Parcel A' by Lennar monitoring station as follows: Station HV1 – 1.1 in a million, Station HV2 – 0.9 in a million, Station HV4 – 2.9 in a million, Station HV5 – 0.7 in a million, Station HV6 – 0.5 in a million. The estimated cancer health risk associated with the community monitors is as follows: Station HVc7 – 0.6 in a million, Station HVc9 – 1.6 in a million, Station HVc11 – 3.7 in a million, Station HVc12 – 4.5 in a million. These risk estimates are well below established significance levels for projects in the air district.
- The District assessed the potential health impacts from exposure to airborne metals (arsenic, hexavalent chromium, and manganese) in response to community

Lennar Bayview Hunters Point Fact Sheet

December 6, 2010

concerns. These naturally occurring metals are part of the geologic makeup of the soils and bedrock in the area. Parcel A' never had heavy metals contamination from past shipyard activities, other than lead contamination from lead paint associated with Navy housing, which was cleaned up. The U.S. EPA, Department of Toxic Substances Control, and Regional Water Quality Control Board oversaw the environmental clean-up of Parcel A' and certified the site safe for development. Based on hundreds of soil sample reports and particulate matter monitoring data and risk assessment protocols established by OEHHA, the District estimated health risks from airborne metals and concluded there is no significant health risks associated from inhalation of airborne metals at Parcel A'.

- The District continues to conduct daily inspections to verify compliance with the ADMP and the Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations.



Bayview Hunters Point Lennar Parcel A'
San Francisco, CA
Ambient Monitoring Network for
Naturally Occurring Asbestos

FACT SHEET

December 6, 2010

The Air Resources Board's Naturally-Occurring Asbestos (NOA) Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations grants local air districts the authority to require NOA air monitoring for projects that are subject to the ATCM.¹ The ATCM proscribes that a 24-hour Transmission Electron Microscopy (TEM) analysis be performed in accordance with a modified version of the Asbestos Hazard Emergency Response Act (AHERA) test method.² The Bay Area Air Quality Management District (Air District) required ambient monitoring of naturally occurring asbestos as part of the October 7, 2005 Asbestos Dust Mitigation Plan (ADMP) to help quantify any potential exposures to asbestos and help ensure public health exposures remained at levels that are less than significant. Routine monitoring results provide (1) valuable data to determine health risk exposures according to state guidelines³ and (2) daily results that help to identify any elevated levels that can then trigger a stop in construction activities that might be contributing to the elevated levels. Construction work must remain halted until monitoring results decline below the trigger level.⁴

BAAQMD Monitoring Network (District Monitors)

The Air District requires 5 ambient monitors (identified as District Monitors HV-1, HV-2, HV-4, HV-5, HV-6) to be run every day there is dust generating construction activity at the project. The monitors are located around the project boundaries and are positioned to provide upwind and downwind readings, to the extent possible, given the variations in wind direction and the fact that the samples are run for a 24-hr period. Consistently, these monitors have shown that the ambient levels of asbestos around the Lennar BVHP Parcel A' project are below significance levels that would pose a health risk.

SFHD Monitoring Network (Community Monitors)

The City of San Francisco Health Department has established 5 additional ambient monitors (identified as Community Monitors HVc-7, HVc-8, HVc-9, HVc-11, HVc-12) and 4 are run on a daily basis with HVc-8 located upwind of project randomly sampled 1 day per week. HVc-12 is located on the dirt shoulder adjacent to the roadway and results do not represent dust generating construction activities from the Lennar project, therefore the data from HVc-12 is collected for information only. The Community Monitors were established under a separate agreement amongst the City of San Francisco, Lennar, and

¹ California Code of Regulation, Title 17, Section 93105, Subpart (g)(1).

² California Code of Regulation, Title 17, Section 93105, Subpart (h)(3).

³ California State Office of Environmental Health Hazard Assessment establishes health risk assessment guidelines for toxic compounds.

⁴ Monitoring results in excess of 16,000 structures per cubic meter of air as measured by Transmission Electron Microscope analysis.

Bayview Hunters Point Lennar Parcel A' Fact Sheet

June 25, 2010

some community representatives and are run by City of San Francisco subcontractors. The Community Monitors were added as supplemental to the District Monitors that are more than adequate to assess health risk and to monitor the project's emissions.



ADMP Revision

On August 4, 2009, the Air District required Lennar to revise the Asbestos Dust Mitigation Plan. The new plan includes 14 additional dust control measures to minimize emissions from dust generating construction activity and incorporates 4 community monitors into the project stop work trigger level. Since August 4, 2009 there have been 8 days (Aug 12, 18, 20, 21; Oct 15, 29; & Feb 16, 26, 2010) where Lennar was required to stop dust generating construction activity until ambient levels declined below trigger levels. The results from the Community Monitors have also shown that the ambient levels of asbestos around the Lennar BVHP Parcel A' project are below significance levels that would pose a health risk.

Nine ambient asbestos monitors run on a daily basis and one monitor (HVC-8) runs on a random day, each week. HVC-8 is a portable monitor and when it is not running, it is removed from the site to prevent theft and vandalism. The normal appearance of the HVC-8 monitoring site on a non-monitoring day is abandoned.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Uilkema and Members
of the Stationary Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 6, 2010

Re: Report on the District's Odor Evaluation Technical Conference

RECOMMENDED ACTION:

Informational Report. Receive and file.

BACKGROUND

The Air District periodically reviews its air pollution odor complaint process to refine and improve its efforts to address air pollution caused by odors in the Bay Area. Odor complaints comprise the majority of air pollution complaints received by the Air District. Bay Area residents are concerned about odorous emissions from facilities and processes because they are concerned about toxic air pollution, adverse health effects and impacts on overall quality of life.

In its current review of the odor complaint process, the Air District committed to undertake several initiatives to improve its efforts to address air pollution odors in the Bay Area. These initiatives include: incorporating new technologies available for odor assessment and measurement, developing a new rule for the metal melting industry, improving customer service feedback, and providing additional odor complaint training to staff.

Historically, the Air District has relied upon public nuisance enforcement to regulate odors in the community. Public nuisance enforcement is a valuable tool; but violations of this type only occur when quantities of air contaminants or other material cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public. Incorporating new technologies available for odor assessment and measurement by the use of state-of-the-art odor instrumentation could facilitate improvements in the odor complaint program enabling the Air District to take action before community impacts occur. These technologies potentially hold the promise of improving odor enforcement in a very objective and predictable manner, for both the community impacted by the odors and for the company operating a facility that emits odors.

To explore and learn about new technologies and state of the art odor instrumentation, the Air District sponsored the Odor Evaluation Technical Conference, which was held August 2, 2010 at Metro Center in Oakland.

DISCUSSION

The Odor Evaluation Technical Conference featured nationally and internationally recognized experts in the science of odor evaluation and monitoring equipment. These experts provided the Air District and the approximately one hundred and twenty (120) conference attendees direct knowledge and information about the science of odors, odor evaluation techniques, and new technologies used to detect and analyze odors. The attendees were comprised of industry, city and county agencies, other air districts, and environmental and community representatives. In addition, there were also conference sessions on community perspectives and community monitoring programs in the Bay Area.

Staff will present a report to the Committee on the District's Odor Evaluation Technical Conference including:

- Conference sessions and science and technologies discussed
- Next steps for the Air District

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: John Marvin
Reviewed by: Kelly Wee

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Uilkema and Members
of the Stationary Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 7, 2010

Re: Proposed Regulation 11, Rule 17: Limited Use Stationary Compression
Ignition Engines in Agricultural Use

RECOMMENDED ACTION:

Receive and file.

BACKGROUND

District staff is developing a proposed new rule concerned primarily with low-use diesel driven water pumps used to protect agricultural crops from frost on cold winter nights. The rule addresses the schedule required for replacing diesel engines subject to the California Air Resources Board (CARB) Air Toxic Control Measure (ATCM) that was approved in 2004, and then revised to include agricultural diesel engines in 2006. The ATCM requires existing stationary agricultural diesel engines greater than 100 HP to be replaced by 12/31/2010, and those from 50 – 100 HP to be replaced by 12/31/2011.

The proposed rule is intended to provide flexibility to affected parties in meeting the requirements of the CARB ATCM. The ATCM exempts agricultural wind machines and agricultural emergency generators. However, the ATCM does not provide any other exemptions for low-use agricultural diesel engines. Vineyard owners have pointed out that the economic analysis during development of the ATCM did not properly consider the remaining life of existing low-use stationary agricultural diesel engines, and the minimal emissions and exposure from these engines. This proposed rule is designed to address this concern. Discussions to date with CARB staff indicate that CARB will likely deem the rule equivalent to the ATCM, thereby resulting in District grant funds continuing to be available to assist with the retrofit/replacement of affected engines.

Per direction from the Committee at the September 27, 2010 meeting, staff has been: conducting robust outreach to affected agricultural operations and trade organizations; investigating regulatory requirements consistent with those adopted by other districts, such as Northern Sonoma County APCD, and; conducting CEQA analysis on the current proposal. Based on this recent activity, staff anticipates proposing the rule to the Board of Directors in 1st quarter 2011.

DISCUSSION

In this report, staff will provide the Committee with information on:

- Current ATCM requirements for low-use stationary agricultural diesel engines;
- A Proposed Alternate Compliance Plan for stationary agricultural diesel engines used less than 100 hours per year.
- How the Alternate Compliance Plan will require replacement with cleaner (Tier 4) diesel engines, thus achieving greater VOC, NOx, and PM emissions than the ATCM.
- Summary of the current and planned outreach to the agricultural communities in each county.
- Status of rule development and CEQA analysis efforts; and next steps in the process.

BUDGET CONSIDERATIONS/FINANCIAL IMPACT:

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Guy Gimlen
Reviewed by: Henry Hilken

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Brad Wagenknecht and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 7, 2010

Re: Update on the Implementation of the District's California Environmental Quality Act (CEQA) Guidelines and Recommendation to Set the Effective Date for the Threshold of Significance for Risks and Hazards for New Receptors at May 1, 2011

RECOMMENDED ACTION

Approve staff recommendation to set the effective date for the threshold of significance for risks and hazards for new receptors at May 1, 2011.

BACKGROUND

On June 2, 2010, the Bay Area Air Quality Management District's Board of Directors unanimously adopted the proposed CEQA thresholds of significance. The thresholds of significance are included in the Air District's updated CEQA Guidelines (June 2010). All of the adopted CEQA thresholds of significance – *except for the risk and hazards thresholds for new receptors* – became effective June 2, 2010. The Board of Directors directed that the risk and hazards thresholds for new receptors are to be effective January 1, 2011. On June 2, the District's Board of Directors also directed staff to report to the Board periodically on the implementation progress of the CEQA Guidelines and thresholds.

DISCUSSION

Since adoption of the CEQA thresholds, District staff has continued to meet extensively with local government officials and staff, consultants, and stakeholder groups. Staff has met with staff from many local jurisdictions to discuss specific CEQA projects; has responded to numerous phone and email inquiries from local government staff and consultants; and has presented the CEQA Guidelines and thresholds to numerous stakeholder groups. It is clear that local lead agencies are familiar with the CEQA Guidelines, are using them in environmental review processes, and understand they may call upon District staff for assistance. Staff has received positive feedback on the CEQA Guidelines and has also heard certain concerns about the Guidelines. Staff's efforts to address concerns, provide assistance to lead agencies, and develop technical tools is summarized below.

Staff is tracking the use of the CEQA Guidelines and thresholds in environmental review documents. Staff has reviewed CEQA documents for proposed land use developments and

submitted comment letters to lead agencies. The CEQA comment letters generally address a project's air quality analysis methods and recommendations for mitigation measures. The District's comment letters often also compliment lead agencies that propose projects and plans that are greenhouse gas (GHG) efficient or otherwise air quality protective and adequately apply the District's CEQA thresholds in their air quality analysis.

Staff has continued working with the District's regional agency partners in implementing the CEQA Guidelines and thresholds. Specifically, staff initiated a staff working group with ABAG and MTC to address potential CEQA issues in Priority Development Areas. The working group provides an opportunity for regional agency staff to share tools and resources, identify potential air quality issues, and to support the development of plan level approaches to addressing GHG and community risk and hazards in Priority Development Areas. The goal is to consider and address potential air quality issues as early as possible in the planning process to develop a Sustainable Communities Strategy to meet SB 375 targets.

Progress is underway with the development of community risk reduction plans (CRRPs) in San Jose and San Francisco. Staff is collaborating with staff from San Jose and San Francisco to prepare local emission inventories, conduct local modeling, and examine future development areas. In addition, staff is initiating the CRRP process in West Contra Costa County. Staff is also working with consultants to develop detailed, local emissions inventories; this data will provide a critical foundation for evaluating and mitigating potential impacts. Staff is also developing Community Development Guidelines to assist jurisdictions in achieving local risk and hazard reductions. The Community Development Guidelines will provide recommended buffer zones and standardized mitigation measures for proposed land use developments located near roadway and stationary sources, and will take into account emission reduction activities, such as implementation of CARB rules for various sources of diesel emissions.

Some stakeholders have raised concerns regarding the Guidelines, specifically that the Guidelines and related technical support tools such as screening tables could be misused to impede infill development or affordable housing. Staff agrees this should be avoided. Staff addressed this in detail during development of the Guidelines and in reports to the Board of Directors. Staff continues to work with stakeholders to identify and implement additional steps to avoid such unintended consequences. Staff has committed to implement a variety of materials and activities to support the Guidelines and assure that they do not impede infill and affordable housing development. These materials and activities include: clarification of the screening process on the District's CEQA webpage; updated screening tables for freeways and local roads; updated screening tables for stationary sources; updated guidance on project screening and modeling; convening a technical work group to solicit input on these and related documents, and; hosting additional workshops for local government staff to review progress in implementing the CEQA Guidelines.

In addition, staff will recommend that the Board of Directors revise the effective date for the threshold of significance for risks and hazards for new receptors from January 1, 2011 to May 1, 2011. The intent of the revised effective date is to allow local jurisdictions additional time to become fully prepared to implement this threshold.

BUDGET CONSIDERATION/FINANCIAL IMPACT

Resources to implement the CEQA Guidelines are included in the FY 2010/11 budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Henry Hilken

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Wagenknecht and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 8, 2010

Re: Public Hearing to Consider Proposed Amendments to Regulation 9, Rule 10:
Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and
Process Heaters in Petroleum Refineries; and Adoption of a CEQA Negative
Declaration

RECOMMENDED ACTION

Staff recommends that the Board of Directors take the following actions:

- Adopt proposed amendments to Regulation 9, Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries (Regulation 9, Rule 10);
- Adopt a Negative Declaration pursuant to the California Environmental Quality Act (CEQA) for this rule-making activity.

BACKGROUND

Regulation 9, Rule 10 sets emission limits for nitrogen oxides (NO_x) and carbon monoxide (CO) from boilers, steam generators and process heaters used in petroleum refineries in order to reduce ozone-forming emissions to the atmosphere, and exposure to CO, a criteria air contaminant. The rule applies a refinery-wide, daily average NO_x limit of 0.033 pounds of NO_x per million BTU of heat input to most heaters. The rule also applies a NO_x limit of 150 parts per million by volume (ppmv) on a daily average basis to heaters classified as CO boilers. The proposed amendments will implement control measure SSM 10 of the Bay Area 2010 Clean Air Plan.

DISCUSSION

Proposed amendments to Regulation 9, Rule 10 would:

- Establish new NO_x emission limits for CO boilers, including long-term emission limits that are significantly lower than the current short-term emission limit;
- Modify one current exemption to extend the applicability of the rule to smaller devices so that refinery heaters are regulated in the same sizes as non-refinery heaters; and
- Simplify the procedures for determining compliance with the refinery-average NO_x limit for heaters at low firing rates.

RULE DEVELOPMENT PROCESS

The proposed rule amendments were developed with significant public input. In 2009 the District formed an industry workgroup comprised of representatives from each Bay Area refinery and the Western States Petroleum Association (WSPA). In 2009 and 2010, District staff met individually with representatives from each Bay Area refinery and with staff from Environmental Resources Management (ERM). ERM was contracted by WSPA to prepare a methodology for estimating costs for NOx control upgrades at refinery heaters, to compile data for refinery heaters, and to estimate costs for NOx upgrades at each heater.

District staff prepared a draft regulation in December 2009 and in February 2010 held a workshop to solicit public comment. A notice for this workshop was posted on the District website and individual notices were mailed to all refinery operators and prior participants in the rule development process. Based on comments and a further evaluation of potential control measures, District staff prepared an amended regulation and released it for public comment in August 2010. During the public comment period, District staff met and communicated with representatives from each refinery and with WSPA to clarify provisions of the proposed regulation and to receive comments. The current proposed amendments are the product of this extensive process.

District staff updated the District's Stationary Source Committee on this rule development process on May 13, 2010 and on September 27, 2010.

The final proposed amendments and staff report were posted on November 15, 2010. Comments and staff responses are included in Appendix A of the staff report.

ENVIRONMENTAL IMPACTS

A draft Initial Study has been prepared by Environmental Audit, Inc. This draft Initial Study concludes that the proposed amendments would not have any significant adverse environmental impacts. Attached is a Negative Declaration for the proposed amendments pursuant to Public Resources Code § 21080(c) and CEQA Guidelines 15070 et seq. The draft Initial Study and Negative Declaration were posted on November 15, 2010. No comments were received on these documents.

SOCIOECONOMIC IMPACTS

A socioeconomic analysis has been prepared by Applied Development Economics. This analysis concludes that the cost of the proposed amendments would not have a significant impact on affected businesses. The analysis was posted on November 15, 2010. No comments were received on this document.

CHANGES TO THE RULE SINCE PUBLICATION

District staff has made a minor change in the proposed amendments to Regulation 9, Rule 10 since publication in response to public comment. Specifically, the change is in Section 9-10-301.5 of the rule. An option has been added to this section to allow the APCO to approve an alternative data period for compliance monitoring, when the normal data period does not reflect typical operating conditions. The change preserves the intent of the rule as published and does not affect the stringency of the standards in the rule. It is not "so substantial as to significantly affect the meaning of the proposed rule" and thus does not require that the public hearing be

continued under Health and Safety Code section 40726 prior to adoption of the proposed amendments.

BUDGET CONSIDERATIONS/FINANCIAL IMPACTS

None. The District already administers and enforces the provisions of Regulation 9, Rule 10.

Respectfully submitted,

Jack P. Broadbent
Executive Officer / Air Pollution Control Officer

Prepared by: Julian Elliot
Reviewed by: Henry Hilken

Attachments:

Proposed amendments to Regulation 9, Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries

Staff Report, including Appendices:

- A. Comments and Responses
- B. Socioeconomic Analysis
- C. CEQA Initial Study and Negative Declaration

**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 10
NITROGEN OXIDES AND CARBON MONOXIDE FROM BOILERS, STEAM
GENERATORS AND PROCESS HEATERS IN PETROLEUM REFINERIES**

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**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 10
NITROGEN OXIDES AND CARBON MONOXIDE FROM BOILERS, STEAM
GENERATORS, AND PROCESS HEATERS IN PETROLEUM REFINERIES**

(Adopted January 5, 1994)

9-10-100 GENERAL

9-10-101 Description: This rule limits the emissions of nitrogen oxides and carbon monoxide from boilers, steam generators, and process heaters, including CO boilers in petroleum refineries.

9-10-110 Exemptions: The requirements of this rule shall not apply to the following:

110.1 Boilers, steam generators, and process heaters with a rated heat input less than ~~240~~ million BTU/hour, if fired exclusively with natural gas, liquefied petroleum gas, or any combination thereof;

110.2 Boilers, steam generators, and process heaters with a rated heat input less than 1 million BTU/hour fired with any fuel;

110.3 Waste heat recovery boilers that are used to recover sensible heat from the exhaust of combustion turbines or reciprocating internal combustion engines;

110.4 Boilers, steam generators, and process heaters processing hydrogen sulfide process flue gas in sulfur recovery plants and their tail-gas treating units, or sulfuric acid manufacturing plants.

110.5 Boilers, steam generators, and process heaters fired on non-gaseous fuel when natural gas is unavailable for use.

110.6 Boilers, steam generators and process heaters, including CO boilers, that receive an Authority to Construct subject to BACT requirements for NOx on or after January 5, 1994.

9-10-111 Limited Exemption, Small Units: The requirements of Sections 9-10-301, 303, and 305 shall not apply to the use of any small units, provided the requirements of Section 9-10-306 are satisfied.

(Amended July 17, 2002)

9-10-112 Limited Exemption, Low Fuel Usage: The requirements of Sections 9-10-301, 303, and ~~305~~ shall not apply to the use of any boiler, steam generator, or process heater that has an annual heat input less than 90,000 therms during each consecutive 12-month period or that accepts a condition in ~~their operating~~ its Title V Permit ~~permit~~ limiting the annual heat input to less than 90,000 therms, provided the requirements of Sections 9-10-306 and subsection 9-10-502.2 are satisfied.

(Amended July 17, 2002)

9-10-200 DEFINITIONS

~~**9-10-201 Affected Unit:** Any refinery boiler, steam generator, and process heater not exempted under Sections 9-10-110, 111, and 112.~~

9-10-202 Boiler or Steam Generator: Any combustion equipment used to produce steam or heat water.

9-10-203 British Thermal Unit (BTU): The amount of heat required to raise the temperature of one pound of water from 59° F to 60° F at one atmosphere.

9-10-204 CO Boiler: A CO boiler is any boiler or furnace that processes the off-gases from a catalytic cracking unit (CCU) regenerator or a coker burner. A partial-burn CO boiler normally processes off-gases from a CCU regenerator that is operated in a partial-burn mode such that the off-gases normally have a CO concentration exceeding 2% by volume.

~~**9-10-205 Combustion Modification:** Any modification of the burner, combustion air flow (including flue-gas recirculation), or fuel-flow system which reduces nitrogen oxide emissions.~~

- 9-10-206 Heat-Input:** The heat of combustion released due to burning a fuel in a source, using higher heating value of the fuel. This does not include the sensible heat of incoming combustion air. In the case of carbon monoxide boilers, the heat input includes the sensible heat of regenerator off-gases and the heat of combustion of the incoming carbon monoxide and of the auxiliary fuel.
- 9-10-207 Higher Heating Value (HHV):** The total heat liberated per mass of fuel burned (BTU per pound) when fuel and dry air at standard conditions undergo complete combustion and all resultant products are brought to their standard states at standard conditions per Section 9-10-604.
- 9-10-208 Natural Gas:** Any mixture of gaseous hydrocarbons containing at least 80 percent methane by volume, as determined according to Standard Method ASTM D1945-64.
- 9-10-209 Nitrogen Oxides (NOx):** The sum of nitric oxide (NO) and nitrogen dioxide (NO₂) in the flue gas, collectively expressed as nitrogen dioxide.
- 9-10-210 Non-Gaseous Fuel:** Any fuel ~~that~~which is not a gas at 68° F and one atmosphere.
- 9-10-211 Operating Day:** 24 hours from midnight to midnight.
- 9-10-212 Out of Service:** The period of time during which a unit is in an inactive state following shutdown.
- 9-10-213 Petroleum Refinery:** Any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives.
- 9-10-214 Process Heater:** Any combustion equipment that transfers heat from combustion gases to water or process streams.
- 9-10-215 Rated Heat Input:** The heat input capacity specified on the nameplate of the combustion source. If the combustion source has been physically modified and/or operated in such a manner that its maximum heat input is different from the heat input capacity specified on the nameplate, then the modified maximum heat input per Section 9-10-503 shall be considered as the rated heat input.
- 9-10-216 Refinery-wide Emission Rate:** The ratio of the total mass of discharge into the atmosphere of nitrogen oxides, in pounds, ~~from affected units, excluding CO boilers,~~ to the sum of the actual heat input ~~to those units,~~ in million BTU, calculated over a twenty-four (24) hour operating day.
- 9-10-217 Small Unit:** Any refinery boiler, steam generator, or process heater with a rated heat input less than 10 million BTU/hour ~~but greater than or equal to 1 million BTU/hour that has the capability of firing any fuel other than natural gas or liquefied petroleum gas.~~
- 9-10-218 Start-up or Shutdown:** Start-up is that period of time, not to exceed twelve (12) hours unless specifically extended by a Title V Permit~~permit condition~~, during which a unit is brought up to its normal operating temperature from a cold start, initially at zero fuel flow, by following a prescribed series of separate steps or operations. Shutdown is that period of time, not to exceed nine (9) hours unless specifically extended by a Title V Permit~~permit condition~~, during which a unit is taken out of service from a normal operating mode to an inactive status following a prescribed series of separate steps or operations.
- 9-10-219 Therm:** One hundred thousand (100,000) BTUs.
- ~~**9-10-220 Unit:** Any petroleum refinery boiler, steam generator, or process heater, as defined in Sections 9-10-202 and 214 of this Section, having an Authority to Construct or a Permit to Operate prior to January 5, 1994.~~
- 9-10-221 Best Available Control Technology (BACT):** As defined in Regulation 2, Rule 2.
- 9-10-222 Curtailed Operation:** Operation of a boiler, steam generator or process heater at no more than 30% of its rated heat input.

9-10-300 STANDARDS

- 9-10-301 Refinery-wide NOx Emission Limit For Facility, NOx:** ~~Except as provided in Section 9-10-403, effective July 1, 1997, A~~ person shall not exceed a refinery-wide emission rate from boilers, steam generators and process heaters~~affected units,~~ excluding CO boilers, of 0.033 pounds NOx per million BTU of heat input, based on

an operating day average. ~~Affected units~~Boilers, steam generators and process heaters that are undergoing start-up or shutdown ~~and affected units~~, that are temporarily out of service, that are in curtailed operation, or that are test-fired on non-gaseous fuel shall ~~be~~ included in the refinery-wide emission rate as follows:

~~301.1 Units in Start-up or Shutdown: For the purposes of determining compliance with the emission limit of Section 9-10-301, the contribution of each affected unit that is in a start-up or shutdown period shall be calculated from the unit's NOx emission rate, as measured by the initial source test required by Section 9-10-501 or a more recent compliance source test, for that unit at the capacity during the source test.~~

~~301.2 Units Out of Service: For the purposes of determining compliance with the emission limit of Section 9-10-301, the contribution of each affected unit that is out of service for repairs, maintenance, and/or inspection shall be taken as the operating day average of NOx emissions at the average heat input over the previous thirty (30) day period. This calculation procedure shall be utilized no more than sixty (60) days for any one unit in a calendar year.~~

301.3 Units Test-Fired On Non-Gaseous Fuel: For the purposes of determining compliance with the emission limit of Section 9-10-301, the contribution of each boiler, steam generator or process heater~~affected unit~~ that is fired on non-gaseous fuel for equipment testing shall be taken as the operating day average of NOx emissions at the average heat input over the previous thirty (30) day period. Equipment testing shall not exceed a total of forty-eight (48) hours during any calendar year for any one unit.

301.4 Units in Start-up or Shutdown or in Curtailed Operation: For the purposes of determining compliance with the emission limit of Section 9-10-301, the emission contribution of each boiler, steam generator or process heater that is undergoing start-up or shutdown or that is in curtailed operation shall be one of the following:

4.1 The operating day average NOx emissions (either from a continuous emission monitoring system (CEMS) or from an equivalent parametric monitoring system developed in accordance with a Title V Permit and Section 9-10-502.1), and the operating day heat input.

4.2 The operating day average NOx emissions (either from a CEMS or from an equivalent parametric monitoring system developed in accordance with a Title V Permit and Section 9-10-502.1), and the operating day heat input averaged over the previous thirty (30) day period or, subject to the approval of the APCO, an alternate 30-day period representative of normal operation.

~~301.5 Units Temporarily Out of Service: For the purposes of determining compliance with the emission limit of Section 9-10-301, the emission contribution of each boiler, steam generator or process heater that is temporarily out of service shall be the operating day average NOx emissions (either from a continuous emission monitoring system (CEMS) or from an equivalent parametric monitoring system developed in accordance with a Title V Permit and Section 9-10-502.1), and the operating day heat input, averaged over the previous thirty (30) day period or, subject to the approval of the APCO, an alternate 30-day period representative of normal operation.~~

9-10-303 Federal Refinery-wide and CO Boiler NOx Emission Limits For Facility (Federal Requirements): Effective May 31, 1995, ~~A~~ a person shall not exceed a refinery-wide emission rate from ~~boilers, steam generators or process heaters~~~~affected units~~, excluding CO boilers, of 0.20 pounds NOx per million BTU of heat input, based on an operating day average.

303.1 ~~Effective May 31, 1995,~~ except during start-up and shutdown, a person shall not ~~shall not~~ operate a CO boiler unless the emissions of nitrogen oxides (NOx) do not exceed 300 ppm_v, dry at 3% oxygen, based on an operating day average.

(Amended July 17, 2002)

9-10-304 Interim NOx Emission Limit For CO Boilers, NOx: ~~Until Section 9-10-307 is effective, and~~ Except as provided in Section 9-10-403, effective July 1, 1997, except

during start-up and shutdown, a person shall not operate a CO boiler unless at least one of the following is met:

- 304.1 Emissions of nitrogen oxides (NOx) do not exceed 150 ppmv, dry at 3% oxygen, based on an operating day average; or
- 304.2 Emissions of nitrogen oxides (NOx) are controlled by an emission control system with a NOx control efficiency of at least 50 percent by weight.

9-10-305 ~~CO Emission Limit For Each Affected Unit, CO:~~ ~~Except during start-up, shutdown or curtailed operations as provided in Section 9-10-403, effective July 1, 1997, a person shall not operate a boiler, steam generator or process heater, including CO boilers, an affected unit unless carbon monoxide emissions of 400 ppmv, dry at 3% oxygen, based on an operating day average, are not exceeded.~~

9-10-306 ~~Small Unit Requirements:~~ ~~Except as provided in Section 9-10-403, effective July 1, 1997, a person shall not operate a small unit unless at least one of the following is met:~~

- 306.1 Operate in a manner that maintains stack-gas oxygen concentrations at less than or equal to 3 percent by volume on a dry basis; or
- 306.2 Tune at least once every twelve (12) months, or within two weeks of unit start-up if not operated in the last twelve (12) months, by a technician in accordance with the procedure specified in Section 9-10-605; or
- 306.3 Meet the applicable emission limits ~~specified in Sections 9-10-301, 303 and 305.~~

9-10-307 ~~Final NOx Emission Limits For CO Boilers:~~ ~~Effective January 1, 2015, and except during start-up or shutdown, a person shall not operate a CO boiler unless it meets the applicable NOx emission limits in Sections 9-10-307.1 and 307.2.~~

307.1 A person shall not operate a CO boiler, except for a partial-burn CO boiler, unless the following NOx limits are not exceeded:

<u>Averaging Period</u>	<u>NOx (ppmv, dry at 3% O2)</u>
<u>1.1 Operating day</u>	<u>150</u>
<u>1.2 Calendar year (excluding periods when the CO boiler does not process CCU regenerator offgas)</u>	<u>45</u>

307.2 A person shall not operate a partial-burn CO boiler, unless the following NOx limits are not exceeded:

<u>Averaging Period</u>	<u>NOx (ppmv, dry at 3% O2)</u>
<u>2.1 Operating day</u>	<u>125</u>
<u>2.2 Calendar year</u>	<u>85</u>

9-10-400 ADMINISTRATIVE REQUIREMENTS

~~**9-10-401 ~~Control Plan Submittal:~~** A person subject to Sections 9-10-301, 304, and 305 of this Rule shall comply with the following increments of progress:~~

- ~~401.1 No later than twenty four (24) months prior to the respective dates of Sections 9-10-301, 304, and 305, submit to the APCO a control plan detailing the proposed measures to be taken in order to meet the requirements of Sections 9-10-301, 304, and 305. The control plan shall contain, at a minimum:~~
 - ~~1.1 A list of all affected units, including the manufacturer, model number, and the maximum rated capacity for each unit.~~
 - ~~1.2 A description of each affected unit and the NOx control system proposed for each unit, including type and design principles, as well as a description of any ancillary equipment related to the control emissions. Data on the expected performance of the NOx control system shall also be included;~~
 - ~~1.3 The proposed mass rate of nitrogen oxides emissions for each affected unit, excluding CO boilers, that will achieve the refinery wide emission rate specified in Section 9-10-301;~~

- ~~1.4 The proposed mass rate of nitrogen oxides emissions for each CO boiler that will achieve the emission rate specified in Section 9-10-304; and~~
- ~~1.5 A proposed implementation schedule for each affected unit, including but not limited to specific dates for the following events: final engineering, contract award, construction, and final compliance.~~
- ~~401.2 No later than eighteen (18) months prior to the respective dates of Sections 301, 304, and 305, submit applications for all Authorities to Construct required for compliance with the respective sections of this Rule.~~

(Amended July 17, 2002)

~~**9-10-402 Control Plan Submittal, Small Units:** A person subject to Section 9-10-306 of this Rule shall comply with the following increments of progress:~~

- ~~402.1 No later than twelve (12) months prior to the compliance date of Section 306, submit to the APCO a plan to comply with the requirements of Section 9-10-306. The plan shall contain, at a minimum:~~
 - ~~1.1 A list of all sources with the rated heat input capacities; and~~
 - ~~1.2 A selection of one of the options specified in Section 306.~~

(Amended July 17, 2002)

~~**9-10-403 Compliance Date, Clean Fuel Extension Allowance:** Notwithstanding the effective dates specified in Sections 9-10-301, 304, 305, and 306, affected facilities that are in the process of, or have completed, making modifications to comply with the State Phase II Reformulated Gasoline Requirement (California Code of Regulations, Section 2260 et seq.) and the Federal Reformulated Gasoline Requirement (1990 Clean Air Act, 42 U.S.C.A., Section 7545) shall meet a compliance date of July 1, 2002. Effective July 1, 1997, any affected facility not producing the state and federal clean fuels shall comply with the effective dates in Sections 9-10-301, 304, 305, and 306.~~

- ~~403.1 Commencing six (6) months after January 5, 1994, and every six months thereafter until clean fuels project completion, facilities shall submit a status report verifying progress toward compliance with state and federal clean fuel requirements.~~

~~**9-10-404 Final Control and Monitoring Plan:** A person subject to Section 9-10-307 shall comply with the following increments of progress:~~

- ~~404.1 No later than twenty-four (24) months prior to the effective date of Section 9-10-307, submit to the APCO a control plan detailing the proposed measures, if any, to be taken in order to meet the requirements of Section 9-10-307, as well as proposed measures, if any, to be taken to continue to meet the requirements of Section 9-10-301.~~
- ~~404.2 No later than eighteen (18) months prior to the effective date of Section 9-10-307, submit applications for all Authorities to Construct required for compliance with Section 9-10-307.~~
- ~~404.3 No later than 30 days after the effective date of Section 9-10-307, perform testing for nitrogen oxide and carbon monoxide emissions at each CO boiler subject to Section 9-10-307 at the rated heat input or as near thereto as practicable. This requirement may be satisfied by monitoring nitrogen oxide and carbon monoxide emissions with a continuous emission monitoring system (CEMS).~~

9-10-500 MONITORING AND RECORDS

~~**9-10-501 Initial Demonstration of Compliance:** All units identified in the control plan of Section 9-10-401 shall be tested for nitrogen oxide and carbon monoxide emissions while firing gaseous fuel and non-gaseous fuel, if applicable, at the maximum rated capacity or as near thereto as practicable. Such tests shall be performed:~~

- ~~501.1 Within one hundred and eighty (180) days after completion of modifications, but no later than thirty (30) days prior to the respective dates of Section 301, 304, and 305 for units which are to be modified with nitrogen oxide control equipment.~~

~~501.2 No later than six (6) months prior to the respective dates of Sections 301, 304, and 305 for units which do not require modification.~~

9-10-502 Monitoring: A person subject to Sections 9-10-301, 303, 304, ~~and 305~~ or 307 shall submit to the APCO a monitoring plan to provide, properly install, maintain in good working order, and operate the following equipment:

502.1 An in-stack nitrogen oxide (NO_x), carbon monoxide (CO), and oxygen (O₂) continuous emission monitoring system (CEMS), or equivalent parametric monitoring verification system as specified in a Title V Permit. The CEMS must meet the requirements of the District Manual of Procedures, Volume V, Continuous Emission Monitoring, Policy and Procedures.

502.2 A fuel-flow meter in each fuel line for each boiler, steam generator and process heater, including each CO boiler affected unit.

(Amended July 17, 2002)

9-10-503 Modified Maximum Heat Input: Any unit that has been physically modified such that its maximum heat input is different than the heat input specified on the nameplate shall demonstrate to the APCO the maximum heat input while operating the source at maximum capacity.

9-10-504 Records: The owner/operator of a source subject to this rule shall keep the following records, in a form suitable for inspection for a period of at least five (5) years. Such records shall be retained for a minimum of sixty (60) months from date of entry and made available to the APCO upon request. These records shall include, but are not limited to the following:

504.1 For all sources subject to the requirements of Sections 9-10-301, ~~303, 304, or 305, 307 or 404.3, or, effective July 17, 2002, 303:~~

1.1 The continuous emission monitoring system (CEMS) measurements or equivalent parametric monitoring system parameters for NO_x, CO, and O₂ in ppmv; and hourly (lb/hour) and daily (lb/day) NO_x emissions for each source;

1.2 The type, heat input (BTU/hr and BTU/day), and higher heating value of each fuel burned, and the injection rate for any reactant chemicals used by the emission control system(s) on a daily basis.

1.3 The date, time, and duration of any start-up, shutdown or malfunction in the operation of any unit, emission control equipment, or emission monitoring equipment; ~~and~~

1.4 The results of performance testing, evaluations, calibrations, checks, adjustments, and maintenance of any CEMS ~~continuous emission monitors that have been installed pursuant to Section 9-10-502 of this Rule~~ required by this rule.

1.5 A list of all sources subject to the NO_x refinery-wide emission rate limits in Sections 9-10-301 and 303.

1.6 Total NO_x emissions and total heat input for all sources listed in ~~subsection Section 9-10-504.1.5, on a daily basis; and~~

1.7 The date, time and duration of all start-ups and shutdowns periods for affected sources.

1.8 The results of source tests required by Section 9-10-404.3.

504.2 For all sources subject to ~~subsection Section 9-10-306.2~~, records of annual tune-ups.

(Amended July 17, 2002)

9-10-505 Reporting Requirements: A person subject to the requirements of Sections 9-10-301, 303, 304, 305, ~~and/or 306~~ or 307 shall meet the following reporting requirements:

505.1 Report to the APCO any violation of Section 9-10-301, 303, 304, 305, ~~and/or 306, or 307~~ in accordance with the requirements of Regulation 1-522 for continuous emission monitoring systems (CEMS) and Regulation 1-523 for parametric monitoring systems ~~writing within ninety-six (96) hours after such occurrence.~~

505.2 Submit a written report for each calendar quarter to the APCO. The report shall be due on the 30th day following the end of the calendar quarter and shall include:

- 2.1 A summary of the data obtained from the CEMS or equivalent parametric monitoring system and the fuel meters installed pursuant to Section 9-10-502; and
- 2.2 The date, time, duration, and magnitude of emissions in excess of the appropriate standards; the nature and cause of the excess (if known); the corrective actions taken; and the preventive measure adopted.

(Amended July 17, 2002)

9-10-600 MANUAL OF PROCEDURES

9-10-601 Determination of Nitrogen Oxides: Compliance with the nitrogen oxide emission requirements of Sections 9-10-301, 303, ~~and 304 and 307~~ shall be determined by a continuous emission monitoring system (CEMS) monitors that meets the requirements of Regulation 1-522~~have been installed~~, or by an equivalent parametric monitoring system that is authorized in a Title V Permit and that meets the requirements of Regulation 1-523~~equivalent verification system pursuant to Section 9-10-502~~, and shall ~~meet the requirements of Volume V of the District Manual of Procedures~~. CEMS operation and compliance with Section 9-10-404.3 shall be verified by source test as set forth in the District Manual of Procedures, Volume IV, ST-13A (nitrogen oxides) and ST-14 (oxygen).

(Amended July 17, 2002)

9-10-602 Determination of Carbon Monoxide and Stack-Gas Oxygen: Compliance with the carbon monoxide emission requirements of Section 9-10-305 shall be determined by a continuous emission monitoring system (CEMS) monitors that meets the requirements of Regulation 1-522~~have been installed~~, or by an equivalent parametric monitoring system that is authorized in a Title V Permit and that meets the requirements of Regulation 1-523~~equivalent verification system pursuant to Section 9-10-502~~, and ~~meet the requirements of Volume V of the District Manual of Procedures~~. CEMS operation and compliance with Section 9-10-404.3 shall be verified by source test as set forth in the District Manual of Procedures, Volume IV, ST-6 (carbon monoxide) and ST-14 (oxygen).

9-10-603 Compliance Determination: All emission determinations shall be made in the as-found operating condition, except during periods of start-up or shutdown ~~as specified by Section 9-10-218~~. ~~In addition to any continuous monitoring system (CEMS) required by Sections 9-10-502, 601, and 602, emission determinations shall include at least one source test, as specified in Section 9-10-501.~~

9-10-604 Determination of Higher Heating Value: If certification of the higher heating value is not provided by the third-party fuel supplier, it shall be determined by one of the following test methods: (1) ASTM D2015-85 for solid fuels; (2) ASTM D240-87 or ASTM D2382-88 for liquid hydrocarbon fuels; or (3) ASTM D1826-88 or ASTM D1945-81 in conjunction with ASTM D3588-89 for gaseous fuels.

9-10-605 Tune-Up Procedures: The tuning procedure required by Section 9-10-306.2 shall be performed in accordance with the procedure set forth in the District Manual of Procedures, Volume I, Chapter 5.

**Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109**

Staff Report

**Proposed Amendments to
BAAQMD Regulation 9, Rule 10:**

***NITROGEN OXIDES AND CARBON MONOXIDE FROM BOILERS,
STEAM GENERATORS AND PROCESS HEATERS IN PETROLEUM
REFINERIES***

December 2010

Prepared by:

**J. Julian Elliot
Senior Air Quality Engineer
Planning, Rules and Research Division**

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1.0 Executive Summary

The primary effect of the proposed amendments to Regulation 9, Rule 10: *Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries* (“Regulation 9-10” or “the rule”) would be to reduce the NO_x emission limits for carbon monoxide (CO) boilers, which are one category of refinery heater that is regulated under this rule, thereby achieving NO_x emission reductions at these devices. NO_x compounds are precursors in the formation of ground level ozone and particulate matter. The Bay Area Air Quality Management District (“BAAQMD” or “District”) has non-attainment status for both the state 1-hr and 8-hr ozone standards and the federal 8-hour ozone standard. Therefore, state law requires that the District implement all feasible measures to reduce emissions of ozone precursors, including NO_x. NO_x reductions also reduce the formation of secondary particulate matter in the atmosphere.

This proposal will implement Control Measure SSM 10 of the Bay Area 2010 Clean Air Plan. Control Measure SSM 10 calls for a reduction in either the refinery-average NO_x emission limit applied to most refinery heaters, or a reduction in the NO_x emission limit at CO boilers.

District staff recommends amending Regulation 9-10 by:

- (1) Establishing new NO_x emission limits for CO boilers, including long-term emission limits that are significantly lower than the current short-term emission limit.
- (2) Modifying one current exemption to extend the applicability of the rule to smaller devices so that all refinery heaters are regulated by Regulation 9-10.
- (3) Simplifying the procedures for determining compliance with the existing refinery-average NO_x limit for heaters other than CO boilers when these are at low firing rates.

The proposed amendments are expected to directly reduce total NO_x emissions from regulated heaters by about 1.6 tons per day. The proposed amendments are not expected to result in any significant adverse environmental impacts.

2.0 Background

Regulation 9-10 was adopted on January 5, 1994 and amended on July 17, 2002. The regulation imposes a refinery-wide average NOx emissions limit on refinery boilers, steam generators and process heaters (excluding CO boilers) that were first permitted prior to the adoption of the rule (“pre-1994 heaters”). The NOx limits were not applied to boilers, steam generators and process heaters that would be permitted after the rule was adopted (“post-1994 heaters”) because these devices would be subject to stringent NOx limits as a result of the District’s permitting requirements. If these post-1994 devices, with very low NOx emission rates, were included under a refinery-wide average NOx limit, the effect would be to reduce a refinery operator’s need to control emissions from older, less well-controlled devices in order to comply with the refinery-wide emission limit. In addition to the refinery-wide average NOx rule for most pre-1994 heaters, Regulation 9-10 also imposes a specific (not average) NOx emission limit on all CO boilers, regardless of when they were first permitted.

The NOx limits in Regulation 9-10 for pre-1994 heaters, combined with permit requirements for post-1994 heaters, (specifically “best available control technology” [BACT] requirements) resulted in significant reductions in NOx emissions from Bay Area refinery operations beginning around 2002. Currently, 81% of the total rated capacity of refinery boilers, steam generators and process heaters in the Bay Area is equipped with NOx controls of some kind.

Control Measure SSM 10 of the Bay Area 2010 Clean Air Plan calls for additional NOx emission reductions through Regulation 9-10 by either reducing the refinery-average NOx emission limit applied to most pre-1994 refinery heaters, or the NOx emission limit for CO boilers.

In the Bay Area 2005 Ozone Strategy, Further Study Measure FS 14, the District committed to study ways to amend Regulation 9-10 to achieve further NOx emissions reductions. In carrying out Further Study Measure FS 14, District staff has completed the following:

- Compiled an inventory of refinery boilers, steam generators and process heaters;
- Determined the type, age, retrofit ability of, and the nature of the emissions from, these refinery boilers, steam generators and process heaters;
- Evaluated the cost effectiveness of retrofits and replacement technologies;
- Evaluated the contribution to emissions of the heaters that are currently exempt from Regulation 9-10;
- Compared the NOx emissions limits imposed by other air districts on refinery boilers, steam generators and process heaters;
- Compared NOx emissions from and control of non-refinery boilers of similar size that are in use in the District; and
- Consulted extensively with industry representatives regarding these analyses.

District staff’s findings and recommendations are included in this report.

2.1 Regulated Heaters, Exempt Heaters and Current NOx Limits

Boilers and steam generators are devices that heat or boil water, while process heaters (also called furnaces) heat process streams, including crude oil and intermediate products, to required processing temperatures. Most refinery heaters, over 80% by number, are classified as process heaters rather than as boilers or steam generators. For simplicity, the term “heater” will be used in this report to refer to boilers, steam generators and process heaters that are subject to Regulation 9-10.

Heaters regulated by Regulation 9-10 use a variety of fuels. Natural gas and refinery gas (a gaseous by-product composed of a variety of hydrocarbon compounds) are the predominant fuels used at the Bay Area refineries, together accounting for over 95% of the NOx emissions from heaters. Most refinery heaters are permitted to use both natural gas and refinery gas fuels. Three refineries operate CO boilers that burn off-gas from cracking or coking units in addition to natural gas and refinery gas.

As mentioned above, Regulation 9-10 imposes NOx emission limits on refinery boilers, steam generators and process heaters in two categories. The first category comprises heaters that **are not** CO boilers and that were first permitted prior to the original adoption of the rule (“pre-1994 heaters”). Under the current rule, NOx emissions from pre-1994 heaters at each refinery are aggregated and averaged, and the average emissions may not exceed 0.033 pounds of NOx per million BTU of actual heat input (0.033 lb/MM BTU, which is equivalent to 28 parts per million by volume [ppmv] of NOx at 3% excess oxygen), evaluated on a daily average basis.

Refinery heaters that **are not** CO boilers that were first permitted on or after January 5, 1994 (“post-1994 heaters”) are not regulated by Regulation 9-10, but each heater in this category is subject to stringent NOx limits as a result of BACT requirements for new or modified devices.

The second category of refinery heaters that is regulated by Regulation 9-10 consists of all CO boilers. CO boilers are subject to a NOx limit of 150 ppmv at 3% excess oxygen, evaluated on a daily average basis. CO boilers are defined in Regulation 9-10 as heaters that process flue gas from fluid catalytic cracking units (FCCU) or coker units. FCCU and coker flue gas contain significant levels of CO. This CO is used as a fuel at the CO boilers (mixed with other fuel gases) with the CO converted to CO₂ in the process and the resulting heat used to produce steam or to heat process streams. In Regulation 9-10, CO boilers are regulated separately from pre-1994 heaters because FCCU and coker flue gases typically contain high concentrations of NOx precursors which form NOx in the CO boiler. This “fuel NOx” cannot be controlled by the combustion techniques that are used to prevent the formation of “thermal NOx” in other refinery heaters and therefore CO boilers may operate at higher NOx emission rates compared to heaters that primarily use natural gas and refinery gas fuels, even though FCCU and coker flue gases typically have low fuel value that results in relatively low combustion temperatures and low thermal NOx production. (For further discussion, see Section 2.6, *infra*.) CO boilers are subject to the rule regardless of when they were first permitted. Three of the five Bay Area refineries (Shell, Tesoro and Valero) operate a total of six CO boilers. Of the remaining two refineries, one (Conoco-Phillips) does not have a FCCU and therefore has no CO boiler, and the other (Chevron) operated a CO boiler until the mid-1980’s, but has modified their FCCU to make a CO boiler unnecessary.

Regulation 9-10 does not apply to the following types of sources that operate at refineries:

- Internal combustion (IC) engines or boilers that recover heat from IC engine exhaust gases while burning supplementary fuel. IC engine NO_x emissions are subject to Regulation 9-8.
- Boilers that recover heat from gas turbine or IC engine exhaust gases while burning supplementary fuel. Gas turbine NO_x emissions are subject to Regulation 9-9. No refinery boilers are used to recover waste heat from IC engine exhaust.
- Heaters processing H₂S flue gas in sulfur recovery plants or sulfuric acid manufacturing plants. These heaters are not regulated because they have either very low NO_x emissions or have no feasible NO_x control options.
- Flares. Flare operations are subject to Regulation 12-12.

2.1.1 Federal NO_x Limit

Regulation 9-10 includes two refinery-wide, daily-average NO_x limits that apply to pre-1994 heaters: the 0.033 lb/MM BTU limit discussed in Section 2.1 that was required by state law as “best available retrofit control technology” (BARCT), and a less stringent limit of 0.20 lb/MM BTU that was required by federal law as “reasonably achievable control technology” (RACT). There is also a federal RACT limit for CO boiler emissions (300 ppmv) that is less stringent than the BARCT limit for CO boilers (150 ppmv). The District could have included only the more-stringent BARCT limits in the rule and satisfied both state and federal requirements. However, both sets of limits were included so that the less-stringent limits could be included in the federal state implementation plan (SIP) for ozone, while excluding the more-stringent limits from the SIP. This strategy allowed refinery operators to comply with the more-stringent limits with strategies that were themselves not included in the SIP. Specifically, refinery operators could use interchangeable emission reduction credits (IERCs) as allowed by District Regulation 2-9. IERCs allow an operator that “over-complies” with a particular limit to apply this over-compliance to a different source subject to a different limit. In the case of Regulation 9-10, IERCs are primarily generated by refinery operators that operate CO boilers, since these tend to over-comply with their 150 ppmv NO_x limit. The use of IERCs allows some refinery operators to operate well above the 0.033 lb/MM BTU average limit for pre-1994 heaters. State law requires the District to allow the use of IERCs. However, the specific provisions that are required to be included in the IERC rule conflict with federal guidelines for SIP regulations. Therefore, any emission limit that is included in the SIP cannot be satisfied with IERCs. If the state of California were to adopt the more-stringent limit of 0.033 lb/MM BTU for pre-1994 heaters into the SIP, then refinery operators would be barred from using IERCs for compliance.

Because the proposed, lower NO_x limits will largely eliminate the ability of refinery operators to generate IERCs at CO boilers, the adoption of these limits will eventually allow the State of California to include Regulation 9-10 into the SIP in its entirety, so that it is credited with the full emission reduction associated with this rule.

2.1.2 Emission-Reduction Mechanisms in Regulation 9-10

Almost all of the NO_x emission reductions attributed to Regulation 9-10 occurred in anticipation of the 2002 effectiveness date for the refinery-wide, daily-average emission limit for pre-1994 heaters and the daily-average limit for CO boilers, as refinery operators implemented NO_x controls on selected heaters. Since 2002, additional emission reductions have occurred as refinery operators have replaced heater burners with lower-emitting units or have improved the operation of existing SCR and SNCR NO_x-abatement systems. However, Regulation 9-10 also includes a mechanism that requires additional NO_x controls on the population of pre-1994 heaters under certain circumstances, as described below.

The population of pre-1994 heaters cannot increase since the rule explicitly excludes post-1994 heaters. Therefore, the installation of new heaters which have low NO_x emission rates because of BACT requirements has no effect on compliance with this rule. However, when a heater is removed from the pre-1994 population of heaters that are subject to the refinery-wide, daily-average NO_x limit, either because the heater is permanently removed from service or because it is modified so that it is subject to BACT requirements for NO_x, compliance with the limit will be affected in one of two ways. If the removed heater has an average NO_x emission rate greater than 0.033 lb/MM BTU, then the remaining pre-1994 heaters will have a reduced average emission rate, and the compliance margin for the remaining heaters will increase relative to the emission limit. If, however, the removed heater has an average NO_x emission rate less than 0.033 lb/MM BTU, then the remaining pre-1994 heaters will have an increased average emission rate, and the compliance margin for the remaining heaters will decrease, possibly requiring additional controls on the existing heaters to maintain compliance.

Although this mechanism has always existed in the rule, it has been criticized by refinery operators because the cost of implementing NO_x controls has risen significantly since the rule was adopted in 1994 due to higher labor and material costs. Further, refinery operators have described this mechanism as a disincentive to the implementation of equipment upgrades that would reduce NO_x emissions directly through better NO_x controls and indirectly through greater energy efficiency. An example of this disincentive effect would occur if a refinery operator was inclined to replace one or more pre-1994 heaters with new heaters. The new heaters would probably be more energy efficient since many pre-1994 heaters were designed and constructed with little regard to energy efficiency. The new heaters would also have the lowest possible NO_x emission rates because they would be subject to BACT requirements for NO_x and other pollutants. However, if the pre-1994 heaters that were replaced had average NO_x emission rates less than 0.033 lb/MM BTU, then the remaining pre-1994 heaters will have an increased average emission rate, possibly requiring additional controls on the existing heaters to maintain compliance, as described above. In this case, the refinery operator would have to fund the desired heater upgrades, and would also have to fund additional NO_x controls on one or more pre-1994 heaters, many of which are quite old and therefore unattractive candidates for capital investment.

The District has explored at length the question of whether this rule mechanism may act as a disincentive to projects that would otherwise have air quality benefits because it imposes costs beyond those required to meet refinery goals and to achieve a net reduction in NO_x emissions. As is shown in Table 1, below, very few new heaters have been installed at Bay Area refineries since 1994, but it is impossible for the District to know all of the factors that contributed to this lack of investment in heater infrastructure, and to be able to conclude whether the design of

Regulation 9-10 has discouraged heater upgrades that would have had a net air quality benefit. Because significant heater upgrades that will improve refinery energy efficiency will be necessary to comply with state requirements to reduce greenhouse gas (GHG) emissions as described in Section 2.8, *infra*, the District will continue to evaluate whether Regulation 9-10 requires non-cost-effective NOx controls that conflict with GHG emission reduction efforts.

2.2 Number, Size and Age of Bay Area Refinery Heaters

Table 1 shows the number of heaters that are currently operated by Bay Area refineries. The data are separated according to the size (input heat rating) and type of the heater. Most refinery heaters are pre-1994 heaters that are subject to the refinery-wide average NOx limit.

Table 1 – Current Regulation 9-10 Heaters at Bay Area Refineries			
Capacity Range (MM BTU/hr)	Pre-1994 Heaters Subject to Reg 9-10	CO Boilers Subject to Reg 9-10	Post-1994 Heaters Not Subject to Reg 9-10
<10	5		
10 to <20	6		1
20 to <50	46		4
50 to <100	43		4
100 to <150	21		
150 to <200	14		
200 to <250	17	3	
250 to <500	19	1	2
500 to <1000	8	2	
Total	179	6 (Note 1)	11

Table 1 Notes:

(1) The Valero refinery has been issued a District permit to replace two CO boilers with two new units (Reference 29). Table 1 includes the new CO boilers, which are scheduled to begin operation in 2011.

Original construction dates and subsequent modification dates have been evaluated for the refinery heaters that are operating in the District. Many refinery heaters at the Bay Area refineries are over 40 years old and the oldest are over 75 years old. Thus, even a 30- or 40-year old heater is not necessarily approaching the end of its service life and heater age is typically not the determining factor in assessing the potential for emission reductions or the cost-effectiveness of reductions. The most important factors in determining potential emission reductions are the heater NOx emission rate, the size of the heater, the utility of the heater (*e.g.*, the fraction of time it is operated as well as the fraction of full firing rate at which it is operated) and the type of NOx control already installed. Typically, larger heaters with higher emission rates and higher utility are the best candidates for further NOx control, especially if they have no NOx controls or a low level of NOx control such as basic low-NOx burners. Since the refineries have already implemented NOx controls to meet the current refinery average NOx limit, the most cost-

effective emission reductions have already been achieved, and the best candidates for NOx controls to meet a lower limit are not obvious. NOx control retrofit options for refinery heaters, including cost-effectiveness, are discussed in detail in Section 2.6, *infra*.

2.3 Refinery Heater Emissions Inventory

When Regulation 9-10 was adopted in 1994, the typical refinery heater operated at a NOx emission rate of 100 ppmv to 140 ppmv (*Reference 18*), with higher emissions at CO boilers. Most of these existing heaters were old enough that they pre-dated District permitting requirements and therefore they had never been subjected to BACT requirements, which apply to devices installed or modified after 1982. In fact, almost all of these heaters operated without emission controls of any kind. In 1994, total NOx emissions from these heaters were estimated to be about 31 ton/day, and adoption of the Regulation 9-10 limits in 1994 was expected to result in a 21 ton/day reduction in NOx. However, it appears that emissions from these heaters may have been underestimated in 1994. The current emissions and emission rates for these heaters, as well as 1994 emission rate data, suggest that total 1994 NOx emissions were about 40 ton/day and that implementation of the 1994 limits achieved a NOx reduction of about 26 ton/day, which represents about a 65% emission reduction.

Table 2 shows current refinery emissions at each of the five Bay Area refineries, based on permit data for 2008. The total 2008 NOx emissions for heaters subject to Regulation 9-10 (*i.e.*, pre-1994 heaters and CO boilers) equaled 10.9 ton/day. Post-1994 heaters that are not subject to the rule contributed another 0.1 ton/day of NOx emissions.

Table 2 - 2008 Refinery Heater NOx Emissions (ton/yr)			
Refinery	Pre-1994 Heaters Subject to Reg 9-10	CO Boilers Subject to Reg 9-10	Post-1994 Heaters NOT Subject to Reg 9-10
Chevron	535	NA	7
Shell	460	516	NA
ConocoPhillips	169	NA	18
Valero	858	600	11
Tesoro	491	346	1
Total (ton/yr)	2513	1462	37
Total (ton/day)	6.9 (63%)	4.0 (36%)	0.1 (1%)

Greenhouse gas emissions at refinery heaters are estimated in Table 3 based on the rated heat input of the heaters, typical heater utilization, and the CO₂ emission factor for refinery fuel gas.

Table 3 – 2008 Refinery Heater Greenhouse Gas Emissions, CO₂ (ton/day) and Percentage of Total Emissions For Each Heater Type (<i>Note 1</i>)		
Pre-1994 Heaters	CO Boilers	Post-1994 Heaters
23200 (88%)	2200 (8%)	944 (4%)

Table 3 Notes:

(1) Emissions are calculated based on the total rated heat input in each heater category, an assumed utilization of 55% for non-CO boilers and 70% for CO boilers, and a CO₂ emission factor of 139 lb /thou ft³ refinery gas (Reference 13), assuming heat value of 1000 BTU / ft³.

As shown in Tables 2 and 3, post-1994 heaters account for about 4% of the permitted heater capacity, but only 1% of the NO_x emissions. This reflects the effectiveness of BACT controls for NO_x that are required on new or modified heaters, which include all post-1994 heaters. On the other hand, CO boilers account for about 8% of the permitted capacity, but about 36% of the NO_x emissions. These disproportionately high NO_x emissions from CO boilers reflect that these devices operate at higher utility levels than other heaters (see Table 3, note 1), and also that they tend to have higher NO_x emission rates than other heaters.

2.4 Refinery Heater Regulations at Other California Air Districts

There are 13 active petroleum refineries in California (Reference 4): five in the Bay Area, two in Bakersfield and six in the Los Angeles area. Thus, the BAAQMD, the San Joaquin Valley Unified APCD (SJVUAPCD) and the South Coast AQMD (SCAQMD) regulate all petroleum refining operations in the state.

The San Joaquin Valley Unified APCD regulates refinery heaters under two rules. Rule 4306 is a conventional NO_x control rule with different emission rate limits for different heater size ranges. The Rule 4306 limits are currently in effect and are no more stringent than the BAAQMD's current limit of 0.033 lb/MM BTU (equivalent to 28 ppmv) in Regulation 9-10 for heaters up to 110 MM BTU/hr. For larger heaters, the Rule 4306 limit of 5 ppmv (0.0062 lb/MM BTU) is significantly more stringent than the BAAQMD requirements. San Joaquin Rule 4320 imposes future NO_x limits for refinery heaters up to 110 MM BTU/hr that are also significantly more stringent than the BAAQMD requirements. Importantly, however, a refinery in the SJVUAPCD may elect to pay an annual emission fee rather than comply with these limits at any heaters. The amount of the annual emission fee is capped at \$13,600 per ton of NO_x emitted (the cost-effectiveness threshold for the Carl Moyer Incentive Program). By contrast, BAAQMD staff estimates that the anticipated cost of achieving further NO_x reductions from pre-1994 heaters (not including CO boilers) at Bay Area refineries will be over twice this cap value (in terms of annualized cost-effectiveness). Also, San Joaquin's refineries are significantly smaller than those in the Bay Area and total active refining capacity in San Joaquin is less than that at the smallest of the five Bay Area refineries (Reference 19). Given the difference in infrastructure between refineries in San Joaquin and the Bay Area, and the fee option for compliance with Rule 4320, the BAAQMD does not consider the numerical limits contained in SJVUAPCD's rules to be appropriate for Bay Area operations.

Compared to San Joaquin, the refining infrastructure in the South Coast AQMD is more similar to that in the Bay Area. However, the SCAQMD regulatory structure for refinery heaters differs so greatly from the BAAQMD's that the BAAQMD does not consider direct comparison to SCAQMD's program to be useful. The SCAQMD regulates NO_x and SO_x emissions at refineries under a voluntary regional cap-and-trade program called RECLAIM (SCAQMD Regulation XX). RECLAIM provides annual emission allocations for NO_x or SO_x at each facility in the RECLAIM program. The allocations were originally based on pre-1993 throughput

at each source and on an emission factor for the source type. Allocations are reduced periodically, and by a uniform factor throughout the region, as necessary to meet air quality goals. If a RECLAIM facility's NOx emissions exceed its total NOx allocation, then it must either reduce emissions or purchase RECLAIM trading credits (RTCs) to make up the difference. RTCs are generated by facilities that have NOx emissions lower than their total NOx allocation and these facilities may sell their RTCs to other RECLAIM facilities. Importantly, the RECLAIM program incorporates a "backstop" measure (South Coast Rule 2015) that requires the South Coast AQMD to track the selling price of RTCs and that triggers a RECLAIM program review, and possible suspension of allocation reductions, if the 12-month average NOx RTC price exceeds \$15,000 per ton. This mechanism effectively limits the average cost of RECLAIM compliance to \$15,000 per ton of NOx, since a RECLAIM facility may opt to purchase RTCs to comply with allocation limits rather than apply emission controls. The average cost of RTCs has never exceeded \$15,000 per ton, except during the "energy crisis" of 2000-2001 when power producers drove the price of some NOx RTCs to \$120,000 per ton (*Reference 20*). This episode triggered the 2005 amendment of the RECLAIM program that added the \$15,000 per ton backstop and restrictions on RECLAIM participation by power producers.

2.5 Comparison of Emissions at Refinery Heaters and Non-Refinery Heaters

Non-refinery heaters are regulated by BAAQMD Regulation 9, Rule 7. These boilers, steam generators and process heaters contribute less NOx emissions than their refinery counterparts. In 2008, the District estimated the total NOx emissions from non-refinery heaters to be 5.1 ton/day (*Reference 11, Table 4*), whereas 2008 NOx emissions from refinery heaters that are regulated by Regulation 9-10 were approximately 10.9 ton/day (*Table 2, supra*).

Regulation 9-7 was amended in 2008 and will impose new NOx limits for non-refinery heaters in 2011 and 2012. The future NOx limits in Regulation 9-7 are summarized in Table 4.

Rated Heat Input (MM BTU/hr)	NOx Limit (ppmv)
>2 to 5	30
>5 to <10	15
10 to <20	15
20 to <75	9
75 or more	5

Almost all refinery heaters are larger than 5 MM BTU/hr, and would be subject to a future NOx limit of 15 ppmv (6% of refinery heaters), 9 ppmv (45% of refinery heaters) or 5 ppmv (49% of refinery heaters) if they were subject to Regulation 9-7. These are more stringent than the limits currently imposed on these heaters by Regulation 9-10 (approximately 28 ppmv for pre-1994 heaters, and 150 ppmv for CO boilers). However, the population of heaters subject to Regulation 9-7 is very different than the one subject to Regulation 9-10. Almost all of the heaters that are subject to Regulation 9-7 are water boilers or low-pressure steam boilers that operate at relatively low temperatures and that use natural gas fuel exclusively. By contrast, over 80% of the heaters at refineries are process heaters rather than boilers. Process heaters typically burn refinery gas

fuel, which has different properties than pipeline-quality natural gas fuel. Refinery gas composition varies among refineries, but in some cases the refinery gas has a significantly higher heat value than natural gas and therefore burns at a higher temperature, thus creating more NO_x. Available low-NO_x and ultra-low-NO_x burners are designed and optimized to use pipeline-quality natural gas fuel exclusively, and the use of refinery gas fuel may increase NO_x emissions by as much as 20% compared to natural gas (*Reference 18*). These factors make NO_x control at most refinery heaters more challenging compared to the heaters regulated under Regulation 9-7. In 2005 the SCAQMD concluded that ultra-low-NO_x burners, which can achieve NO_x emission rates of as little as 9 ppmv in natural gas-fired boilers, were only capable of 25 ppmv performance in refinery heater applications “due to the size and design of the equipment and the combustion characteristics of refinery gas” (*Reference 20*). Although CO boilers typically do not use high-BTU fuels, they have significant levels of nitrogen in their fuel gases which promote NO_x formation even at reduced temperatures.

For these reasons, District staff has determined that direct comparison of NO_x emissions limits on non-refinery and refinery heaters is not appropriate and has not based the proposed amendments on Regulation 9-7 emissions limits.

2.6 NO_x Emissions and Controls

A refinery heater combustion process involves the combustion of a hydrocarbon fuel in the presence of oxygen (provided by adding combustion air). The carbon in the fuel is oxidized to carbon dioxide (CO₂) and the hydrogen in the fuel becomes water vapor (H₂O). By-products of the process include: carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxides (SO_x), volatile organic compounds (VOCs), and particulate matter. NO_x and VOC compounds react in the lower atmosphere to form ozone. NO_x, SO_x, VOCs, and ammonia may react to form fine particulate matter. NO_x emissions that contribute to ozone formation are the focus of Regulation 9-10 and Control Measure SSM 10 in the Bay Area 2010 Clean Air Plan.

2.6.1 NO_x Emission Mechanisms

The nitrogen contained in the NO_x emissions from a refinery heater combustion process comes from one of two sources: (1) elemental nitrogen (N) that is chemically bound to the fuel molecules, and (2) nitrogen gas (N₂) that is part of the combustion air (air contains about 79% N₂ by volume). NO_x formed from elemental, fuel-bound nitrogen is called “fuel NO_x”. Because natural gas and most other gaseous fuels have negligible levels of fuel-bound nitrogen, and because these are the primary fuels used in refinery heaters, fuel NO_x is not a significant contributor to NO_x emissions from most refinery heaters, except for CO boilers. NO_x formed from gaseous nitrogen that is introduced into the combustion process with the combustion air stream is the source of “thermal NO_x” and “prompt NO_x”. Thermal NO_x is created by a set of reactions that are affected primarily by heater temperature and excess O₂ concentration, with higher temperatures (especially greater than 2800°F) and higher O₂ concentrations causing higher NO_x generation rates. Prompt NO_x is created by a set of reactions that are affected primarily by the air-fuel ratio in the combustion zone, with fuel-rich conditions promoting NO_x formation. Thermal NO_x is the primary component of NO_x emissions from most refinery heaters (*Reference 18*), although prompt NO_x must be controlled to achieve overall NO_x emission rates of 20 to 30 ppmv or less.

CO boilers do not produce as much thermal NO_x as other heaters because they tend to have lower flame and operating temperatures because of the low heating value of the fuel gases that they use. However, these low-BTU fuel gases contain a high concentration of NO_x precursors that may produce a significant amount of fuel NO_x. All Bay Area CO boilers, for example, burn flue gas from FCCU catalyst regenerators. Catalyst regenerators are used to burn coke from the surface of used FCCU catalyst. This coke contains significant levels of elemental nitrogen which enters the CO boiler along with the regenerator flue gas. Although most of the elemental nitrogen is converted to inert N₂ gas rather than being emitted as NO_x (*Reference 22*), subtle differences in catalyst regenerator design and operation can result in wide variations in the uncontrolled level of NO_x produced by CO boilers. Although the primary purpose of a CO boiler (besides making steam) is to reduce the emission of CO by oxidizing CO to CO₂, many of the techniques that are used to promote the oxidation of CO tend to work against the reduction reaction of NO_x precursor species to N₂. Coker flue gas also has elevated levels of NO_x precursors and high CO concentrations.

2.6.2 Thermal NO_x Controls at Non-CO Boilers

Uncontrolled heaters use conventional burners that are not designed to achieve any particular level of NO_x emissions. Conventional burners are designed to produce a small, hot flame by quickly and completely mixing fuel and combustion air. Such a flame allows the heater firebox to be as small as possible, and to be stable under a wide firing range and during fast changes in load, but does not control the formation of thermal NO_x.

The first level of thermal NO_x control for a refinery heater is the use of low-NO_x burners (LNB) which use staged-combustion techniques. Instead of mixing fuel and combustion air as quickly as possible, LNBs perform combustion in at least two stages, with the fuel-air ratio carefully controlled and the fuel and combustion air mixed thoroughly. Thorough mixing prevents combustion hot spots where NO_x formation is high, while staged combustion produces a larger flame with a lower average temperature. Since the thermal NO_x formation rate is highly dependent on combustion temperature, eliminating hot-spots and performing combustion at lower average temperatures reduces thermal NO_x formation. Some refinery heaters continue to use conventional burners rather than LNBs because the firebox will not accommodate a larger flame. LNBs typically provide as much as 50% reduction of NO_x formation compared to conventional burners, when applied to natural gas-fired heaters. Implementation of the current NO_x limits in Regulation 9-10 resulted in an average refinery heater emission rate (excluding CO boilers) that was no higher than if all refinery heaters used this first level of NO_x control.

The next level of thermal NO_x control is ultra-low-NO_x burners (ULNB). ULNBs suppress thermal NO_x formation in the same way that LNBs do, but they also suppress prompt NO_x formation by avoiding fuel-rich conditions and reducing combustion temperatures. ULNBs use internal exhaust gas recirculation, where a portion of the combustion gases that are leaving the combustion zone are injected back into the combustion zone to cool the combustion zone. ULNBs typically provide as much as 75% reduction of NO_x formation compared to conventional burners, when applied to natural gas-fired heaters.

Finally, thermal NO_x may be controlled with selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR). SCR and SNCR are post-combustion controls that are designed to remove previously-formed NO_x from heater exhaust by chemically “reducing” the NO_x to N₂

by reacting with ammonia (NH₃), with or without the use of a catalyst. NO_x catalysts operate well in a narrow temperature band, so SCR systems are less suitable in applications where a heater operates over a wide load range, which results in a wide temperature variation at the exhaust catalyst. SCR and SNCR systems can be costly to design, install and operate, although they are capable of reducing NO_x emission concentrations to less than 10 ppmv. SCR systems may have significant space requirements to accommodate a large catalyst grid and a long enough run of upstream ducting to ensure that heater exhaust flow through the grid is uniform.

2.6.3 Fuel NO_x Controls at CO Boilers

Thermal NO_x emissions at CO boilers may be controlled with the same combustion options that are available to non-CO boilers, up to SCR and SNCR. Fuel NO_x emissions, which may predominate at CO boilers, are not affected by thermal NO_x controls. Therefore, if SCR or SNCR is not feasible or if it has limited effectiveness, then control of fuel NO_x may be an option. Fuel NO_x controls may focus on reducing the elemental nitrogen in coker and FCCU feedstocks to reduce the amount of coke nitrogen that is emitted as NO_x, or on reducing the amount of NO_x precursors created in the coker or FCCU regenerator through a re-design or through optimized operation of these units. Because a significant reduction of elemental nitrogen in feedstocks would probably require a new hydrotreating process unit or a new hydrogen plant, and because either of these would exceed the cost of add-on controls such as SCR, this is not considered a cost-effective approach. However, optimization of coker and FCCU regenerator operation is discussed in Section 3.1, *infra*.

2.6.4 Potential Pollutant Trade-Offs

NO_x controls have the potential to directly or indirectly cause emissions of other air pollutants or toxic emissions. Table 5 summarizes potential trade-offs for common NO_x controls.

Table 5 – Potential Trade-Offs for Heater NO_x Reductions	
LNB, ULNB	<ul style="list-style-type: none"> • Replacing conventional burners with LNBS or ULNBS reduces heater efficiency because cooler combustion temperatures provide less radiant heat transfer. A loss of efficiency requires the heater to consume more fuel to achieve the same heating, thereby producing NO_x and other combustion products. LNBS and ULNBS typically cause an efficiency loss through reduced radiant heat transfer of less than 1% of the heater output. • Installing LNBS or ULNBS may also cause an increase in CO emissions because, while lower combustion temperatures suppress the NO_x formation reactions, they may also suppress the full conversion of carbon in the fuel to CO₂, resulting in higher CO formation rates. Proper burner design and operation should keep CO emissions under the current 400 ppmv limit.
LNB, ULNB + SCR	<ul style="list-style-type: none"> • SCR typically uses two electric SCR blowers that cause additional fuel consumption at the electricity source, which produces NO_x and other combustion products. This penalty is typically less than 1% of the heater output. • SCR uses ammonia as a reducing agent in the reaction that converts NO_x to N₂. Some of the ammonia does not react and escapes in the exhaust as “ammonia slip”. Although ammonia is toxic, slip emissions typically do not result in a significant toxic risk. Like NO_x, ammonia is a precursor to the formation of fine particulate matter compounds such as ammonium nitrate.

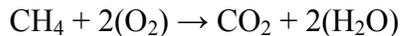
2.7 CO Emissions and Controls

Carbon monoxide is produced by the incomplete oxidation of carbon in a fossil fuel to CO rather than to CO₂. Because the District is in attainment status with all state ambient air quality standards for CO and is a “maintenance area” with respect to federal CO standards, Regulation 9-10 limits the concentration of CO in the exhaust stream of refinery heaters to a reasonable level (400 ppmv), but does not attempt to achieve further CO emission reductions. All other California air districts that address CO emissions from combustion sources impose the same 400 ppmv standard.

Combustion-based thermal NO_x control strategies, which limit NO_x formation by limiting combustion temperature, tend to also limit complete oxidation of carbon to CO₂, thereby increasing the CO formation rate. All refinery heaters, including CO boilers, may be operated at CO emission levels below 400 ppmv through good operating practice.

2.8 Greenhouse Gas Emissions and Controls

Combustion of conventional hydrocarbon fuel results in the release of energy in the form of heat as bonds between carbon and hydrogen are broken and reformed with oxygen to create water vapor (H₂O) and the greenhouse gas (GHG) carbon dioxide (CO₂). CO₂ is the only GHG emitted in significant quantities by refinery heaters. When methane (CH₄), the primary constituent of natural gas, is burned, the reaction proceeds as follows:



Thus, CO₂ is not a pollutant that occurs in relatively low concentrations as a by-product of the combustion process, like NO_x. Rather, CO₂ is a necessary combustion product of any fuel containing carbon. The only practical way to reduce CO₂ emissions, and by far the least expensive way, is by increasing energy efficiency, *i.e.*, by consuming less fuel to provide the same useful energy output.

The current version of Regulation 9-10 has no GHG reduction or mitigation requirements, and no such requirements are proposed. However, the California Air Resources Board (CARB) is implementing GHG reduction strategies as required by 2006 California Assembly Bill 32 (AB 32). The basic goal of AB 32 is to reduce California GHG emissions to 1990 levels by the year 2020. CARB intends to achieve this goal through a cap-and-trade program for GHG and through several dozen individual measures. The individual measures most likely to affect Bay Area refineries are shown below. The first two measures are intended to directly reduce GHG emissions at refineries, while the last would reduce GHG emissions when refined transportation fuels are used.

- A measure (I-4) to reduce refinery flaring is scheduled to have an ARB board hearing in 2011 for implementation beginning in 2012.
- A measure (I-5) to eliminate exemptions for methane emissions from refinery regulations is scheduled to have an ARB board hearing in 2011 for implementation beginning in 2012.
- A low-carbon fuel standard (T-2) that calls for a phased-in 10% reduction in the carbon-intensity of transportation fuels by 2020 has been adopted and goes into effect in 2011.

On October 29, 2010, CARB released the draft GHG cap-and-trade program for public comment (*Reference 24*). The cap will be a regional cap, rather than a set of facility caps, and the cap will initially be set in 2012 at the expected level of GHG emissions for that year. It will then be reduced every three years (except in 2015 when the cap will increase to reflect the addition of the second-phase facilities to the cap in that year) through 2020 to achieve the reduction goal. Petroleum refineries, including all of the Bay Area petroleum refineries, are among the industrial facilities to be included in the first phase of the cap-and-trade program in 2012. For refineries, CARB has focused on steam generator and process heater operations as primary GHG sources, and has indicated that the necessary emission reductions may be achieved through a range of measures applied to these devices. The simplest (and least costly) measures include optimization of steam generator and process heater operation. More costly measures include enhanced maintenance to achieve and maintain optimum performance. The most costly measures include installation of air or feedwater economizers, and complete replacement of steam generators and process heaters.

Facilities covered by the cap will receive emission allowances for each 3-year period of the cap and will surrender allowances to “pay” for actual emissions of GHG at the end of each period. Allowances will initially be allocated at no charge to refineries based on total refinery GHG emissions, but will then be adjusted to reflect conformance to some GHG emission baseline. Thus, facilities that emit less GHG than the allowances they receive will be able to trade excess allowances, while those that emit more GHG than the allowances they receive will have to buy additional allowances. Also, facilities that emit more GHG than the emission benchmark suggests will receive a smaller fraction of allowances relative to their initial GHG output, and facilities that emit less GHG than the benchmark suggests will receive a greater fraction of allowances relative to their initial GHG output. CARB has evaluated three benchmark alternatives (*Reference 25*), but has not yet finalized the benchmark or the initial distribution of allowances for 2012.

3.0 Proposed Rule Amendments

District staff recommends amending Regulation 9-10 in the following ways:

- (1) Establishing new NO_x emission limits for CO boilers, including long-term emission limits that are significantly lower than the current short-term emission limit.
- (2) Modifying one current exemption to extend the applicability of the rule to smaller devices so that all refinery heaters are regulated by Regulation 9-10.
- (3) Simplifying the procedures for determining compliance with the existing refinery-average NO_x limit for heaters other than CO boilers when these are at low firing rates.

3.1 CO Boiler NO_x Limits

Each of the six CO boilers in the Bay Area operates in conjunction with a fluid catalytic cracking unit (FCCU). The FCCUs use a powdered catalyst to promote the hydrocarbon cracking process, and this catalyst becomes coated with burned carbonaceous material (“coke”) during its exposure to the hydrocarbon feedstock. Each FCCU includes a reaction vessel where the catalyst and feedstock are mixed, as well as a catalyst regenerator where coke is burned off the surface of the catalyst to restore its activity so that it can be re-used. Catalyst regenerators may be designed to burn the coke completely to CO₂ (full burn) or to only partially burn the coke to a mixture of CO and CO₂ (partial burn), with complete combustion occurring at a CO boiler. Because partial burn regenerators have high levels of CO in their flue gas, this gas is vented to a CO boiler where the CO is further combusted to CO₂ and where steam is generated. Thus the CO boiler acts as a CO control device and also recovers the significant fuel value of the CO, as well as some of the sensible heat of the flue gas. Five of the six Bay Area CO boilers are associated with partial burn FCCU regenerators. The sixth CO boiler, operated by Tesoro, was originally operated with a partial burn regenerator, but the regenerator has since been modified to operate normally in full burn mode. Partial burn operation is achieved by limiting the amount of oxygen in the regenerator so that coke combustion cannot proceed to completion. Full burn regenerators, on the other hand, operate with some level of excess oxygen so that combustion proceeds to completion. Partial burn operation typically results in regenerator operating temperatures less than 1300°F, while full burn regenerators operate at higher temperatures. A further distinction can be made between “partial burn” regenerators which produce flue gas with as little as 1% CO by volume and “deep partial burn” regenerators which produce flue gas with at least 5% CO by volume. Three of the Bay Area CO boilers, all operated at the Shell refinery, are “deep partial burn” units.

District staff has evaluated the six CO boilers operated at Bay Area refineries to determine if revised NO_x emission limits are appropriate for these devices. These six devices include the two new CO boilers scheduled to be operational at the Valero refinery in 2011 (and which will be subject to more stringent BACT limits rather than Regulation 9-10), rather than the existing CO boilers which are to be replaced. In all cases, revised NO_x limits are appropriate, based on the demonstrated ability of all CO boilers to operate at an emission rate below the current (daily) limit in Regulation 9-10. Specifically, the District found that some of the CO boilers at Bay Area refineries have a demonstrated ability to operate at lower daily emission rates. In addition, all of the CO boilers in the Bay Area are capable of operating at a much lower NO_x emission rate when

emissions are considered on a longer-term basis. Therefore, in addition to a reduced daily-average limit for some CO boilers, staff has proposed even lower annual-average limits for all devices.

In addition to establishing NOx limits that reflect the current capability of each CO boiler, District staff has also evaluated additional NOx control options available to each CO boiler and the resulting emission reductions and associated cost.

Table 6 describes the six Bay Area CO boilers. The Shell and Valero units that process both coker and FCCU regenerator flue gas have higher uncontrolled NOx emissions than the Tesoro unit, which does not process coker flue gas. However, the Valero CO boilers have controlled emissions that are similar to the Tesoro unit because the Valero units are equipped with SCR.

CO Boiler (rated heat input)	Fuel Gases	Current NOx Controls
Shell #1 (207 MM BTU/hr) Shell #2 (207 MM BTU/hr) Shell #3 (207 MM BTU/hr)	<ul style="list-style-type: none"> • Flexicoker flue gas (“Flexigas”) • Partial burn fluid catalytic cracking unit (FCCU) regenerator flue gas 	1. Over-Fire Air System (OFA) 2. Urea injection selective non-catalytic reduction (SNCR)
Tesoro #1 (668 MM BTU/hr)	<ul style="list-style-type: none"> • Full burn fluid catalytic cracking unit (FCCU) regenerator flue gas 	Production management
Valero #1 (529 MM BTU/hr) Valero #2 (259 MM BTU/hr) <i>(both new in 2011)</i>	<ul style="list-style-type: none"> • Fluid coker flue gas • Partial burn fluid catalytic cracking unit (FCCU) regenerator flue gas 	Selective catalytic reduction (SCR): imposed by District as best available control technology (BACT) in 2008

Table 7 shows the current and proposed NOx limits for CO boilers.

	Current Limits (ppmv @ 3% O₂)	2015 Proposed Limits (Note 1) (ppmv @ 3% O₂)	
		“CO Boiler” (Tesoro)	“Partial-Burn CO Boiler” (Shell)
operating-day average	all	150	125
calendar year average	none	45 <i>(Note 2)</i>	85

Table 7 Notes:

(1) The new Valero CO boilers, as well as any other new CO boilers, will not be subject to these limits because they are subject to stringent best-available control technology (BACT) NOx limits (Reference 29).

(2) The 45 ppmv limit will not apply during periods when the CO boiler does not use FCCU off-gas as fuel. This off-gas has a low heat value that results in lower combustion temperatures and therefore suppressed NOx formation compared to the refinery gas and natural gas fuels that are burned when the FCCU is out of service. When FCCU off-gas is not available, Tesoro cannot comply with this limit. FCCU maintenance outages occur for 30 to 45 days every three years.

As Table 7 shows, the six Bay Area CO boilers are currently all subject to a single NOx limit: 150 ppmv on a daily average basis. This limit reflects the fact that CO boilers tend to operate at higher NOx emission rates than other types of refinery heaters, especially on a short term basis. However, all of the CO boilers have established that they are capable of operating at emission rates significantly lower than 150 ppmv on a long-term basis.

Different limits are proposed for “partial burn” CO boilers. The proposed regulation applies the two proposed standards based on whether or not the CO boiler processes off-gas from a catalytic cracking unit (CCU) regenerator that operates in partial-burn mode, as the CO boilers do at the Shell refinery. Partial-burn CCU regenerator operation produces an off-gas high in CO and NOx precursors which results in higher NOx formation in the associated CO boiler.

3.1.1 Shell CO Boilers

Shell operates three identical CO boilers that process flue gas from a FCCU regenerator that operates in “deep partial burn” mode. This operating mode is characterized by a CO concentration in the flue gas (typically 6.5% by volume) that is high compared to typical partial burn regenerators. The proposed daily NOx limit of 125 ppmv and proposed annual NOx limit for “deep partial burn” units of 85 ppmv would apply to these CO boilers.

In addition to regenerator flue gas, the three Shell CO boilers also process Flexigas that is the gaseous by-product of Shell’s Flexicoker coking unit. Flexigas has a very low fuel value and significantly higher CO concentration (typically 21% by volume) than FCCU regenerator flue gas. Regenerator flue gas is the primary CO boiler fuel, with varying amounts of Flexigas burned to accommodate steam demand, and with high-BTU refinery gas used as a supplemental fuel to maintain combustion of the lower-BTU primary fuels.

The primary NOx controls on these heaters are the Over-Fire Air (OFA) combustion air control system that has been in use since 1999 and the Urea Injection system, a form of selective non-catalytic reduction (SNCR) that was installed in 1988 and then upgraded in 1993 with improved urea flow controls and improved urea injectors. The OFA and SNCR systems were specifically designed so that the CO boilers “over-complied” with the 150 ppmv NOx limit. District Regulation 2, Rule 9: *Interchangeable Emission Reduction Credits* (IERCs) allows this over-compliance to be used to comply with other NOx rule provisions, including Regulation 9-10’s refinery-wide non-CO boiler heater limit of 0.033 lb NOx/MM BTU. So, to some extent, the current 150 ppmv NOx limit for CO boilers in Regulation 9-10 has allowed Shell to forgo

controlling NOx emissions at some of its other refinery heaters, which otherwise would need to be controlled for Shell to comply with the refinery-wide 0.033 lb NOx/MM BTU limit.

In 2005, as part of a consent decree between the previous owner of the Shell refinery and U.S. EPA, GE Energy performed an evaluation of the performance of the OFA and SNCR systems and of the associated baseline NOx emissions at the three Shell CO boilers for the purpose of establishing NOx emission limits at these CO boilers (*Reference 26*). This evaluation concluded that the three CO boilers operated at uncontrolled NOx emission rates between 200 ppmv and 250 ppmv during normal conditions, and as high as 350 ppmv during upset conditions, and that the OFA and SNCR systems resulted in an annual average NOx emission rate of 106 ppmv at the three heaters. The proposed rule amendments would reduce the daily NOx limit from 150 ppmv to 125 ppmv for these CO boilers. Shell has historically exceeded 125 ppmv two or three times per year under unusual operating conditions. The proposed amendments would also add a new annual average NOx limit of 85 ppmv for these boilers, which represents about a 20% reduction from the historical emission rate provided by the OFA and SNCR systems. Shell has indicated that it will attempt to achieve compliance with these proposed limits through further optimization of the existing OFA and SNCR control systems. If this optimization does not provide the necessary emission reductions, Shell will attempt to manage the production processes associated with the FCCU regenerator and the Flexicoker to reduce the concentration of NOx precursors introduced to the CO boilers. Shell has indicated that it believes that a combination of OFA and SNCR optimization and production management will provide the necessary emission reductions, without the need to design and install a new SCR or SNCR system. It should be noted that Shell has questioned the technical feasibility of improving SNCR performance with a new system or of successfully operating an SCR system on these CO boilers, and has also questioned the cost-effectiveness of these techniques, if they were found to be technically feasible.

3.1.2 Tesoro CO Boiler

Tesoro operates a single CO boiler that processes flue gas from a FCCU regenerator that normally operates in “full burn” mode. Normally, a full burn regenerator would not be equipped with a CO boiler since complete conversion of CO to CO₂ occurs in the regenerator with no need for a CO boiler to complete the combustion. However the Tesoro regenerator originally operated in partial burn mode, but has since been modified to operate in full burn mode, although it may operate in partial burn mode for limited periods under unusual circumstances.

Although the Tesoro CO boiler does not use SCR or SNCR, this boiler is proposed to be subject to an annual average NOx limit of 45 ppmv, which is very close to the 43 ppmv BACT limit for the new, SCR-equipped CO boilers at Valero (see Section 3.1.3). A review of recent historical continuous emission monitoring system (CEMS) emission data for the Tesoro CO boiler indicates that this limit provides little to no compliance margin for the existing CO boiler. The Tesoro CO boiler achieves a relatively low NOx emission rate through process management that limits the amount of NOx precursors that go to the CO boiler and also limits the operating temperature of this device. Compliance with the proposed limit will require continued management of these NOx emission mechanisms, but will not require the design and installation of a new SCR or SNCR system. Given the relatively low level of NOx emissions at this CO boiler, the incremental cost-effectiveness for a new control system would be poor.

The proposed rule amendments would retain the 150 ppmv daily NO_x limit for the Tesoro CO boiler since CEMS data indicate that this limit is approached during certain operating conditions, although these episodes may only occur 2 or 3 times per year. Reducing this daily limit would result in a very limited emission reduction, but would probably require additional NO_x controls with poor incremental cost-effectiveness.

3.1.3 Valero CO Boilers

In 2011, Valero will operate two CO boilers that will process flue gas from a FCCU regenerator that operates in “partial burn” mode. Both CO boilers will have their NO_x emissions abated by SCR systems that represent “best available control technology” (BACT). BACT is a more stringent emission standard than “best available retrofit control technology” (BARCT), which is the control standard normally applied in retrofit rules like Regulation 9-10. Because the Valero CO boilers will satisfy the most stringent emission standard, there is no need to consider additional controls for these devices. In fact, the BACT NO_x limits assigned to the Valero devices (43 ppmv annual average) are slightly more stringent than the proposed limits for the Tesoro CO boilers (*Reference 29*).

Currently, Regulation 9-10 applies to CO boilers, regardless of their service date. However, as with all new devices, new CO boilers are subject to stringent BACT limits for NO_x and other pollutants. Subjecting these new CO boilers to Regulation 9-10 would not result in any additional NO_x emission reductions beyond those already required for BACT. However, including these under Regulation 9-10 would result in having two different sets of applicable monitoring and recordkeeping requirements. In order to prevent the possibility of conflicting monitoring and recordkeeping requirements, new CO boilers, including the Valero CO boilers, are proposed to be excluded from the rule, the same way that new non-CO boilers (*i.e.*, post-1994 heaters) are excluded.

3.2 Extend Rule Applicability for Natural Gas and LPG-Fired Heaters

Regulation 9-10 currently applies only to natural gas and LPG-fired heaters with input heat ratings of 10 MM BTU/hr or greater. In 2008, the non-refinery heater rule (Regulation 9-7) was amended to apply to natural gas and LPG-fired heaters with input heat ratings of greater than 2 MM BTU/hr. So that refinery heaters are regulated in the same size range as non-refinery heaters, District staff proposes that the exemption for natural gas and LPG-fired heaters in Regulation 9-10 be narrowed so that it only applies to heaters smaller than 2 MM BTU/hr rather than 10 MM BTU/hr. The refineries have a very limited number of heaters smaller than 10 MM BTU/hr. To minimize the administrative burden associated with regulating these small heaters, these heaters will be allowed to be treated in the same way that liquid-fueled heaters in this same size range are currently treated in Regulation 9-10. Namely, the refineries will have the option of either maintaining a low excess oxygen concentration or of performing annual tune-ups for these small heaters. Either of these measures will provide a level of NO_x control appropriate to these units.

3.3 Simplify Calculation Procedures for Non-CO Boilers at Low Firing Rates

The refinery-wide average NO_x limit in Regulation 9-10 is expressed in units of “pounds of NO_x per million BTU of heat input”. This particular form was chosen for a variety of reasons, one of which is that it can be applied to refineries of completely different design and with completely

different product lines. However, one drawback to this form is that, because it is a ratio of the mass of NO_x emissions to the corresponding heat input, the resulting emission rate tends to increase disproportionately to the actual increase in NO_x mass emissions at low heater firing rates. When a refinery heater is operating at a low firing rate, as during startup or shutdown, the emission rate expressed in “lb NO_x/MM BTU” may be higher than the emission rate during normal operation, even though actual NO_x mass emissions may be lower than during normal operation.

Also, a refinery may comply with the refinery-wide average limit during normal operations, but if the refinery relies on one or two large heaters with low emissions to achieve compliance (because these balance out higher emissions at other heaters), then the refinery may be out of compliance if the large heaters with low emissions are temporarily out of service for testing or maintenance.

In order to address these two situations, Regulation 9-10 currently allows heaters that are in start-up or shutdown and heaters that are temporarily out of service to have special calculation procedures during these periods. Instead of using the actual emission rate for heaters in start-up or shutdown, any historic source test data may be substituted, and for heaters that are out of service the rule states that historic emission data and firing rate data is used. However, non-CEMS equipped heaters would not have historic emission rate data available. Also, allowing any historic source test data to be used for heaters in start-up or shutdown is quite permissive.

To simplify and clarify these provisions, the proposed amendments remove the allowance to use any previous source test result for heaters in start-up or shutdown and instead allow the use of historic emission data and firing rate data to be consistent with the treatment of units that are temporarily out of service.

The Title V permit conditions for all refineries currently address low-fire conditions by allowing heaters operating at no more than 20% of their rated heat input and also heaters in “curtailed operation” to use historic data rather than actual data. The term “curtailed operation” is not explicitly defined in the Title V permit conditions, although examples are provided of operations that would be considered curtailed operation. The proposed amendments add a definition of “curtailed operation” to the rule that would include all low-fire conditions. “Curtailed operation” is proposed to be explicitly defined as operation at no more than 30% of the heater’s rated heat input. As with heaters in start-up and shutdown, all heaters in “curtailed operation” would be allowed to use historic data for emission calculations. This reflects the District’s current practice in enforcing the Title V permit conditions. Heaters operating at up to 30% are expected to have reduced absolute NO_x emission rates that justify the use of historic emission data rather than actual data. For consistency, the Title V permits should be amended so that “curtailed operation”, as defined and treated in the rule, is similarly treated in permits.

3.4 Cost of Controls

The proposed changes to CO boiler emission limits in Regulation 9-10 may result in capital costs for NO_x control equipment and may result in increased operating costs. The other proposed changes are not expected to result in a significant additional cost. Because the District already administers Regulation 9-10 and because the proposed amended rule will retain most of the same provisions, additional costs to the District will be limited to rule development costs, costs to process required compliance plans and permit applications for equipment modifications required

by the proposed amendments, as well as initial compliance verification costs. As discussed in Section 8, *infra*, throughout this rule development process, District staff met extensively with refinery staff and representatives to evaluate the cost of each control option.

3.4.1 Cost to Refinery Operators

As described in Section 3.1, two Bay Area refineries operate CO boilers that will be subject to the proposed NO_x limits. As described in Section 3.1.1, the operators of the Shell refinery will have NO_x emission limits that are somewhat lower than the average historical performance of the three facility CO boilers, both on a daily and annual average basis. Shell staff has indicated that they have a number of options to achieve compliance without resorting to the installation of new add-on NO_x controls (the CO boilers already have SNCR control systems). These options include further performance optimization of the combustion air (OFA) control system and of the SNCR system, as well as careful management of processes to avoid conditions that will cause NO_x emissions to increase. NO_x emission rates at the CO boilers vary from day to day, and sometimes show long-term increasing or decreasing trends. These variations occur for a variety of production-related reasons, some of which are poorly understood, even by refinery staff. For this reason it is impossible to definitively say what actions will be necessary to achieve compliance with the proposed limits by the 2015 effectiveness date. However, District staff assumes that there will be costs associated with the proposed changes simply because the proposed limits are lower than the recent historical emissions for these CO boilers. To estimate these costs, District staff has assumed that Shell will be able to achieve compliance by undertaking a thorough optimization of the existing OFA and SNCR systems, including some replacement of system components (e.g. controllers, urea injection equipment, ducting), and that the cost of these optimization efforts will be a fraction of the cost of a new add-on NO_x control system, such as SCR. Shell has provided the estimated installed cost for two new, SCR-equipped CO boilers. Assuming that the SCR portion of this project is 10% of the cost, and that thorough optimization of the existing OFA and SNCR systems would vary from 10% to 25% of the cost of a new SCR control system, optimization costs could range from about \$6 million to about \$16 million. If these costs are annualized using standard District methodology, and Shell is estimated to have an emission reduction of 20% compared to 2008 emissions (103 ton/yr NO_x reduction) as discussed in Section 3.1.1, the cost-effectiveness for the Shell refinery is between \$8,000 and \$21,000 per ton of NO_x reduced. The higher estimate of \$16 million (equivalent to an annualized cost of \$2.2 million) is the basis for the cost used in the socioeconomic analysis discussed in Section 5, *infra*. However, in the analysis, the annualized cost was round up to \$3 million.

As described in Section 3.1.2, the operators of the Tesoro refinery will have to maintain the production controls already in place to comply with the proposed NO_x limits. They are not expected to need new, add-on controls or comprehensive, additional optimization of existing processes. Tesoro has not indicated that any specific actions will be necessary to comply with the proposed limits, although, as at the Shell refinery, CO boiler emissions vary on a short-term and long-term basis and it is impossible to predict how future production and operational changes may affect CO boiler emission rates. Because no specific actions are known to be necessary to comply with the proposed limits, no compliance cost has been estimated for the Tesoro refinery.

As noted in Section 3.1.3, the new Valero CO boilers will be subject to more stringent BACT limits, rather than the proposed CO boiler NOx limits. Therefore, no compliance cost has been estimated for the Valero refinery.

3.4.2 Cost to the District

In addition to the cost of developing and adopting the proposed amendments to Regulation 9-10, the District will also incur one-time costs to process permit applications for any required heater modifications. Permit fees are expected to recover any such permitting costs. Enforcement of the amended rule is not expected to result in significant new costs.

4.0 Emissions and Emission Reductions

4.1 NOx Emissions and Emission Reductions

Table 2 in Section 2.3 shows the most recent (2008) emission inventory data for each of the five Bay Area refineries in each of the heater categories relevant to Regulation 9-10 (pre-1994, post-1994 and CO boilers). Table 8 shows the CO boiler data from Table 2.

Shell	516 ton/yr
Valero	600 ton/yr
Tesoro	346 ton/yr
Total	1462 ton/yr
	4.0 ton/day

The proposed CO boiler NOx limits represent a significant reduction from the current limit of 150 ppmv. Because the proposed limits are different for different facilities, the proposed limits may be considered as a weighted average based on the emission rate at each facility. If the annual average limit of either 45 ppmv or 85 ppmv is weighted by the emissions shown in Table 8, the weighted average proposed NOx limit is 59 ppmv. This represents a reduction of 61% from the current limit of 150 ppmv. Therefore, in the simplest terms, the emission reduction from the 2008 inventory may be estimated to be 2.4 ton/day of NOx.

However, as discussed in this report, CO boilers do not operate at the current 150 ppmv NOx limit on a long term basis. In some cases, CO boilers operate close to the proposed NOx limits. However, some refineries use the fact that they operate CO boilers below 150 ppmv to generate IERCs that are used to comply with the refinery-average daily NOx limit in Regulation 9-10 instead of actually applying NOx controls to the pre-1994 heaters that are subject to the refinery-wide limit. The new NOx limits are expected to eliminate the ability of refineries to generate IERCs, such that they will have to apply NOx controls to pre-1994 heaters to maintain compliance. Therefore, the emission reduction associated with the proposed CO boiler NOx limits may also be estimated as the amount of IERCs used by refineries with CO boilers. From 2002 through 2008, the average total use of IERCs by refineries with CO boilers was 595 ton/yr (1.6 ton/day). Therefore, a more realistic estimate of the emission reduction from the proposed CO boiler NOx limit changes is 1.6 ton/day of NOx.

4.2 Secondary Particulate Emission Reductions

Because NOx compounds in the atmosphere contribute to the formation of secondary particulate matter (PM), any NOx emission reduction will also result in a reduction of PM. Secondary PM is formed from the conversion of NOx to ammonium nitrate (NH₄NO₃). District staff has estimated the ratio between NH₄NO₃ formation to NOx emissions to range between 1:6 and 1:10. Assuming a NOx emission reduction of 1.6 ton/day, and a conversion rate of 1:8, secondary particulate matter will be reduced by as much as 0.2 tons/day by the proposed amendments.

5.0 Economic Impacts

Socioeconomic Impacts

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”. Applied Economic Development of Walnut Creek, California has prepared a socioeconomic analysis of the proposed amendments to Regulation 9-10. The analysis concludes that the cost of the proposed amendments will not have a significant socioeconomic impact on affected businesses. As discussed in Section 8, *infra*, throughout this rule development process, District staff met extensively with refinery staff and representatives to evaluate the cost of each control option.

Cost-Effectiveness and Incremental Cost-Effectiveness

As discussed in Section 3.4.1, *supra*, the estimated cost-effectiveness for Shell refinery for the proposed CO boiler NOx limits is between \$8,000 and \$21,000 per ton of NOx reduced for optimization of the existing OFA and SNCR NOx control systems. The highest value in this range, \$21,000 per ton, is the basis for the cost evaluated in the socioeconomic analysis. \$21,000 per ton is equivalent to an annualized cost of \$2.2 million. For conservatism, this amount was rounded up to \$3 million in the socioeconomic analysis.

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 rule or feasible measure. The air district must: (1) identify one or more control options achieving the emission reduction objectives for the proposed rule, (2) determine the cost effectiveness for each option, and (3) calculate the incremental cost effectiveness for each option. To determine incremental costs, the air district must “calculate the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option.”

The control options that will achieve the emission reduction objectives for Regulation 9-10 are described in Section 3, *supra*, and the cost-effectiveness for these options is shown in Section 3.4.1.

To evaluate incremental cost-effectiveness, District staff divided refinery heaters into the three groups shown in Table 9: pre-1994 heaters, Shell CO boilers and Tesoro CO boilers. Pre-1994 heaters are considered collectively because they are subject to a collective limit. Each CO boiler is considered separately. Valero CO boilers are not subject to an incremental cost-effectiveness evaluation because these are not subject to the proposed rule, and also these were recently determined to meet “best available control technology” (BACT) requirements (*Reference 29*). For these three heater categories, Table 9 identifies the proposed NOx limits or control technologies in the proposed rule, and then a further level of control considered to be the next most effective with the associated incremental cost-effectiveness for this further control.

Table 9 – Incremental Cost-Effectiveness for Further NOx Controls

Category	Proposed NOx Limit (Control Technology)	Further NOx Limit (Control Technology)	Incremental Cost- Effectiveness
Pre-1994 Heaters	0.033 lb NOx / MM BTU heat input (equivalent to 28 ppmv), daily average (various)	0.018 lb NOx / MM BTU heat input (equivalent to 15 ppmv), daily average (various)	>\$31,000 / ton NOx
3 Shell CO Boilers	85 ppmv NOx, annual average (SNCR)	9 ppmv NOx, annual average (SCR)	>\$35,000 / ton NOx
Tesoro CO Boiler	45 ppmv NOx, annual average (process control)	9 ppmv NOx, annual average (SCR)	>\$35,000 / ton NOx

6.0 Environmental Impacts

Pursuant to the California Environmental Quality Act, the District has had an initial study for the proposed amendments prepared by Environmental Audit, Inc. The initial study concludes that there are no potential significant adverse environmental impacts associated with the proposed amendments. A negative declaration is proposed for adoption by the Air District Board of Directors. The initial study and negative declaration was circulated for public comment during the period from November 15, 2010 to December 6, 2010. No comments were received on these documents.

7.0 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 the 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.

BAAQMD Regulation 9 for NO_x sources is structured so that no source is subject to more than one rule under Regulation 9. Therefore, the heaters that are currently subject to Regulation 9, Rule 10 and those that are proposed to be made subject to Regulation 9, Rule 10 are not subject to any other District regulation that establishes specific emission limits or monitoring requirements, although they may be subject to other District regulations that establish permitting requirements or fees.

U.S. EPA has established New Source Performance Standards (NSPS) in Part 60 of the Code of Federal Regulations (CFR) and National Emission Standards for Hazardous Air Pollutants (NESHAP) in Part 63 of the CFR that include NO_x and CO emission limits that affect some refinery heaters as listed in Table 10.

Table 10 – New Source Performance Standards (NSPS)		
Federal Standard	Affected Heaters	Requirements
NSPS Subpart D 60.44(a)	Steam Generator; input rating >250 MM BTU/hr; constructed after August 17, 1971	<ul style="list-style-type: none"> • 0.20 lb NO_x/MM BTU limit for gaseous fuel • 0.30 lb NO_x/MM BTU limit for liquid fuel
NSPS Subpart Db 60.44(b)	Steam Generator; input rating >100 MM BTU/hr; constructed after June 19, 1984	<ul style="list-style-type: none"> • 0.10-0.20 lb NO_x/MM BTU limit for natural gas and distillate oil fuel
NSPS Subpart J 60.103	Fluid Catalytic Cracking Unit (FCCU) Catalyst Regenerators and Fuel Gas Combustion Devices constructed between June 11, 1973 and June 24, 2008	<ul style="list-style-type: none"> • 500 ppmv CO limit
NSPS Subpart Ja 60.103	FCCUs, Fluid Coking Units (FCUs) and Fuel Gas Combustion Devices (FGCDs) constructed after May 14, 2007	<ul style="list-style-type: none"> • 80 ppmv NO_x limit at 0% oxygen, 7-day rolling average • 500 ppmv CO limit at 0% oxygen, hourly average
NESHAP Subpart UUU 63.1565(a)(1)	Catalytic Cracking Units (CCUs) constructed after September 11, 1998	<ul style="list-style-type: none"> • 500 ppmv CO limit (surrogate for hazardous organic compounds)

The details of which of these federal requirements apply to specific refinery heaters are included in the major facility (Title V) permit for each refinery. In general, Regulation 9-10 already has, and is proposed to continue to have, more restrictive NO_x and CO emission limits than the NSPS and NESHAPS. The only case where this is not obvious is for the 80 ppmv NO_x limit in NSPS Subpart J. This limit is expressed as a daily average corrected to 0% oxygen while Regulation 9-10 has a refinery-wide daily average limit equivalent to 28 ppmv NO_x at 3% oxygen. However, the NSPS standard applies to post-2007 heaters that would not be subject to Regulation 9-10, but would instead be subject to BACT standards if constructed in the Bay Area. BACT requirements would be at least as stringent as this NSPS standard.

8.0 Rule Development Process

District staff has reviewed refinery heater rules at all California air districts, studied each Bay Area refinery heater and considered all known NO_x control technologies to establish the appropriate NO_x emission limits for heaters subject to Regulation 9-10.

In 2009 the District formed an industry workgroup comprised of representatives from each Bay Area refinery and the Western States Petroleum Association (WSPA). In 2009 and 2010, District staff met individually with representatives from each Bay Area refinery and with staff from Environmental Resources Management (ERM). ERM was contracted by WSPA to prepare a methodology for estimating costs for NO_x control upgrades at refinery heaters (*Reference 27*), to compile data for refinery heaters, and to estimate costs for NO_x upgrades at each heater. District staff reviewed this methodology and the resulting cost data with ERM staff and with refinery staff, including various refinery technical experts. District staff validated the ERM cost methodology using U.S. EPA cost estimation tools (*Reference 28*).

District staff prepared a draft regulation in December 2009 and in February 2010 held a workshop to solicit public comment. A notice for this workshop was posted on the District website and individual notices were mailed to all refinery operators and prior participants in the rule development process. Based on comments and a further evaluation of potential control measures, District staff prepared an amended regulation and released it for public comment in August 2010. During the public comment period, District staff met and communicated with representatives from each refinery and with WSPA to clarify provisions of the proposed regulation and to receive comments. The current proposed amendments are the product of this extensive process. District staff updated the District's Stationary Source Committee on this rule development process on May 13, 2010 and on September 27, 2010.

The final proposed amendments and staff report were posted for public review on November 15, 2010. Comments and staff responses are included in Appendix A of this report.

9.0 Conclusion

Pursuant to Section 40727 of the California Health and Safety Code, the proposed rule must meet findings of necessity, authority, clarity, consistency, non-duplication, and reference. The proposed amendments to Regulation 9-10 are:

- Necessary to limit emissions of NO_x, a primary precursor to ground-level ozone formation, and to meet the requirements of the Bay Area 2010 Clean Air Plan;
- Authorized under Sections 40000, 40001, 40702, and 40725 through 40728 of the California Health and Safety Code;
- Written or displayed so that its meaning can be easily understood by the persons directly affected by it;
- Consistent with other BAAQMD rules, and not in conflict with state or federal law;
- Non-duplicative of other statutes, rules or regulations; and
- Implementing, interpreting or making specific the provisions of the California Health and Safety Code Sections 40000 and 40702.

The proposed new rule has met all legal noticing requirements, has been discussed with the regulated community, and reflects the input and comments of many affected and interested parties. BAAQMD staff recommends adoption of the proposed amendments to Regulation 9-10.

10.0 References

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5. San Joaquin Valley Unified Air Pollution Control District: Rule 4306, “*Boilers, Steam Generators and Process Heaters – Phase 3*”, October 2008.
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24. California Air Resources Board: *“Staff Report: Initial Statement of Reasons, Proposed Regulation to Implement the California Cap-and-Trade Program”*, Part I, Volume I; October 28, 2010
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28. U.S Environmental Protection Agency: “*Air Pollution Control Cost Manual*”, 6th Edition, EPA 452/B-02-001, June 2003
29. Bay Area Air Quality Management District: *Engineering Evaluation Report: Valero Benicia Refinery, Permit Application 16937*, December 2008.

Appendix A – Comments and Responses

During the public comment period for the rule amendment, written comments were submitted by the Western States Petroleum Association (WSPA) on behalf of the companies it represents, including the five Bay Area petroleum refineries. Comments were also submitted by the Valero Benicia petroleum refinery. These comments and staff responses are as follows:

WSPA comments

1. Change “rated heat input” to “Title V Permitted Heat Input Capacity” in the definition of Curtailed Operation in Section 9-10-222. WSPA indicated that the recommended change would clarify the intent of this section and be consistent with the terminology in refinery Title V permits.

Response: The current proposed language and the WSPA proposal are functionally equivalent. Any particular heater has only one “rated heat input” that is used for all District purposes, including assessment of permit fees and for all purposes of Regulation 9-10, including Section 9-10-222. The term is defined in Section 9-10-215. WSPA’s suggested change would lead to the use of inconsistent terminology within the rule. Therefore, the suggested change will not be made.

2. Clarify in the staff report that while operating at less than 30% of permitted heat input, a heater would not be subject to NOx Box restrictions in permit conditions.

Response: Clarifying language has been added to the last paragraph of Section 3.3 of this staff report.

3. Amend the calculation procedure for heaters that are temporarily out of service in Section 9-10-301.5 to allow facilities the option of considering heaters that are out of service to be either operating at typical conditions or not operating. WSPA points out that the rule allows the use of typical or actual emission data for heaters in start-up, shutdown or curtailed operation and urges the District to allow the same for heaters that are temporarily out of service.

Response: The current rule (Section 301.2) allows heaters that are out of service to be considered to be operating at the operating conditions that occurred during the 30-day period previous to going out of service for the purposes of quantifying their contribution to the refinery-wide average NOx emission rate, but limits this treatment to 60 days per calendar year. The intent of this allowance was for the refinery to not be penalized in complying with the refinery-wide average when a low-emitting heater is temporarily out of service (since removing such a heater from the average calculation would increase the average NOx emission rate of the remaining heaters). During the out-of-service condition, however, a heater is not considered to have zero emission impact but rather to have typical emissions. The proposed amendments would retain this treatment for heaters that are out of service but removes the 60-day limit, since the rationale for allowing this treatment does not end after any arbitrary period of time. WSPA requests adding two further options, not included in the current rule, of also allowing the actual heater contribution for heaters that are out of service (i.e., zero NOx emission rate and zero heat input)

or an alternative APCO-approved 30 day period rather than the 30-day period immediately prior to the heater going out of service. The “zero” option would increase a facility’s compliance margin with respect to the refinery-wide average NOx limit, if applied to a high-emitting heater. For refineries that currently comply with the refinery-wide average through the use of IERCs, the use of the “zero” option for an out of service, high-emitting heater would reduce the required IERCs compared to the current rule provisions. Therefore, District staff has not adopted this suggested change to the rule. However, the WSPA proposal to allow an APCO-approved 30-day period that is representative of typical operations as an alternative to the 30-day period immediately prior to the heater going out of service will be added.

Valero Benicia Refinery comments

1. Request to amend the rule to allow an Alternative Emission Reduction Plan (AERP). Valero states that the rule will require it to undertake significant investment in NOx controls at existing heaters at the Valero Benicia Refinery.

Response: Although the District considered several options in an attempt to ensure that the rule will continue to require cost-effective controls, none of these options was ultimately satisfactory to both the District and Valero. For its part, the District could not identify an option that would assure that equivalent emission reductions would occur at Valero under an AERP.

SOCIOECONOMIC ANALYSIS FOR REGULATION 9, RULE 10 NITROGEN OXIDES AND CARBON MONOXIDE FROM BOILERS, STEAM GENERATORS AND PROCESS HEATERS IN PETROLEUM REFINERIES

DECEMBER 8, 2010

Prepared for
BAAQMD

Prepared by
Applied Development Economics

100 Pringle Avenue, Suite 560 ♦ Walnut Creek, California 94596 ♦ (925) 934-8712
2150 River Plaza Drive, Suite 168 ♦ Sacramento, CA 95833 ♦ (916) 923-1562
www.adeusa.com



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SECTION ONE: INTRODUCTION

The Bay Area Air Quality Management District (“BAAQMD” or the “District”) seeks to amend Regulation 9, Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries (“Regulation 9-10” or “the rule”). In Further Study Measure 14 of the Bay Area 2005 Ozone Strategy, and subsequently, Control Measure SSM 10 of the Bay Area 2010 Clean Air Plan, the District identified refinery boilers, steam generators, and process heaters as potential sources of further reductions of emissions of nitrogen oxides (NOx), an ozone precursor. By reducing NOx emissions, the District would make progress toward meeting federal and state ozone standards, with respect to which the District currently is in nonattainment.

After this introduction, this report discusses in greater detail how the District proposes to amend Regulation 9-10 (Section Two). After that discussion, the report describes the socioeconomic impact analysis methodology and data sources (Section Three). The report describes population and economic trends in the nine-county San Francisco Bay Area (Section Four), which serves as a backdrop against which the District is contemplating changes to Regulation 9-10. Finally, the socioeconomic impacts stemming from the proposed amendments are discussed in Section Five.

The report is prepared pursuant to the provisions of AB2051 (Section 40728.5 of the California Health and Safety Code), which requires an assessment of socioeconomic impacts of proposed air quality rules. The findings in this report can assist District staff and the Board of Directors in understanding the socioeconomic impacts of the proposed requirements, and can assist staff in preparing a refined version of the rule. Figure 1 is a map of the nine-county region that comprises the San Francisco Bay Area Air Basin.

Figure 1. Map of San Francisco Bay Area Region



SECTION TWO: BACKGROUND OF BAAQMD'S RULE 9-10

The District adopted Regulation 9-10 on January 5, 1994 and subsequently amended it on July 17, 2002. The regulation imposes a refinery-wide average NOx emissions limit on refinery boilers, steam generators and process heaters (excluding CO (carbon monoxide) boilers) that were permitted prior to the adoption of the rule (“pre-1994 heaters”). The NOx limits were not applied to boilers, steam generators and process heaters that would be permitted after the rule was adopted (“post-1994 heaters”) because these devices would be subject to stringent NOx limits as a result of the District’s “best available control technology” (BACT) requirements. The rule also imposes a specific (not average) NOx emission limit on all CO boilers. The NOx limits in Regulation 9-10 for pre-1994 heaters, combined with BACT requirements for post-1994 heaters, resulted in significant reductions in NOx emissions from Bay Area refinery operations beginning in 2002. Currently, 81 percent of the total rated capacity of refinery boilers, steam generators and process heaters in the Bay Area is equipped with NOx controls of some kind.

In the Bay Area 2005 Ozone Strategy (“Further Study Measure FS 14”), and now in the Bay Area 2010 Clean Air Plan (Control Measure SSM 10) the District committed to study ways that the existing Regulation 9-10 emissions limits might be tightened to achieve further NOx emissions reductions. As explained in the Ozone Strategy, however, the District did not commit to continue evaluating measures deemed technically infeasible, cost-ineffective or inappropriate for any other reason, nor did the District commit to move forward with a measure that was deemed feasible as a result of its further study, unless and until the District conducted a rulemaking process.

In carrying out Further Study Measure FS 14, District staff has completed the following:

- Compiled a precise inventory of refinery boilers, steam generators and process heaters
- Determined the type, age, retrofitability of, and the nature of the emissions from, these refinery boilers, steam generators and process heaters
- Evaluated the cost effectiveness of retrofits and replacement technologies
- Evaluated the contribution to emissions of the heaters that are currently exempt from Regulation 9-10
- Compared the NOx emissions limits imposed by other air districts on refinery boilers, steam generators and process heaters
- Compared NOx emissions from and control of non-refinery boilers of similar size that are in use in the District; and
- Consulted extensively with industry representatives regarding these analyses.

At this time, District staff recommends amending Regulation 9-10 in three ways: (1) by making NOx limits on CO boilers more stringent; (2) by expanding the applicability of the rule to smaller natural gas and LPG-fired devices; and (3) by simplifying and clarifying compliance calculation procedures.

First, since 1994 some CO boilers have demonstrated the ability to operate at significantly lower NOx levels than the current Regulation 9-10 limit of 150 ppmv. As a result, District staff recommends amending Regulation 9-10 to impose more stringent NOx limits on CO boilers. The new limits are shown in Table 7 of the staff report. As explained in the staff report, the District anticipates that only one refinery, Shell Oil in Martinez, will incur costs to comply with the proposed new limits.

Second, the District proposes narrowing the exemption in Regulation 9-10-110.1 so that pre-1994 heaters fired with natural gas or LPG fuel with a rated heat input between 10 and 2 MMBTU/hr would be subject to the rule. District staff does not anticipate that the change will require any refinery to add NOx controls since these newly-regulated devices will have other compliance options; however, the change would make refinery heaters regulated in the same size range as non-refinery heaters in Regulation 9-7.

Throughout this rule development process, District staff met this rule development process, District staff met extensively with refinery staff and representatives to evaluate the cost of each control option.

SECTION THREE: METHODOLOGY

Applied Development Economics (ADE) began the analysis by preparing a statistical description of the industry groups of which the affected sources are a part, analyzing data on the number of establishments, jobs, and payroll. We also estimated sales generated by impacted industries, as well as net profits for each affected industry.

This report relies heavily on the most current data available from a variety of sources, particularly the State of California's Employment Development Department (EDD) Labor Market Information Division. In addition, this report relied on data from the State of California's Department of Energy, particularly with respect to measuring throughput capacity of the sole refinery expected to have compliance costs related to the proposed changes to the CO boiler NOx emission limits, i.e. Shell Oil refinery. Another important source of information was the United States Department of Energy/Energy Information Agency, which provides data on retail and wholesale prices of gasoline and other refinery products. For purposes of estimating profits, ADE reviewed industry-specific financial ratios issued by the US Internal Revenue Service.

With the above information, ADE was able to estimate net after tax profit ratios for sources affected by the proposed control measures. ADE calculated ratios of profit per dollar of revenue for affected industries. The result of the socioeconomic analysis shows what proportion of profits the compliance costs represent. Based on assumed thresholds of significance, ADE discusses in the report whether the affected sources are likely to reduce jobs as a means of recouping the cost of rule compliance or as a result of reducing business operations. To the extent that such job losses appear likely, the indirect multiplier effects of the jobs losses are estimated using a regional IMPLAN input-output model. In some instances, particularly where consumers are the ultimate end-users of goods and services subject to proposed control measures, we also analyzed whether costs could be passed to households in the region.

When analyzing the socioeconomic impacts of proposed new rules and amendments, ADE attempts to work closely within the parameters of accepted methodologies discussed in a 1995 California Air Resources Board report called "Development of a Methodology to Assess the Economic Impact Required by SB513/AB969" (by Peter Berck, PhD, UC Berkeley Department of Agricultural and Resources Economics, Contract No. 93-314, August, 1995). The author of this report reviewed a methodology to assess the impact that California Environmental Protection Agency proposed regulations would have on the ability of California businesses to compete. The California Air Resources Board (ARB) has incorporated the methodologies described in this report in its own assessment of socioeconomic impacts of rules generated by ARB. One methodology relates to determining a level above or below which a rule and its associated costs is deemed to have significant impacts. When analyzing the degree to which its rules are significant or insignificant, ARB employs a threshold of significance that ADE follows. Berck reviewed the threshold in his

analysis and wrote, “The Air Resources Board’s (ARB) use of a 10 percent change in [Return on Equity] ROE (i.e. a change in ROE from 10 percent to a ROE of 9 percent) as a threshold for a finding of no significant, adverse impact on either competitiveness or jobs seems reasonable or even conservative.”

SECTION FOUR: REGIONAL DEMOGRAPHIC AND ECONOMIC TRENDS

This section of the report tracks economic and demographic contexts within which District staff and officials are contemplating changes to Rule 9-10. Table 1 tracks population growth in the nine-county San Francisco Bay Area between 1999 and 2009, including data for the year 2004. Between 1999 and 2004, the region grew by less than one percent a year, at 0.6 percent. Between 2004 and 2009, the region grew annually by slightly over one percent, at 1.1 percent a year. Overall, there are 7,459,858 people in the region. At 1,880,876, Santa Clara County has the most people, while Napa has the least, at 138,917.

**TABLE 1
REGIONAL DEMOGRAPHIC TRENDS: 1999-2009
POPULATION GROWTH: SAN FRANCISCO BAY AREA**

	Population			Percent Change		
	1999	2004	2009	99-04	04-09	99-09
California	34,336,091	36,676,931	38,648,090	1.3%	1.1%	1.2%
Bay Area	6,878,214	7,073,168	7,459,858	0.6%	1.1%	0.8%
Alameda County	1,454,302	1,498,967	1,574,857	0.6%	1.0%	0.8%
Contra Costa County	930,025	1,016,407	1,073,055	1.8%	1.1%	1.4%
Marin County	249,671	251,586	260,651	0.2%	0.7%	0.4%
Napa County	127,005	132,280	138,917	0.8%	1.0%	0.9%
San Francisco Cty.	801,377	806,433	856,095	0.1%	1.2%	0.7%
San Mateo County	730,029	720,042	754,285	0.3%	0.9%	0.3%
Santa Clara County	1,736,722	1,753,041	1,880,876	0.2%	1.4%	0.8%
Solano County	399,026	418,876	427,837	1.0%	0.4%	0.7%
Sonoma County	450,057	475,536	493,285	1.1%	0.7%	0.9%

Source: Applied Development Economics, based on total population estimates from The California Department of Finance (E-5 Report)

Data in Table 2 describe the larger economic context within which officials are contemplating the proposed updates to Rule 9-10. Businesses in the region employ over three million workers, or 3,193,427. The number of jobs in the region grew annually by 1.2 percent between 2004 and 2009, after having declined dramatically between 1999 and 2004 by 2.4 percent a year. Of the 3,193,427 positions, almost 14 percent are in the public sector. In the state, slightly over 16 percent of all jobs are in the public sector. Relative to the state as a whole, manufacturing, professional/business services, and education/health service sectors comprise a greater proportion of the employment base in the Bay Area. In the region, these sectors comprise 10.1 percent (manufacturing), 17.4 percent (professional/business services), and 12.1 percent (private education/health services) respectively of total employment. In the state, these sectors comprise 8.8 percent, 14.1 percent, and 11.5 percent of the statewide job base. In other words, as a percent of total workforce, the region employs more people in sectors with occupations that presumptively require more skills and are higher-paying.

**TABLE 2
SAN FRANCISCO BAY AREA EMPLOYMENT TRENDS, 1999-2009**

	SF Bay Area Employment			Distribution		1999-2004		2004-2009	
	1999	2004	2009	SFBA 2009	California '09	Change	CAGR	Change	CAGR
Private and Public	3,391,178	3,003,433	3,193,427	100.0%	100.0%	-387,745	-2.4%	189,994	1.2%
Total, all industries (private sector)	2,960,921	2,588,826	2,748,225	86.1%	83.6%	-372,095	-2.7%	159,399	1.2%
Goods-Producing	662,086	515,650	493,895	15.5%	16.0%	-146,436	-4.9%	-21,755	-0.9%
Natural Resources and Mining	29,454	17,599	21,799	0.7%	2.7%	-11,855	-9.8%	4,200	4.4%
Construction	171,832	169,409	150,514	4.7%	4.4%	-2,423	-0.3%	-18,895	-2.3%
Manufacturing	460,800	328,642	321,582	10.1%	8.8%	-132,158	-6.5%	-7,060	-0.4%
Service-Providing	2,298,835	2,073,176	2,254,329	70.6%	67.6%	-225,659	-2.0%	181,153	1.7%
Trade, Transportation, and Utilities	602,544	521,223	526,983	16.5%	18.0%	-81,321	-2.9%	5,760	0.2%
Information	121,893	110,639	112,229	3.5%	3.0%	-11,254	-1.9%	1,590	0.3%
Financial Activities	198,588	197,996	183,446	5.7%	5.4%	-592	-0.1%	-14,550	-1.5%
Professional and Business Services	629,658	502,453	556,256	17.4%	14.1%	-127,205	-4.4%	53,803	2.1%
Education and Health Services	326,645	323,039	385,503	12.1%	11.5%	-3,606	-0.2%	62,464	3.6%
Leisure and Hospitality	290,783	284,461	324,850	10.2%	10.2%	-6,322	-0.4%	40,389	2.7%
Other Services	128,724	133,027	157,909	4.9%	5.0%	4,303	0.7%	24,882	3.5%
Unclassified	0	338	7,155	0.2%	0.4%				
Government Ownership:	430,257	414,607	445,202	13.9%	16.4%	-15,650	-0.7%	30,595	1.4%
Federal Government	60,971	52,493	51,320	1.6%	1.7%	-8,478	-2.9%	-1,173	-0.5%
State Government	77,744	81,082	86,757	2.7%	3.1%	3,338	0.8%	5,675	1.4%
Local Government	291,542	281,032	307,125	9.6%	11.6%	-10,510	-0.7%	26,093	1.8%

Source: Applied Development Economics, Inc., based on California EDD LMID

Table 2 above also shows precipitous decline in employment in industries most-affected by the downturn in the economy that began in late 2007, namely housing. Construction employment declined by 2.3 percent per year between 2004 and 2009, with financial activities (which includes real estate) declining by 1.5 percent annually over the same period.

The proposed amendments to Rule 9-10 affect one particular industry in the Bay Area, namely refineries. While the California EDD LMID reports that there are 28 refineries in the nine-county region, more than likely, this state agency applied a broader definition for refinery operations in the region. Rule 9-10 defines refineries as facilities engaged in the production of gasoline, etc. through the distillation of petroleum or through redistillation, cracking or reforming of unfinished petroleum derivatives. The EDD data includes facilities classified under BAAQMD rules as distribution facilities. Nonetheless, Table 3 below shows refinery trends per the EDD-LMID. What is striking about the table below is the high average pay workers garner in this industry. Average annual pay is \$134,393. It is worth noting that Table 3 shows that employment grew by 5.7 percent a year, according to the EDD LMID.

TABLE 3
SF BAY AREA EDD-LMID REFINERY TRENDS, 1999-2009

	1999	2004	2009	99-04 CAGR	04-09 CAGR
Establishments	28	35	28	4.6%	-4.2%
Employment	6,779	6,335	8,352	-1.3%	5.7%
Payroll	\$686,031,847	\$754,700,581	\$1,122,391,845	1.9%	8.3%
Average Pay	\$101,200	\$119,132	\$134,393	3.3%	2.4%

Source: Applied Development Economics, Inc., based on California EDD LMID

Table 4 below identifies the businesses in the Bay Area that are refineries that would be subject to the rule. The list comes from the California Energy Commission, which also included each refinery's respective throughput capacity. Of the five operating refineries in the region, Chevron is the largest, refining 242,900 42-gallon barrels per day. The sole entity expected to have compliance costs related to the proposed CO boiler NOx emission limits is Shell Oil in Martinez, which refines 155,600 barrels per day.

TABLE 4
BAY AREA REFINERIES (CALIFORNIA ENERGY COMMISSION) AND CRUDE OIL CAPACITY

Refinery	Barrels Per Day
Chevron U.S.A. Inc., Richmond Refinery	242,901
Tesoro Refining & Marketing Company, Golden Eagle (Avon/Rodeo) Refinery	166,000
Shell Oil Products US, Martinez Refinery	155,600
Valero Benicia Refinery	144,000
ConocoPhillips, Rodeo San Francisco Refinery	76,000

Source: Applied Development Economics, Inc., based on California Energy Commission

SECTION FIVE: SOCIOECONOMIC IMPACT ANALYSIS

This section of the report analyzes socioeconomic impacts stemming from changes to the Rule 9-10. If the proposed amendments are adopted, the District estimates that the impacted source will incur less than \$3 million in annual costs. This section of the report compares these annual costs against estimated revenues and net profits generated by the affected source, which is the Shell Oil Refinery in Martinez. The results are summarized in Table 5 below.

The Shell Oil Refinery's throughput capacity is approximately 155,600 42-gallon barrels a day, according to the State of California. Assuming a 90 percent utilization rate, and further estimating the price of wholesale gasoline at \$1.812 per gallon, wholesale diesel at \$2.569, and other products at \$1.655¹, we estimate the affected refinery generates \$3.5 billion in revenues a year, from which is generated \$246.1 million in net profits. When the annual cost stemming from the proposed amendments of \$3 million is compared against typical annual net profits, we obtain a cost-to-net profit ratio of less than one percent, or 1.2 percent.² As a result, impacts are less than significant. Moreover, because this establishment is not a small business, small businesses are not disproportionately impacted by the proposed amendments.

TABLE 5
SOCIOECONOMIC IMPACT ANALYSIS: PROPOSED
CHANGES TO REGULATION 9, RULE 10

Shell Oil Refinery	
Barrels Per Day	155,600
Est. Revenues	\$3.5 billion
Est. Net Profits	\$246.1 million
Annual Cost (Reg 9, Rule 10 change)	\$3 million
Cost to Net Profits	1.2%
Significant?	No

Source: Applied Development Economics, Inc.

¹Source: ADE, Inc., based on US Department of Energy, Energy Information Agency annual wholesale price for gas and diesel (2000-2009) in California.

² Source: net profit rate: ADE, Inc., based on US Internal Revenue Service ("SOI Tax Stats" 1994-2009): the long-term average annual after-tax net profit rate for oil refineries is approximately 7.0 percent, according to US IRS SOI data.

**Initial Study/Negative Declaration
for the
Amendments to
Bay Area Air Quality Management District
Regulation 9, Rule 10:
Nitrogen Oxides and Carbon Monoxide from
Boilers, Steam Generators and Process Heaters in Petroleum Refineries**

Prepared for:

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Contact: Julian Elliot
(415) 749-4705

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

Purpose of this Document

This Negative Declaration assesses the environmental impacts of the proposed adoption of amendments to Regulation 9, Rule 10 – Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries (Regulation 9-10) - by the Bay Area Air Quality Management District (BAAQMD or District). 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 rule amendments when determining whether to adopt them. The BAAQMD has prepared this Negative Declaration because no significant adverse impacts are expected to result from the proposed rule amendments.

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.

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.

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 of Regulation 9, Rule 10, describes the proposed rule amendments, and describes the area and facilities that would be affected by the amendments.
- 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.

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Chapter 2

Description of the Proposed Rule

BACKGROUND

The BAAQMD regulates nitrogen oxides (NO_x) emissions from boilers, steam generators, and process heaters that are used in petroleum refineries under Regulation 9, Rule 10, (Regulation 9-10). Regulation 9-10 currently imposes a 0.033 lb NO_x per million British Thermal Units (BTU) heat input (daily average) for each refinery operating within the District's jurisdiction. Regulation 9-10 was adopted on January 5, 1994 and amended on July 17, 2002. The regulation imposes a refinery-wide average NO_x emissions limit on refinery boilers, steam generators, and process heaters (excluding carbon monoxide (CO) boilers) that were permitted prior to the adoption of the rule (pre-1994 heaters). The NO_x limits were not applied to boilers, steam generators and process heaters that would be permitted after the rule was adopted (post-1994 heaters) because these devices would be subject to stringent NO_x limits as a result of the District's "best available control technology" (BACT) requirements. The rule also imposes a specific (not average) NO_x emission limit on all CO boilers.

The NO_x limits in Regulation 9-10 for pre-1994 heaters, combined with BACT requirements for post-1994 heaters, resulted in significant reductions in NO_x emissions from Bay Area refinery operations beginning in 2002. Currently, 81 percent of the total rated capacity of refinery boilers, steam generators, and process heaters in the Bay Area is equipped with NO_x controls of some kind.

In the Bay Area 2005 Ozone Strategy, Further Study Measure 14 (FS-14), and subsequently, Control Measure SSM 10 of the Bay Area 2010 Clean Air Plan (SSM 10), the District committed to study ways that the existing Regulation 9-10 emissions limits might be tightened to achieve further NO_x emissions reductions. As explained in the Ozone Strategy, however, the District did not commit to continue evaluation of any measure if it was determined to be technically infeasible, not cost-effective or inappropriate for any other reason, nor did the District commit to move forward with a measure that was deemed feasible as a result of its further study, unless and until the District conducted a rulemaking process.

OBJECTIVES

In FS-14, the District suggested review of NO_x emission requirements for boilers, steam generators, and process heaters in petroleum refineries. The objective of the proposed amendments for Regulation 9-10 is to further reduce NO_x emissions from CO boilers in order to reduce ozone levels in the Bay Area and reduce transport of air pollutants to neighboring air basins. The Bay Area and neighboring regions are not yet in attainment with the State one-hour ozone standard, so further reductions in ozone precursors, NO_x

and reactive organic gases (ROG), are needed. Additional NOx reductions can be achieved by flame modification techniques, low and ultra-low NOx burners, resulting in a lower and more uniform flame temperature, which reduces formation of NOx, or by add-on controls such as selective catalytic or non-catalytic reduction, which react NOx emissions with ammonia to produce nitrogen gas (N₂) and water (H₂O) vapor.

The U.S. Environmental Protection Agency (U.S. EPA) has set primary national ambient air quality standards for ozone and other air pollutants to define the levels considered safe for human health. The California Air Resources Board (CARB) has also set a California ozone standard. The Bay Area is a non-attainment area for the state one-hour ozone standard and federal eight-hour ozone standard. Under State law, ozone non-attainment areas must prepare plans showing how they will attain the state standard. The Bay Area 2010 Clean Air Plan is the most recent planning document for the State one-hour ozone standard. Because the Bay Area is a marginal non-attainment area for the national one-hour standard, the least severe non-attainment classification, the BAAQMD is not required to prepare an attainment plan for the national standard. In addition, NOx emissions react in the atmosphere to form secondary particulate matter. The Bay Area is not in attainment of California ambient air standards for particulate matter of 10 microns or less (PM10) and is also not in attainment with California or federal ambient air standards for particulate matter of 2.5 microns or less (PM2.5).

RULE AMENDMENTS UNDER CONSIDERED

District staff is currently recommending amending Regulation 9-10 in three ways: (1) by making NOx limits for CO boilers more stringent; (2) by expanding the applicability of the rule to smaller natural gas and LPG-fired devices; and (3) by simplifying and clarifying compliance calculation procedures.

TABLE 2-1

Current and Proposed CO Boiler NOx Limits

Current NOx Limit (ppmv @ 3% oxygen)	Proposed NOx Limits (Effective 1/1/2015) (ppmv @ 3% oxygen)	
Any CO boiler	CO boiler (except Partial-Burn)	Partial-Burn CO boiler
Operating-day average: 150	Op/day avg: 150	Op day avg: 125
Calendar year average: none	Calendar yr avg: 45	Calendar yr avg: 85

First, since 1994, some CO boilers have demonstrated the ability to operate at significantly lower NOx levels than the current Regulation 9-10 limit of 150 parts per million by volume (ppmv). As a result, the District staff recommends amending Regulation 9-10 to impose more stringent NOx limits on CO boilers. Under the proposed rule, the current daily limit of 150 ppmv would still apply to CO boilers, except for partial-burn CO boilers which would have a daily limit of 125 ppmv. A new calendar-

year average emission limit is proposed for CO boiler of 45 ppmv, except for partial-burn CO boilers which would have a limit of 85 ppmv, as illustrated in Table 2-1.

The proposed operating day and calendar year average limits are intended to come as close as possible to limits imposed as best available control technology (BACT) for two new CO boilers at the Valero Benicia refinery, while remaining cost-effective.

Second, the District proposes narrowing the exemption in Regulation 9-10-110.1 so that pre-1994 heaters fired with natural gas or LPG fuel with a rated heat input between 2 and 10 MMBTU/hr would be subject to the rule. District staff does not anticipate that the change will require any refinery to add NO_x controls since emissions from these small heaters are negligible; however, the change would make refinery heaters regulated in the same size range as non-refinery heaters in Regulation 9-7.

Third, the District proposes changes to the emission compliance calculations that are applied to heaters that are in start-up or shutdown mode, that are temporarily out of service, or that are in a curtailed operating mode. These changes retain the principle that heaters in these non-standard operating modes may use different data than would be used under normal operating conditions to calculate the emission contribution from the heater.

District staff is not currently proposing further NO_x emissions controls on pre-1994 heaters.

PROPOSED METHOD OF CONTROL

Controlling Emissions

A refinery heater combustion process involves the combustion of a hydrocarbon fuel in the presence of oxygen (in the combustion air stream). The carbon in the fuel is oxidized to carbon dioxide (CO₂) and the hydrogen in the fuel becomes water vapor (H₂O). By-products of the process include: CO, NO_x, sulfur oxides (SO_x), volatile organic compounds (VOCs), and particulate matter (PM). NO_x and VOC compounds react in the lower atmosphere to form ozone. NO_x, SO_x, VOCs, and ammonia may react to form fine particulate matter. NO_x emissions that contribute to ozone formation are the focus of Regulation 9-10, FS-14 and SSM 10.

NO_x Emissions

The nitrogen contained in the NO_x emissions from a refinery heater combustion process comes from one of two sources: (1) elemental nitrogen (N) that is chemically bound to the fuel molecules, and (2) nitrogen gas (N₂) that is part of the combustion air (air contains about 79 percent N₂ by volume). NO_x formed from elemental, fuel-bound nitrogen is called “fuel NO_x”. Because natural gas and most other gaseous fuels have negligible levels of fuel-bound nitrogen, and because these are the primary fuels used in refinery heaters, fuel NO_x is not a significant contributor to NO_x emissions from refinery heaters. NO_x formed from gaseous nitrogen that is introduced into the combustion

process with the combustion air stream is the source of “thermal NOx” and “prompt NOx”. Thermal NOx is created by a set of reactions that are affected primarily by heater temperature and excess oxygen concentration, with higher temperatures (especially greater than 2800 degrees F) and higher oxygen concentrations causing higher NOx generation rates. Prompt NOx is created by a set of reactions that are affected primarily by the air-fuel ratio in the combustion zone, with fuel-rich conditions promoting NOx formation. Thermal NOx is the primary component of NOx emissions from refinery heaters, although prompt NOx must be controlled to achieve overall NOx emission rates of 20 to 30 ppmv or less.

NOx Controls

Uncontrolled heaters use conventional burners that are not designed to achieve any particular level of NOx emissions. Conventional burners are designed to produce a small, hot flame by quickly and completely mixing fuel and combustion air. Such a flame allows the heater firebox to be as small as possible, and to be stable under a wide firing range and during fast changes in load.

The first level of control for a refinery heater is the use of low-NOx burners (LNB) which use staged-combustion techniques to suppress the formation of thermal NOx. Instead of mixing fuel and combustion air as quickly as possible, LNBs perform combustion in at least two stages, with the fuel-air ratio carefully controlled and the fuel and combustion air mixed thoroughly. Thorough mixing prevents combustion hot spots where NOx formation is high, while staged combustion produces a larger flame with a lower average temperature. Since the thermal NOx formation rate is highly dependent on combustion temperature, eliminating hot-spots and performing combustion at lower average temperatures reduces thermal NOx formation. Some refinery heaters continue to use conventional burners rather than LNBs because the firebox will not accommodate a larger flame. LNBs typically provide a 50 percent reduction of NOx formation compared to conventional burners. Implementation of the Phase 1 requirements of Regulation 9-10 in 1994 resulted in an average refinery heater emission rate (excluding CO boilers) that was no higher than if all refinery heaters used this first level of NOx control.

Ultra-low-NOx burners (ULNB), in addition to suppressing thermal NOx formation, also suppress prompt NOx formation by avoiding fuel-rich conditions and reducing combustion temperatures. ULNBs use internal exhaust gas recirculation, where a portion of the combustion gases that are leaving the combustion zone are injected back into the combustion zone to cool the combustion temperature. ULNBs typically provide a 75 percent reduction of NOx formation compared to conventional burners.

Flue gas recirculation (FGR) reduces flame temperature by diverting some of the combustion exhaust gas back to the burner inlet, where it is mixed with the fuel and combustion air. Unlike the internal gas recirculation that occurs in ULNBs, FGR diverts exhaust gas outside of the firebox. The exhaust gas, while hot, is cooler than the combustion temperature, so FGR reduces the average flame temperature. The exhaust gas also has a reduced oxygen content compared to ambient combustion air, so the

amount of excess oxygen available to form NO_x is reduced. FGR may be used by itself or in combination with LNBs or ULNBs and typically will achieve an additional 10 percent reduction of NO_x formation compared to LNBs or ULNBs by themselves. However, FGR imposes an efficiency penalty because it requires the use of an additional blower to re-circulate exhaust gases.

A technique similar to FGR is the injection of water or steam into the combustion zone to lower combustion temperature. This technique is rarely used because it causes a large efficiency loss.

NO_x emissions can also be reduced with add-on controls that convert previously-formed NO_x to N₂ by reacting NO_x with ammonia (NH₃), with or without the use of a catalyst. These post combustion controls are known as SCR and SNCR systems, respectively. NO_x catalysts operate well in a narrow temperature band, so SCR systems are less suitable in applications where a heater operates over a wide load range, which results in a wide temperature variation at the exhaust catalyst.

Compliance with the current NO_x standards in Regulation 9-10 has been achieved through the use of LNBs, ULNBs, and SCR at selected heaters. No new NO_x control technologies have become available since the Phase 1 NO_x controls in Regulation 9-10 were completely implemented in 2002. Although the performance of LNBs, ULNBs, and SCR has improved somewhat since 2002, much of this improvement has been limited to natural gas-fired boilers.

A total of six refinery heaters (at three refineries, referred to herein as Refinery #1, #2, and #3) are classified as “CO boilers”. CO boilers are not regulated under the refinery-wide NO_x limit (0.033 lb NO_x per million BTU heat input for each refinery as a daily average). Instead, CO boilers have individual NO_x limits of 150 ppmv, expressed as a daily average. Although some CO boilers may have emissions that approach 150 ppmv on a short-term basis, all of them can operate at a lower NO_x level, when considered on a long-term basis. For that reason, the BAAQMD is proposing to add a lower, 365-day average limit to the current daily average limit (and to reduce the daily limit for some CO boilers). See Table 2-1 for proposed NO_x emissions limits.

Starting in 2011, Refinery #3 will operate new CO boilers and take their existing CO boilers out of service. The new CO boilers will not be subject to Regulation 9-10. Therefore, 2 refineries (#1 and #2) will be affected by the proposed changes in CO boiler NO_x limits.

CO Emissions and Controls

Carbon monoxide is produced by the incomplete oxidation of carbon in a fossil fuel to CO rather than to CO₂. Because the District is in attainment status with all state ambient air quality standards for CO and is a “maintenance area” with respect to federal CO standards, Regulation 9-10 limits the concentration of CO in the exhaust stream of

refinery heaters to 400 ppmv, but does not attempt to achieve further CO emission reductions. All other California air districts that address CO emissions from combustion sources impose the same 400 ppmv standard.

Burner-based NO_x control strategies, which limit NO_x formation by limiting combustion temperature, tend to also limit complete oxidation of carbon to CO₂, thereby increasing the CO formation rate. All refinery heaters, including CO boilers, may be operated at CO emission levels below 400 ppmv through good operating practice.

POTENTIAL EMISSION REDUCTIONS

When Regulation 9-10 was adopted in 1994, the typical refinery heater operated at a NO_x emission rate of 100 ppmv to 140 ppmv, with higher emissions at CO boilers. Most of these existing heaters were old enough that they had not triggered the District's BACT requirements, which apply to devices installed or modified after 1982. In fact, almost all of these heaters operated without NO_x controls of any kind. In 1994, total NO_x emissions from these heaters were estimated to be about 31 tons/day, and adoption of the Regulation 9-10 limits in 1994 ("Phase 1" limits) was expected to result in a 21 tons/day reduction in NO_x. However, it appears that emissions from these heaters may have been underestimated in 1994. The current emissions and emission rates for these heaters, as well as 1994 emission rate data, suggest that total 1994 NO_x emissions were in fact about 40 tons/day and that implementation of Phase 1 NO_x controls achieved a NO_x reduction of about 26 ton/day, which represents about a 65 percent emission reduction.

Table 2-2 shows current refinery emissions at each of the five Bay Area refineries, based on permit data for 2008. The current total NO_x emissions for heaters subject to Regulation 9-10 (i.e., pre-1994 heaters and CO boilers) equaled 10.9 tons/day. Post-1994 heaters that are not subject to the rule contributed another 0.1 ton/day of NO_x emissions.

TABLE 2-2**2008 Refinery NO_x Emissions – Boilers, Steam Generators
and Process Heaters (tons/year)**

Refinery	Pre-1994 Heaters Subject to Reg 9-10	CO Boilers Subject to Reg 9-10	Post-1994 Heaters NOT Subject to Reg 9-10
#1	535	NA	7
#2	460	516	NA
#3	169	NA	18
#4	858	600	11
#5	491	346	1
Total (tons/yr)	2513	1462	37
Total (tons/day)	6.9	4.0	0.1

As shown in Table 2-2, total NO_x emissions from CO boiler emissions in 2008 were 4.0 tons/day. The Air District estimates that the NO_x emission reduction from the adoption of the proposed CO boiler NO_x limits will be 1.6 ton/day.

AFFECTED AREA

The proposed rule amendments would apply to facilities under BAAQMD jurisdiction. 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.

See Figure 1 depicting the area covered by the Bay Area Air Quality Management District. The refineries that fall within the District are located in Contra Costa and Solano County adjacent to the San Francisco Bay.

The Chevron refinery is located in the City of Richmond in Contra Costa County. The refinery lies to the west of Castro Street and mostly to the north of Interstate 580 and some storage tanks and the wharf lie south of Interstate 580. The refinery occupies most of the Point San Pablo Peninsula and covers approximately 2,900 acres. It is generally bordered on the north and south by the residential communities of North Richmond and Point Richmond, respectively. East of the refinery, across Castro Street and Garrard Boulevard, are the Iron Triangle and Santa Fe communities and central and downtown Richmond. San Francisco and San Pablo Bays form the western border of the refinery.

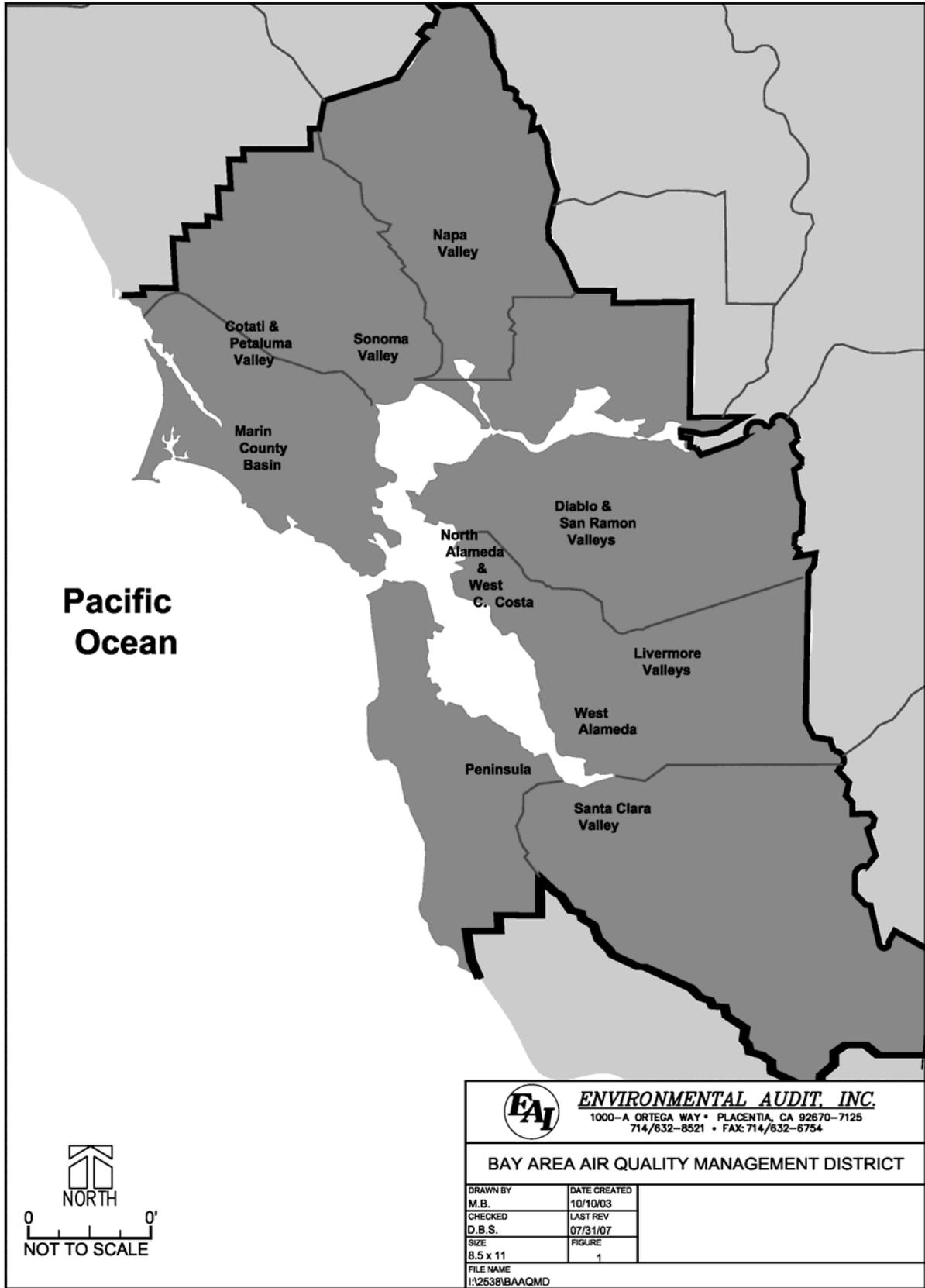
The Valero refinery is located on about 800 acres of land within the City of Benicia. The refinery is located about 0.5 mile north of Interstate 780 and immediately west of Interstate 680. Valero is bisected in a north-south direction by East Second Street. The refinery is bounded on the north by residential development and open space, on the east by an industrial park and Interstate 680, on the south by industrial development, and on the west by residential development.

The ConocoPhillips refinery is located on approximately 1,100 acres of land in the unincorporated area northeast of the community of Rodeo. The refinery property is bounded on the north by San Pablo Bay and a marine terminal, on the east by agricultural lands, on the south and southwest by a residential area and on the west by San Pablo Bay. Interstate 80 runs north-south through the refinery dividing the eastern portion of the refinery.

The Shell Oil refinery is located on about 880 acres in Contra Costa County, partially within the City of Martinez. The main portion of the refinery is bordered by Marina Vista Boulevard to the north, Interstate 680 to the east, Pacheco Boulevard to the South, Merrithew Avenue to the west, and the Shell marine terminal to the northwest. Land use north of the refinery is a combination of industrial and open space; northeast of the refinery is an environmental conservation district; east is residential land use with some light industrial areas; land use south and southwest of the refinery is residential. The Martinez reservoir is also located to the south of the refinery.

The Tesoro refinery is located in Contra Costa County, within the community of Avon. The refinery is located south of Suisun Bay and is bordered by Waterfront road to the north and Solano Way to the west. Land use south and east of the refinery is a combination of industrial and open space. The Tesoro refinery is located east of the Shell Martinez refinery. The Mallard reservoir is also located southeast of the refinery.

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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:	Bay Area Air Quality Management District (BAAQMD) Proposed Amendments to Regulation 9, Rule 10.
Lead Agency Name:	Bay Area Air Quality Management District 939 Ellis Street
Lead Agency Address:	San Francisco, California 94109
Contact Person:	Julian Elliot
Contact Phone Number:	415-749-4705
Project Location:	This rule amendment 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 939 Ellis Street
Project Sponsor's Address:	San Francisco, California 94109
General Plan Designation:	Rule 9-10 applies to boilers, steam generators, and process heaters that are used in petroleum refineries throughout the District, which are primarily located in industrial areas.
Zoning:	Rule 9-10 applies to boilers, steam generators, and process heaters at petroleum refineries throughout the District, which are primarily located in industrial areas.
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 a "✓" 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.

- | | | |
|---|---|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology / Soils |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Hydrology / Water Quality |
| <input type="checkbox"/> Land Use / Planning | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Population / Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Transportation / Traffic | <input type="checkbox"/> Utilities / Service Systems | <input type="checkbox"/> 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 tiering, Program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c)(3)(D). In this case, a brief discussion should identify the following:
 - a) Earlier Analysis Used. Identify and state where they are available for review.
 - b) Impacts Adequately Addressed. Identify which effects from the 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.

ENVIRONMENTAL CHECKLIST AND DISCUSSION

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less-than-Significant Impact	No Impact
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I. AESTHETICS.

Would the project:

a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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 proposed rule amendments focus on NOx emissions from boilers, steam generators, and process heaters in petroleum refineries. Rule amendments for these boilers and heaters will affect five refineries currently operating within the Bay Area. Scenic highways or corridors are generally not located in the vicinity of these refineries.

Regulatory Background

Visual resources are generally protected by the City and/or County General Plans through land use and zoning requirements.

Impacts

I a-d. The proposed amendments to Regulation 9-10 would further reduce NO_x emissions from boilers, steam generators, and process heaters in petroleum refineries in order to reduce ozone levels in the Bay Area and reduce transport of air pollutants to neighboring air basins. The proposed amendments are not expected to require the construction of any major new structures that would be visible to areas outside of existing refinery boundaries, and are not expected to result in any adverse aesthetic impacts. Once completed, most of the modifications are not expected to be visible as they would involve new burners, emission control equipment, or replacement of existing equipment with new equipment, which would not be visible to surrounding areas. The boilers and heaters affected by the proposed rule amendments are located within existing refineries within the Bay Area, which are not typically located in areas with scenic vistas. The proposed amendments to Regulation 9-10 are not expected to require substantial construction of any major new structures that would be visible to areas outside of the refineries, and are not expected to result in adverse aesthetic impacts. The refineries may require new air pollution control equipment such as SCR or SNCR which could be visible to surrounding areas. However, the refinery facilities are all industrial facilities located within industrial areas. Once completed, most of the modifications are not expected to be visible. Therefore, the installation of new equipment within an industrial area is not expected to generate significant adverse impacts on aesthetics. The proposed amendments to Regulation 9-10 would also not require any new sources of light or glare, since new equipment would largely replace existing equipment.

Based upon these considerations, no significant adverse aesthetic impacts are expected from the implementation of the amendments to Regulation 9-10.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

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. Some of these agricultural lands are under Williamson Act contracts.

The proposed amendments will affect boilers, steam generators, and process heaters at existing refineries within the Bay Area. Agricultural or forest resources are currently not located within the confines of the refineries located 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.

Discussion of Impacts

II a-e. The proposed amendments to Regulation 9-10 would further reduce NO_x emissions from boilers, steam generators, and process heaters in petroleum refineries in order to reduce ozone levels in the Bay Area and reduce transport of air pollutants to neighboring air basins. The refineries are located in industrial areas where no agricultural or forest resources are located. The five refineries operating within the Bay Area may comply with Regulation 9-10 by using either LNB, ULNB, SCR, SNCR, or a combination of these technologies, thus reducing the production of NO_x. These changes would be made within the confines of the existing refinery facilities. No development outside of existing refinery facilities would be required by the proposed amendments to Regulation 9-10. Further, it is doubtful that any major modifications at the refineries would be required, rather fewer emission offsets will be produced.

Based upon these considerations, no significant adverse impacts to agricultural and forest resources are expected from the implementation of the proposed rule amendments.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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, CO, nitrogen dioxide (NO₂), PM₁₀, PM_{2.5}, sulfur dioxide (SO₂) 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 monitors levels of various criteria pollutants at 24 monitoring stations. The 2008 air quality data from the BAAQMD's monitoring stations are presented in Table 3-2.

Air quality conditions in the San Francisco Bay Area have improved since the 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 District is in attainment of the State and federal ambient air quality standards for CO, NO_x, and SO₂. The District is not considered to be in attainment with the State PM₁₀ and PM_{2.5} standards.

The 2008 air quality data from the BAAQMD monitoring stations are presented in Table 3-2. All monitoring stations were below the state standard and federal ambient air quality standards for CO, NO₂, and SO₂. The federal 8-hour ozone standard was exceeded 12 days in the District in 2008, while the state standard was exceeded on 20 days. The Bay Area is designated as a non-attainment area for the California 1-hour ozone standard. The State 1-hour ozone standard was exceeded on 9 days in 2008 in the District. The ozone standards are most frequently exceeded in the Eastern District (Livermore, Concord, and Bethel Island) (see Table 3-2).

All monitoring stations were in compliance with the federal PM₁₀ standards. The California PM₁₀ standards were exceeded on 5 days in 2008, most frequently in Bethel Island. The Air District exceeded the federal PM_{2.5} standard on 12 days, most frequently in Vallejo, in 2008 (see Table 3-2).

TABLE 3-1

Federal and State Ambient Air Quality Standards

AIR POLLUTANT	STATE STANDARD CONCENTRATION/ AVERAGING TIME	FEDERAL PRIMARY STANDARD CONCENTRATION/ AVERAGING TIME	MOST RELEVANT EFFECTS
Ozone	0.09 ppm, 1-hr. avg. > 0.070 ppm, 8-hr	0.075 ppm, 8-hour avg. >	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr avg. > 20 ppm, 1-hr avg. >	9 ppm, 8-hour avg.> 35 ppm, 1-hour avg.>	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.25 ppm, 1-hr avg. >	0.053 ppm, ann. avg.> 0.100 ppm, 1-hour avg.>	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0.04 ppm, 24-hr avg.> 0.25 ppm, 1-hr. avg. >	0.03 ppm, ann. avg.> 0.14 ppm, 24-hour avg.> 0.075 ppm, 1-hour avg.>	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM10)	20 µg/m ³ , annarithmic mean > 50 µg/m ³ , 24-hr average>	50 µg/m ³ , annual arithmetic mean > 150 µg/m ³ , 24-hour avg.>	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Suspended Particulate Matter (PM2.5)	12 µg/m ³ , annual arithmetic mean>	15 µg/m ³ , annual arithmetic mean> 35 µg/m ³ , 24-hour average>	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.
Sulfates	25 µg/m ³ , 24-hr avg. >=		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/m ³ , 30-day avg. >=	1.5 µg/m ³ , calendar quarter> 0.15 ug/m ³ , rolling 3-month avg.>	(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)		Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent

**TABLE 3-2
Bay Area Air Pollution Summary - 2008**

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 Days	Cal Days	3-Yr Avg	Max 1-hr	Max 8-hr	Nat/Cal Days	Max 1-hr	Ann Avg	Nat/Cal Days	Max 24-hr	Ann Avg	Nat/Cal Days	Ann Avg	Max 24-hr	Nat Days	Cal Days	Max 24-hr	Nat Days	3-Yr Avg	Ann Avg	3-Yr Avg
North Counties	(ppb)						(ppm)			(ppb)			(µm ³)				(µm ³)							
Napa	107	1	77	2	2	61	3.2	1.8	0	64	10	0	-	-	-	21.6	50	0	0	-	-	-	-	-
San Rafael	85	0	69	0	0	50	1.8	1.1	0	56	13	0	-	-	-	18.6	41	0	0	-	-	-	-	-
Santa Rosa*	76	0	64	0	0	51	3.5	1.5	0	49	11	0	-	-	-	*	*	*	*	30.8	0	30.4	8.6	8.4
Vallejo*	109	1	75	0	3	60	2.7	2.3	0	67	10	0	4	1.2	0	*	*	*	*	50.0	7	36.4	9.9	9.8
Coast/Central Bay																								
Berkeley*	53	0	49	0	0	*	2.8	1.7	0	55	14	0	4	1.3	0	22.5	44	0	0	-	-	-	-	-
Oakland*	86	0	64	0	0	*	3.0	1.6	0	70	15	0	-	-	-	-	-	-	-	30.1	0	*	9.5	*
Richmond	-	-	-	-	-	-	-	-	-	-	-	-	8	1.5	0	-	-	-	-	-	-	-	-	-
San Francisco	82	0	66	0	0	46	5.7	2.3	0	62	16	0	5	1.5	0	22.0	41	0	0	29.4	0	26.3	9.8	9.4
San Pablo	84	0	63	0	0	50	2.5	1.3	0	67	12	0	4	1.4	0	20.9	44	0	0	-	-	-	-	-
Eastern District																								
Benicia*	123	2	86	3	7	*	1.0	0.8	0	38	7	0	5	1.6	0	18.1	52	0	1	-	-	-	-	-
Bethel Island	109	4	90	4	10	76	1.5	1.1	0	41	7	0	4	1.4	0	24.1	77	0	3	-	-	-	-	-
Concord	119	3	88	6	8	78	1.6	1.1	0	50	10	0	4	1.2	0	17.5	51	0	1	60.3	3	34.6	9.3	9.0
Crockett	-	-	-	-	-	-	-	-	-	-	-	-	13	2.1	0	-	-	-	-	-	-	-	-	-
Fairfield	116	2	90	1	2	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Livermore*	141	5	110	6	8	81	2.4	1.4	0	58	13	0	-	-	-	*	*	*	*	38.6	2	36.2	10.1	9.6
Martinez	-	-	-	-	-	-	-	-	-	-	-	-	6	1.7	0	-	-	-	-	-	-	-	-	-
Pittsburg*	106	1	83	1	2	71	2.8	1.4	0	56	10	0	6	1.8	0	*	*	*	*	-	-	-	-	-
South Central Bay																								
Fremont*	112	1	78	1	3	61	1.9	1.4	0	62	14	0	-	-	-	*	*	*	*	28.6	0	28.8	9.4	9.5
Hayward	114	1	86	1	3	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redwood City*	82	0	69	0	0	53	4.3	1.9	0	69	14	0	-	-	-	*	*	*	*	27.9	0	29.3	9.1	9.0
San Leandro	96	1	68	0	0	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara Valley																								
Gilroy*	103	1	79	1	4	73	-	-	-	-	-	-	-	-	-	-	-	-	-	25.5	0	*	8.7	*
Los Gatos	122	2	97	2	6	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose Central	118	1	80	2	3	65	3.3	2.5	0	80	17	0	-	-	-	23.4	57	0	1	41.9	5	35.8	11.5	11.0
San Martin	123	2	77	2	5	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunnyvale	93	0	76	1	2	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Days over Standard		9		12	20				0			0			0			0	5		12			

*PM_{2.5} monitoring at Gilroy began Mar. 1, 2007; Benicia and Berkeley sites opened in 2007, Apr. 1 and Dec. 13 respectively; and Oakland site opened Nov. 1, 2007, no 3-year ozone or PM_{2.5} statistics available. PM₁₀ monitoring was discontinued on June 30, 2008 at Fremont, Livermore, Pittsburg, Redwood City, Santa Rosa, and Vallejo. SO₂ monitoring was discontinued at San Francisco Dec. 31, 2008.

(ppb) = parts per billion (ppm) = parts per million, (µg/m³) = micrograms per cubic meter.

TABLE 3-3
Bay Area Air Quality Summary
Days over standards

YEAR	OZONE			CARBON MONOXIDE				NO _x	SULFUR DIOXIDE		PM10		PM2.5
	1-Hr	8-Hr	8-Hr*	1-Hr		8-Hr		1-Hr	24-Hr		24-Hr*		24-Hr**
	Cal	Cal	Nat	Nat	Cal	Nat	Cal	Cal	Nat	Cal	Nat	Cal	Nat
1999	20	-	9	0	0	0	0	0	0	0	0	12	-
2000	12	-	4	0	0	0	0	0	0	0	0	7	1
2001	15	-	7	0	0	0	0	0	0	0	0	10	5
2002	16	-	7	0	0	0	0	0	0	0	0	6	7
2003	19	-	7	0	0	0	0	0	0	0	0	6	0
2004	7	-	0	0	0	0	0	0	0	0	0	7	1
2005	9	9	1	0	0	0	0	0	0	0	0	6	0
2006	18	22	12	0	0	0	0	0	0	0	0	15	10
2007	4	9	1	0	0	0	0	0	0	0	0	4	14
2008	9	20	12	0	0	0	0	0	0	0	0	5	12

* Ozone exceedance days for 2008 reflect new U.S.EPA standard of 0.075 ppm.
 ** PM2.5 exceedance days beginning in 2006 reflect new U.S.EPA standard of 35 µg/m³.

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, 2003 Annual Report (BAAQMD, 2007) and summarized in Table 3-4. The 2003 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 1,1,1-trichloroethane, methylene chloride, and perchloroethylene. Table 3-4 contains a summary of ambient air toxics listed by compound.

TABLE 3-4

Summary of 2003 BAAQMD Ambient Air Toxics Monitoring Data

Compound	LOD (ppb) ⁽¹⁾	% of Samples < LOD ⁽²⁾	Max. Conc. (ppb) ⁽³⁾	Min. Conc. (ppb) ⁽⁴⁾	Mean Conc. (ppb) ⁽⁵⁾
Acetone	0.30	0	121.4	0.6	6.80
Benzene	0.10	1.78	2.4	0.5	0.401
1,3-butadiene	0.15	75.7	0.89	0.075	0.12
Carbon tetrachloride	0.01	0	0.16	0.09	0.108
Chloroform	0.02	62.5	1.47	0.01	0.024
Ethylbenzene	0.10	44.2	0.90	0.05	0.135
Ethylene dibromide	0.02	100	0.01	0.01	0.01
Ethylene dichloride	0.10	100	0.05	0.05	0.05
Methylene chloride	0.50	82.9	3.40	0.25	0.356
Methyl ethyl ketone	0.20	7.7	5.80	0.1	0.496
Metyl tert-butyl ether	0.30	32.9	4.80	0.15	0.532
Perchloroethylene	0.01	42.4	0.28	0.005	0.026
Toluene	0.10	0.2	6.0	0.05	1.062
1,1,1-Trichloroethane	0.05	72.3	2.47	0.025	0.084
Trichloroethylene	0.05	93.8	0.33	0.025	0.029
Trichlorofluoromethane	0.01	0	.046	0.18	0.266
1,1,2-trichlorotrifluoroethane	0.01	0	1.16	0.06	0.077
Vinyl chloride	0.30	100	0.15	0.15	0.15
m/p-xylene	0.10	2.8	3.40	0.05	0.535
o-xylene	0.10	27.9	1.30	0.05	0.186

NOTES: Table 3-4 summarizes the results of the BAAQMD gaseous toxic air contaminant monitoring network for the year 2003. These data represent monitoring results at 19 of the 20 separate sites at which samples were collected. Data from the Fort Cronkhite "clean-air" background site was not included. Data from the Oakland-Davie Stadium site was available from January through March.

- (1) "LOD" is the limit of detection of the analytical method used.
- (2) "% of samples < LOD" is the percent of the total number of air samples collected in 2003 that had pollutant concentrations less than the LOD.
- (3) "Maximum Conc." is the highest daily concentration measured at any of the 19 monitoring sites.
- (4) "Minimum Conc." is the lowest daily concentration measured at any of the 19 monitoring sites.
- (5) "Mean Conc." is the arithmetic average of the air samples collected in 2003 at the 19 monitoring sites. In calculating the mean, samples with concentrations less than the LOD were assumed to be equal to one half the LOD concentration.

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 22-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 District through federal, state, and local programs. At the federal level, TACs are regulated primarily under the authority of the CAA. Prior to the amendment of the CAA in 1990, source-specific National Emission Standards for Hazardous Air Pollutants (NESHAPs) were promulgated under Section 112 of the CAA for certain sources of radionuclides and Hazardous Air Pollutants (HAPs).

Title III of the 1990 CAA amendments requires U.S. EPA to promulgate NESHAPs on a specified schedule 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. All NESHAPs were to be promulgated by the year 2000. Specific incremental progress in establishing standards were to be made by the years 1992 (at least 40 source categories), 1994 (25 percent of the listed categories), 1997 (50 percent of remaining listed categories), and 2000 (remaining balance). The 1992 requirement was met; however, many of the four-year standards were not promulgated as scheduled. Promulgation of those standards has been rescheduled based on court ordered deadlines, or the aim to satisfy all Section 112 requirements in a timely manner.

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 18 TACs, and CARB adopted a regulation designating all 189 federal HAPs as TACs.

Control of TACs Under the Air Toxics "Hot Spots" Act: The Air Toxics Hot Spot Information and Assessment Act of 1987 (AB 2588) (California Health and Safety Code §39656) 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.

Discussion of Impacts

III a. Regulation 9-10 was adopted on January 5, 1994, and amended on July 17, 2002. The objectives of the proposed rule amendments are to implement Control Measure SSM 10 of the Bay Area 2010 Clean Air Plan (SSM 10) in order to help reduce NO_x emissions from refinery boilers, steam generators, and process heaters, thus, tightening NO_x emission limits existing in Regulation 9-10 to further reduce ozone concentrations in the Bay Area. Because the proposed amendments would directly implement a further study measure in the 2005 Ozone Strategy, the proposed amendments are in compliance with the local air quality plan and are expected to provide beneficial impacts associated with reduced ozone concentrations in the Bay Area.

III b. FS-14 in the Bay Area 2005 Ozone Strategy committed the BAAQMD to study ways that the existing Regulation 9-10 emissions limits might be tightened to achieve further NO_x emissions reductions from refinery boilers, steam generators, and process heaters. Compliance with the current NO_x standards in Regulation 9-10 has been achieved through the use of LNBS, ULNBS, and SCR at selected heaters. Control Measure SSM 10 incorporated the findings of FS-14.

To implement SSM 10, District staff is currently proposing to amend Regulation 9-10 in three ways: (1) by making NO_x limits for CO boilers more stringent; (2) by expanding the applicability of the rule to smaller natural gas and LPG-fired devices; and (3) by simplifying and clarifying compliance calculation procedures.

First, under the proposed rule, CO boilers, depending on their design, would retain a daily-average NOx limit, either the current limit of 150 ppmv or a lower limit of 125 ppmv. CO boilers, again depending on their design, would also have a calendar-year NOx limit of either 85 ppmv or 45 ppmv.

Second, the BAAQMD is proposing to narrow the exemption in Regulation 9-10-110.1 so that pre-1994 heaters with a rated heat input between 2 and 10 MMBTU/hr would be subject to the refinery-wide average NOx limit. This amendment is not expected to require any refinery to add NOx controls since emissions from these heaters is negligible; however, the change would make this exemption in Regulation 9-10-110.1 consistent with a similar exemption in Regulation 9-7-110.1.

Table 2-2 shows current refinery emissions at each of the five Bay Area refineries, based on permit data for 2008.

Total NOx emissions from CO boiler emissions in 2008 were 4.0 tons/day (see Table 2-2). The Air District estimates that the NOx emission reduction from the adoption of the proposed CO boiler NOx limits will be 1.6 ton/day. The overall impact of the proposed amendments to Regulation 9-10 is a decrease in NOx emissions. Therefore, no air quality standard is expected to be violated, and no contribution is expected to be made to an existing or projected air quality violation.

Secondary Particulate Emissions: Although most facilities are expected to comply with the proposed amendments to Regulation 9-10 in other ways, the use of SCR control equipment is also a feasible way to reduce NOx emissions and has become a widespread method of complying with NOx control rules. SCR technology uses ammonia as a catalyst, which could result in ammonia slip and secondary particulate formation.

Ammonia slip depends on a variety of factors including flow velocity through the SCR catalyst, ammonia to NOx molar ratio, temperature, and NOx inlet concentration. Better technology has allowed operators to control ammonia slip: (1) by ensuring adequate mixing of ammonia in the flue gas to maintain uniform ammonia injection; (2) maintaining the proper ammonia to NOx molar ratio; (3) decreasing the exhaust gas flow rate; (4) maintaining consistent exhaust flow velocity, and maintaining an optimal temperature regime (SCAQMD, 1990). The potential for secondary particulate emissions can be alleviated by limiting ammonia slip, which will minimize the potential for secondary particulate formation to less than significant. In addition, NOx reductions may also reduce ambient levels of fine particulate matter (PM_{2.5}) pollution, because a fraction of NOx emissions is ultimately converted to nitrate particles in the atmosphere. Secondary PM reductions resulting from the proposed amendments have been estimated at up to 0.2 ton/day. SCR is not expected to be used to comply with the proposed amendments to Regulation 9-10, so limiting the ammonia slip by air permit conditions in any potential SCR application is expected to reduce the potential for secondary particulate emission formation to less than significant.

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). The overall impact of the proposed amendments to Rule 9-10 is a decrease in NOx emissions and an associated decrease in ozone concentrations. Therefore, there will be no adverse incremental effect on air quality.

III d. Although most facilities are expected to comply with the proposed amendments to Regulation 9-10 with minor facility modifications, facilities could comply through the installation of LNBS, ULNBs, FGR, or SCR control equipment to reduce NOx emissions. SCR technology uses ammonia (a toxic air contaminant) as a catalyst and can potentially generate ammonia emissions through ammonia “slip.” Ammonia slip is limited to 10 ppm on air permits, which is expected to minimize the potential exposure to sensitive receptors so that no significant impacts associated with ammonia use are expected.

III e. The proposed project is not expected to result in an increase in odors. The proposed amendments to Regulation 9-10 propose to minimize NOx emissions from refinery boilers, steam generators and process heaters. Affected facilities are expected to comply by replacing or retrofitting boilers, steam generators and process heaters with BACT technologies. While the modifications to boilers, steam generators and process heaters will produce less NOx, they will continue to be fueled with refinery fuel gas and/or natural gas, which will not change the fuel source or result in odors produced during operation.

Odors associated with ammonia use in new SCR systems are expected to be minimal. Ammonia can have a strong odor; however, the proposed project is not expected to generate substantial ammonia emissions. Ammonia is generally stored in an enclosed pressurized tank, which prevents fugitive ammonia emissions. Ammonia emissions from the SCR unit stack (also referred to as ammonia slip) can be minimized through permit conditions. Since exhaust emissions are buoyant as a result of being heated, ammonia will disperse and ultimate ground level concentrations will be substantially lower than five ppm. Five ppm is below the odor threshold for ammonia of 20 ppm (OSHA, 2005). Potential odor impacts associated with the proposed amendments to Regulation 9-10 are not expected to be significant. Therefore, no significantly adverse incremental odor impacts are expected due to the proposed amendments to Regulation 9-10.

Based upon these considerations, no significant adverse air quality impacts are expected from the implementation of the proposed rule amendments. In fact, the proposed rule amendments are expected to provide beneficial air quality impacts by reducing NOx emissions and subsequent formation of ozone.

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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. A wide variety of biological resources are located within the Bay Area.

The areas affected by the proposed rule amendments are located in the Bay Area-Delta Bioregion (as defined by the State's Natural Communities Conservation Program). This Bioregion is comprised of a variety of natural communities, which range from salt marshes to chaparral to oak woodland. The areas affected by the proposed rule amendments are located within the boundaries of the five existing refineries within the Bay Area. The affected areas have been graded to develop various petroleum refining structures. Native vegetation, other than landscape vegetation, has generally been removed from areas to minimize safety and fire hazards. Any new development would fall under compliance with the City or County General Plans.

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 Game, 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 Game 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.

Discussion of Impacts

IV a – f. No impacts on biological resources are anticipated from the proposed rule amendments which would apply to existing refinery facilities. Existing boilers and heaters affected by the proposed amendment are located within the operating portions of refineries, which do not typically include sensitive biological species. The refineries areas have been graded and developed, and biological resources, with the exception of landscape species, have been removed. Any construction activities associated with the proposed amendments to Regulation 9-10 will be limited to within the boundaries of existing refineries and no development outside of existing facilities is expected.

Based upon these considerations, no significant adverse impacts to biological resources are expected from the implementation of the proposed amendments to Regulation 9-10.

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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 boilers, steam generators, and process heaters affected by the proposed rule amendments are within the five refineries located in the Bay Area. These facilities have already been graded to develop petroleum refining facilities and are typically surrounded by other industrial uses. Cultural resources are generally not located within these areas.

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 Sections 50020.1(k) and 5024.1(g).

Discussion of Impacts

V a – d. No impacts on cultural resources are anticipated from the proposed rule amendments that would apply to boilers, steam generators, and process heaters. The boilers, steam generators, and heaters affected by the proposed rule amendments already exist and are located within the confines of existing refinery facilities. Any modifications to existing equipment and any new equipment would be installed or modified within the boundaries of existing refineries. The existing areas have been graded and developed. No new construction would be required outside of the existing facility boundaries due to the adoption of the proposed amendments to Regulation 9-10. Therefore, no significant adverse impacts to cultural resources are expected due to the proposed amendments to Regulation 9-10.

Based upon these considerations, no significant adverse impacts to cultural resources are expected from the implementation of the proposed amendments to Regulation 9-10.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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 know 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 facilities affected by the proposed rule amendments are located primarily in industrial areas within the Bay Area.

The affected refineries with CO boilers and natural gas-fired heaters are 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 Strait 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.

Ground movement intensity during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geological material. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill. Earthquake ground shaking may have secondary effects on certain foundation materials, including liquefaction, seismically induced settlement, and lateral spreading.

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 Uniform 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.

Discussion of Impacts

VI a. The boilers and heaters affected by the proposed rule amendments already exist and are located within the confines of the five existing refinery facilities in the Bay Area. No new construction activities are expected to be required as a result of adopting the proposed amendments to Regulation 9-10, rather, old equipment would be required to be upgraded or existing heaters or boilers would need to be replaced. All new refinery structures must be designed to comply with the Uniform Building Code Zone 4 requirements. The local cities and counties are responsible for assuring that new construction complies with the Uniform Building Code as part of the issuance of the building permits and can conduct inspections to ensure compliance. The Uniform 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 Uniform Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The Uniform 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 Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site.

Any new refinery development would be required to obtain building permits, as applicable, for new structures at any site. The issuance of building permits from the local agency will assure compliance with the Uniform Building Code requirements which include requirements for building within seismic hazard zones. No significant impacts from seismic hazards are expected since no new development is required due to implementation of the proposed amendments to Regulation 9-10.

VI b. No new significant construction activities would be required due to the adoption of Regulation 9-10. Boilers and heaters affected by the proposed rule amendments already exist and are located within the confines of existing petroleum refining facilities. Any new boilers or heaters or any upgrades to

existing equipment would be installed within the confines of the existing boundaries in similar locations. Therefore, the proposed amendments are not expected to result in soil erosion or the loss of topsoil as no major construction activities would be required.

VI c – e. The boilers and heaters affected by the proposed rule amendments already exist and are located within the confines of existing refinery facilities so no major construction activities are expected. New structures are expected to be limited to new control equipment or heaters/boilers. Since the petroleum refining facilities already exist, no construction activities are expected to occur on a geologic unit or soil that is unstable or that would become unstable, or potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse. Likewise, no structure would be constructed on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property. Compliance with the Uniform Building Code would minimize the impacts associated with existing geological hazards. Construction would not affect 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, as the proposed rule amendments have no impact on wastewater treatment/disposal systems. Therefore, no adverse significant impacts to geology and soils are expected due to the proposed amendments to Regulation 9-10.

Based upon these considerations, no significant geology and soils impacts are expected from the implementation of the proposed rule amendments.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

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 CO₂, methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), 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.), have heavily contributed to the increase in atmospheric levels of GHGs. The GHG inventory for California is presented in Table 3-5 (CARB, 2007 and CARB, 2009). Approximately 80 percent of GHG emissions in California are from fossil fuel combustion and over 70 percent of GHG emissions are carbon dioxide emissions (see Table 3-5).

TABLE 3-5
California GHG Emissions and Sinks Summary
(Million Metric Tons CO₂ Equivalent)

Categories Included in the Inventory	1990 ⁽¹⁾	2006 ⁽²⁾
ENERGY	386.41	419.32
Fuel Combustion Activities	381.16	414.03
Energy Industries	157.33	160.82
Manufacturing Industries & Construction	24.24	19.03
Transport	150.02	184.78
Other Sectors	48.19	49.41
Non-Specified	1.38	2.16
Fugitive Emissions from Fuels	5.25	5.28
Oil and Natural Gas	2.94	3.25
Other Emissions from Energy Production	2.31	2.03
INDUSTRIAL PROCESSES & PRODUCT USE	18.34	30.22
Mineral Industry	4.85	5.92
Chemical Industry	2.34	0.37
Non-Energy Products from Fuels & Solvent Use	2.29	1.85
Electronics Industry	0.59	0.77
Product Uses as Substitutes for Ozone Depleting Substances	0.04	13.38
Other Product Manufacture & Use Other	3.18	1.67
Other	5.05	6.25
AGRICULTURE, FORESTRY, & OTHER LAND USE	19.11	25.10
Livestock	11.67	15.68
Land	0.19	0.19
Aggregate Sources & Non-CO ₂ Emissions Sources on Land	7.26	9.24
WASTE	9.42	9.23
Solid Waste Disposal	6.26	6.31
Wastewater Treatment & Discharge	3.17	2.92
EMISSION SUMMARY		
Gross California Emissions	433.29	483.87
Sinks and Sequestrations	-6.69	-4.07
Net California Emissions	426.60	479.80

Source: (1) CARB, 2007.
 (2) CARB, 2009.

Regulatory Background

In response to growing scientific and political concern regarding global climate change, California has adopted a series of laws to reduce both the level of GHGs in the atmosphere and to reduce emissions of GHGs from commercial and private activities within the state. In September 2002, Governor Gray Davis signed Assembly Bill (AB) 1493, requiring the development and adoption of regulations to achieve “the maximum feasible reduction of greenhouse gases” emitted by non-commercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the State. Setting emission standards on automobiles is normally the responsibility of the U.S. EPA. The Federal Clean Air Act, however, allows California to set a state-specific emission standard on automobiles if it first obtains a waiver from the U.S. EPA. On March 6, 2008 the U.S. EPA denied California’s request

for a waiver. In response, California sued the U.S. EPA claiming that the denial was not based on the scientific data. Subsequently, U.S. EPA has granted the request by California for a waiver of Clean Air Act preemption for California's greenhouse gas emission standards for 2009 and later model years of new motor vehicles, which was adopted the CARB on September 24, 2004.

In June 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05, which established GHG emissions reduction targets for the state, as well as a process to ensure that the targets are met. As a result of this executive order, the California Climate Action Team (CAT), led by the Secretary of the California State Environmental Protection Agency (CalEPA), was formed. The CAT published its report in March 2006, in which it laid out several recommendations and strategies for reducing GHG emissions and reaching the targets established in the Executive Order.

The greenhouse gas targets are:

- By 2010, reduce to 2000 emission levels;
- By 2020, reduce to 1990 emission levels; and,
- By 2050, reduce to 80 percent below 1990 levels.

In September 2006, Governor Schwarzenegger signed California's Global Warming Solutions Act of 2006 (AB32). AB32 will require CARB to:

- Establish a statewide GHG emissions cap for 2020, based on 1990 emissions, by January 1, 2008;
- Adopt mandatory reporting rules for significant sources of GHG emissions by January 1, 2008;
- Adopt an emissions reduction plan by January 1, 2009, indicating how emissions reductions will be achieved via regulations, market mechanisms, and other actions; and,
- Adopt regulations to achieve the maximum technologically feasible and cost-effective reductions of GHGs by January 1, 2011.

SB1368, a companion bill to AB32, requires the CPUC and the CEC to establish GHG emission performance standards for the generation of electricity, whether generated inside the State, or generated outside, and then imported into California. SB1368 provides a mechanism for reducing the emissions of electricity providers, thereby assisting CARB to meet its mandate under AB32. On January 25, 2007, the CPUC adopted an interim GHG Emissions Performance Standard (EPS), which is a facility-based emissions standard requiring that all new long-term commitments for baseload generation to serve California consumers be with power plants that have GHG emissions no greater than a combined cycle gas turbine plant. That level is established at 1,100 pounds of CO₂ per megawatt-hour (MW-hr). Further, on May 23, 2007, the CEC adopted regulations that establish and implement an EPS of 1,100 pounds of CO₂ per MW-hr (see CEC order No. 07-523-7).

SB97, passed in August 2007, is designed to work in conjunction with CEQA and AB32. SB97 required the California Office of Planning and Research (OPR) to prepare and develop guidelines for the mitigation of GHG emissions or the effects thereof, including but not limited to, effects associated with transportation and energy consumption. These guidelines were required to be transmitted to the Resources Agency by July 1, 2009, and certified and adopted by January 1, 2010. The guidelines became effective March 18, 2010. The OPR and the Resources Agency shall periodically update these guidelines to incorporate new information or criteria established by CARB pursuant to AB32.

There has also been activity at the Federal level on the regulation of GHGs. In *Massachusetts v. Environmental Protection Agency* (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held that not only did the U.S. EPA have authority to regulate greenhouse gases, but that the U.S. EPA's reasons for not regulating greenhouse gases did not fit the statutory requirements. The U.S. Supreme Court ruled that CO₂ and other greenhouse gases are pollutants under the Clean Air Act, which U.S. EPA must regulate if it determines they pose an endangerment to public health or welfare. On October 30, 2009, the U.S. EPA issued 40 CFR Part 98, which requires reporting of greenhouse gas (GHG) emissions from large sources and suppliers in the United States. Under Part 98, suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to EPA, with an abbreviated report required in 2011 (for 2010 emissions), and full reporting in 2012 (for 2011 emissions). Part 98 became effective December 29, 2009.

Discussion of Impacts

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 CO₂. CO₂ is not a pollutant that occurs in relatively low concentrations as a by-product of the combustion process; CO₂ 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. Boilers generally operate at no more than 85 percent overall efficiency (i.e. only up to 85 percent of the heat value of the fuel that is consumed is transferred to the material that is being heated and the other 15 percent is released to the atmosphere as waste heat). Waste heat is released in three ways:

- as heat in the combustion exhaust which is released from the boiler stack;
- as radiant heat from the outside of the boiler because the boiler is not perfectly insulated; or
- as heat in the liquid “blowdown” stream that is constantly drained from the boiler to prevent solids from concentrating inside the boiler and ultimately fouling the heat exchange surfaces.

The most significant of these factors is heat loss through the boiler stack. Stack losses may be minimized by minimizing the amount of excess air and, therefore, the amount of oxygen and nitrogen that is heated and released from the stack. Reducing excess air to the minimum level necessary for complete fuel combustion, with a reasonable safety margin, is a very effective way to control NO_x emissions. In addition, boiler efficiency may be improved by limiting liquid blowdown to the lowest necessary level, by improving boiler shell insulation, and by maintaining clean boiler internals to

maximize heat transfer to the medium being heated rather than to the atmosphere through the boiler stack.

Installation of ultra low-NO_x burners or FGR may require that the maximum firing capacity of the heater or boiler be reduced or may result in an overall loss of efficiency that would require the heater to be replaced. The amendments to Regulation 9-10 are not expected to require a substantial increase in the use of NO_x control equipment. The rule could also lead refineries to replace old heaters with new ones which tend to be more energy efficient. The energy efficiency requirements and the phasing in of the requirements are expected to offset the potential energy losses associated with the potential increase in use of FGR.

Finally, the proposed amendments to Regulation 9-10 could result in the addition of SCR. The energy requirements for the use of SCR units are limited to new air blowers, pumps, and a vaporization unit which have relatively small motors (about 100 horsepower) (SCAQMD, 2008 and SCAQMD, 2004). SCR units are not expected to be required to comply with the rule amendments. However, the use of SCR equipment, if a facility chose to install it, would occur at an existing refinery that already uses electricity and any resultant increase in energy use at these facilities and related greenhouse gas emissions is expected to be negligible.

Therefore, the proposed amendments to Regulation 9-10 are not expected to result in a significant increase in greenhouse gas emissions because the energy use associated with any additional add-on control equipment is minimal.

Based on the above discussion, implementation of the proposed amendments to Regulation 9-10 is not expected to result in a significant increase in GHG emissions. Based on the above, no significant adverse air quality impacts are expected due to implementation of the proposed rule amendments.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Setting

The affected petroleum refining facilities handle and process large quantities of flammable, hazardous, and acutely hazardous materials. Accidents involving these substances can result in worker or public exposure to fire, heat, blast from an explosion, or airborne exposure to hazardous substances.

The potential hazards associated with handling such materials are a function of the materials being processed, processing systems, and procedures used to operate and maintain the facilities where they exist. The hazards that are likely to exist are identified by the physical and chemical properties of the materials being handled and their process conditions, including the following events.

- **Toxic gas clouds:** Toxic gas clouds are releases of volatile chemicals (e.g., anhydrous ammonia, chlorine, and hydrogen sulfide) that could form a cloud and migrate off-site, thus exposing individuals. “Worst-case” conditions tend to arise when very low wind speeds coincide with an accidental release, which can allow the chemicals to accumulate rather than disperse.
- **Torch fires (gas and liquefied gas releases), flash fires (liquefied gas releases), pool fires, and vapor cloud explosions (gas and liquefied gas releases):** The rupture of a storage tank or vessel containing a flammable gaseous material (like propane), without immediate ignition, can result in a vapor cloud explosion. The “worst-case” upset would be a release that produces a large aerosol cloud with flammable properties. If the flammable cloud does not ignite after dispersion, the cloud would simply dissipate. If the flammable cloud were to ignite during the release, a flash fire or vapor cloud explosion could occur. If the flammable cloud were to ignite immediately upon release, a torch fire would ensue.
- **Thermal Radiation:** Thermal radiation is the heat generated by a fire and the potential impacts associated with exposure. Exposure to thermal radiation would result in burns, the severity of which would depend on the intensity of the fire, the duration of exposure, and the distance of an individual to the fire.
- **Explosion/Overpressure:** Process vessels containing flammable explosive vapors and potential ignition sources are present at many types of industrial facilities. Explosions may occur if the flammable/explosive vapors came into contact with an ignition source. An explosion could cause impacts to individuals and structures in the area due to overpressure.

For all affected facilities, risks to the public are reduced if there is a buffer zone between industrial processes and residences or other sensitive land uses, or the prevailing wind blows away from residential areas and other sensitive land uses. The risks posed by operations at each facility are unique and determined by a variety of factors. The areas affected by the proposed amendments are typically located in industrial areas.

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.

Discussion of Impacts

VII a - c. It is expected that the proposed amendments to Regulation 9-10 will lead to a reduction in NO_x emissions from existing boilers, steam generators, and process heaters at affected refineries thus reducing PM₁₀ and NO_x emissions. Major modifications are not expected to be required and the impact of the proposed amendments is likely to be a reduction in emission reduction credits generated. However, petroleum refining facilities could choose to comply by installing low NO_x burners, FGR, or SCR technology to reduce NO_x emissions. SCRs use ammonia or urea to react with NO_x, in the presence of a catalyst, to form nitrogen gas and water. In some SCR installations, anhydrous ammonia is used. Safety hazards related to the transport, storage and handling of ammonia exist. Ammonia is considered to be a hazardous chemical. Ammonia has acute and chronic non-cancer health effects and also contributes to ambient PM₁₀ emissions under some circumstances. Facilities can use either aqueous ammonia or anhydrous ammonia. The EIR prepared for the 2005 Ozone Strategy evaluated the potential impacts of ammonia use. The main hazard associated with ammonia is associated with a release that generates a toxic cloud and those hazards are summarized below. It should be noted that all refineries currently operate SCR units and use ammonia so the proposed amendments would not introduce any new hazards but may result in an increase in ammonia use and transport.

On-Site Release Scenario: The use of anhydrous ammonia involves greater risk than aqueous ammonia because it is stored and transported under pressure. In the event of a leak or rupture of a tank, anhydrous ammonia is released and vaporizes into the gaseous form, which is its normal state at atmospheric pressure and produces a toxic cloud. Aqueous ammonia is a liquid at ambient temperatures and gas is only produced when a liquid pool from a spill evaporates. Under current OES regulations implementing the CalARP requirements, anhydrous ammonia and aqueous ammonia is regulated under California Health and Safety Code Section 2770.1.

Any new SCR would require the increased use and storage of ammonia at existing petroleum refineries primarily located in industrial zones. Existing refineries operate SCR systems and have ammonia storage onsite, so the increase in ammonia storage is expected to be minimal as existing ammonia storage systems may be used. If new ammonia storage systems are required, the use and storage of anhydrous ammonia would be expected to result in potentially significant hazard impacts as there is the potential for anhydrous ammonia to migrate off-site and expose individuals to concentrations of ammonia that could lead to adverse health impacts. Anhydrous ammonia would be expected to form a vapor cloud (since anhydrous ammonia is a gas at standard temperature and pressures) and migrate from the point of release. The number of people exposed and the distance that the cloud would travel would depend on the meteorological conditions present and the distance from the release. Depending on the location of the spill, a number of individuals could be exposed to high concentrations of ammonia resulting in potentially significant impacts.

In the event of an aqueous ammonia release, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a release from on-site vessels or storage tanks, spills would be released into a containment area, which would limit the surface area of the spill and the subsequent toxic emissions. The containment area would limit the potential pool size, minimizing the amount of spilled material that would evaporate, form a vapor cloud, and impact residences or other sensitive receptors (including schools) in the area of

the spill. Significant hazard impacts associated with a release of aqueous ammonia would not be expected.

In addition, the following safety design and process standards generally apply to facilities that use and store ammonia:

- The California Code of Regulations, Title 8 – contains minimum requirements for equipment design.
- Industry Standards and Practices – codes for design of various equipment, including the American National Standards Institute (ANSI), American Society of Mechanical Engineers (ASME), and National Fire Protection Association (NFPA).
- OSHA passed the Process Safety Management of Highly Hazardous Chemicals rule in 1992 (29 CFR 910.119). This rule was designed to address the prevention of catastrophic accidents at facilities handling hazardous substances, in excess of specific threshold amounts, through implementation of Process Safety Management (PSM) systems for protection of workers. A major PSM requirement is the performance of process hazard analyses to identify potential process deviations and improved safeguards to prevent accidents.
- A federal EPA Risk Management Program (RMP) and more stringent state RMP program have been developed. The RMP's contain hazard assessments of both worst-case and more credible accidental release scenarios, a five year accident history, an accident prevention program, and an emergency response program.

The standards noted above and other applicable design standards govern the design of mechanical equipment such as pressure vessels, tanks, pumps, piping, and compressors. Adherence to codes minimizes the potential for an ammonia release.

Transportation Release Scenario: If new SCR systems are installed, there would be an increase in ammonia transport to existing refineries. Most refineries already transport ammonia, so only an incremental increase in ammonia transport would be required. Use and transport of anhydrous ammonia involves greater risk than aqueous ammonia because it is stored and transported under pressure. In the event of a leak or rupture of a tank, anhydrous ammonia is released and vaporizes into the gaseous form, which is its normal state at atmospheric temperature and pressure, and produces a toxic cloud. Aqueous ammonia is a liquid at ambient temperatures and pressure, and gas is only produced when a liquid pool from a spill evaporates. Deliveries of ammonia would be made to each facility by tanker truck via public roads. The maximum capacity of a tanker truck is about 150 barrels. Regulations for the transport of hazardous materials by public highway are described in 49 CFR 173 and 177. Nineteen percent aqueous ammonia is considered a hazardous material under 49 CFR 172.

Although trucking of ammonia and other hazardous materials is regulated for safety by the U.S. DOT, there is a possibility that a tanker truck could be involved in an accident spilling its contents. The factors that enter into accident statistics include distance traveled and type of vehicle or transportation system. Factors affecting automobiles and truck transportation accidents include the type of roadway, presence of road hazards, vehicle type, maintenance and physical condition, and driver training. A common reference frequently used in measuring risk of an accident is the number of accidents per

million miles traveled. Complicating the assessment of risk is the fact that some accidents can cause significant damage without injury or fatality.

The actual occurrence of an accidental release of a hazardous material cannot be predicted. The location of an accident or whether sensitive populations would be present in the immediate vicinity also cannot be identified. In general, the shortest and most direct route that takes the least amount of time would have the least risk of an accident. Hazardous material transporters do not routinely avoid populated areas along their routes, although they generally use approved truck routes that take population densities and sensitive populations into account.

The hazards associated with the transport of regulated (CCR Title 19, Division 2, Chapter 4.5 or the CalARP requirements) hazardous materials, including ammonia, would include the potential exposure of numerous individuals in the event of an accident that would lead to a spill. Factors such as amount transported, wind speed, ambient temperatures, route traveled, distance to sensitive receptors are considered when determining the consequence of a hazardous material spill.

In the unlikely event that the tanker truck would rupture and release the entire 150 barrels of aqueous ammonia, the ammonia solution would have to pool and spread out over a flat surface in order to create sufficient evaporation to produce a significant vapor cloud. For a road accident, the roads are usually graded and channeled to prevent water accumulation and a spill would be channeled to a low spot or drainage system, which would limit the surface area of the spill and the subsequent toxic emissions. Additionally, the roadside surfaces may not be paved and may absorb some of the spill. Without this pooling effect on an impervious surface, the spilled ammonia would not evaporate into a toxic cloud and impact residences or other sensitive receptors in the area of the spill. An accidental aqueous ammonia spill occurring during transport is, therefore, not expected to have significant impacts.

In the unlikely event that a tanker truck would rupture and release the entire contents of anhydrous ammonia, the ammonia would be expected to form a vapor cloud (since anhydrous ammonia is a gas at standard temperature and pressures) and migrate from the point of release. There are federal, State and local agencies with jurisdiction over hazardous materials and waste are responsible for ensuring that hazardous materials and waste handling activities are conducted in accordance with applicable laws and regulations. While compliance with these laws and regulations will minimize the chance of an accidental release of anhydrous ammonia, the potential will still exist that an unplanned release could occur. The number of people exposed and the distance that the cloud would travel would depend on the meteorological conditions present. Depending on the location of the spill, a number of individuals could be exposed to high concentrations of ammonia resulting in potentially significant impacts.

Conclusion: Based on the above evaluation and significance criteria, the hazard impacts associated with the use and transport of aqueous ammonia are less than significant. The hazard impacts associated with the use and transport of anhydrous ammonia are potentially significant, but can be mitigated by using aqueous ammonia. Further, the number of facilities expected to add SCR equipment as a result of the proposed amendments is limited, so no significant increase in the transport of ammonia is expected (about one truck per day). Therefore, the proposed amendments to Rule 9-10 are not expected to generate significant adverse hazard impacts because the increase in ammonia use within the Bay Area is relatively small and limited, and the numerous regulations that exist minimize the potential hazard

impacts. Therefore, the impacts of the proposed project on hazards are expected to be less than significant.

VII d. No impacts on hazardous material sites are anticipated from the proposed rule amendments that would typically apply to existing petroleum refining operations. Some of the affected areas may be located on the hazardous materials sites list pursuant to Government Code Section 65962.5. However, the proposed rule amendments would have no effect on hazardous materials nor would the amendment create a significant hazard to the public or environment. Boilers, steam generators, and process heaters already exist and are located within the confines of petroleum refining facilities. The proposed rule amendments neither require, nor are likely to result in, activities that would affect hazardous materials or existing site contamination. Therefore, no significant adverse impacts on hazards are expected.

VII e – f. No impacts on airports or airport land use plans are anticipated from the proposed rule amendments, which would apply to boilers, steam generators, and process heaters. The boilers, steam generators, and process heaters already exist and are located within the confines petroleum refining facilities. Once the proposed amendments are implemented, facilities would be expected to comply in the form of replacement of low-NOx burners, upgraded or new SNCR, SCR or hybrid SNCR/SCR systems, associated upgrades of heater controls and ducting to accommodate these controls, and possible complete heater replacement. These changes are expected to be made within the confines of the existing refineries. No development outside of existing facilities is expected to be required by the proposed amendments to Regulation 9-10. Therefore, no significant adverse impacts on an airport land use plan or on a private air strip are expected.

VII g. No impacts on emergency response plans are anticipated from the proposed rule amendments that would apply to existing petroleum refining facilities. The boilers, steam generators, and process heaters already exist and are located within the confines of existing refineries. The proposed rule amendments neither require, nor are likely to result in, activities that would impact the emergency response plan, and any new development would consider emergency response as part of the City/County General Plans prior to approval. The refineries already store and transport ammonia, so emergency response plans already include hazards associated with an ammonia release. New ammonia storage may require that emergency response plans be updated. However, no significant adverse impacts on emergency response plans are expected.

VII h. No increase in hazards related to wildfires are anticipated from the proposed rule amendments. The boilers, steam generators, and process heaters affected by the proposed amendments already exist and are located within the confines of existing petroleum refineries. Native vegetation has been removed from the operating portions of the refineries to minimize fire hazards. Any modifications will occur within the confines of the existing refineries. Therefore, no increase in exposure to wildfires will occur due to the proposed amendments to Regulation 9-10.

Based upon these considerations, no significant adverse hazards and hazardous materials impacts are expected from the implementation of the proposed amendments to Regulation 9-10.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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IX. HYDROLOGY AND WATER QUALITY.

Would the project:

a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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, 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 affected environment vary substantially throughout the area and include commercial, industrial, residential, agricultural, and open space uses.

The petroleum refining facilities affected by the proposed rule amendments are located throughout the Bay Area. Affected areas are generally surrounded by other industrial or commercial facilities. Reservoirs and drainage streams are located throughout the area and discharge into the Bays. Marshlands incised with numerous winding tidal channels containing brackish water are located throughout the Bay Area.

The affected areas are 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 RWQCB 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 1998 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.

Discussion of Impacts

VIII a, f. No significant adverse impacts on hydrology and water quality resources are anticipated from the proposed rule amendments, which would apply to existing petroleum refining facilities. The proposed rule amendments are not expected to require additional water use and no increase in wastewater discharge is expected. Therefore, no violation of any water quality standards or waste discharge requirements, and no decrease in water quality is expected from the proposed amendments to Regulation 9-10.

VIII b. The boilers, steam generators, and process heaters affected by the proposed rule amendments already exist and are located within the confines of existing petroleum refining facilities. The 2005 Ozone Strategy addressed the impacts of control measures on water demand. The proposed amendments to Regulation 9-10 are not expected to require additional water use. The NO_x control technologies (i.e., LNB, FGR, SCR, and SNCR equipment) do not require additional use of water. Therefore, the proposed amendments are not expected to deplete groundwater supplies or interfere with groundwater recharge. Therefore, no significant impacts on groundwater supplies are expected due to the proposed amendments to Regulation 9-10.

VIII c - f. Petroleum refining facilities are expected to comply with the proposed amendments to Regulation 9-10 in the form of replacement of low-NO_x burners, upgraded or new SNCR, SCR or hybrid SNCR/SCR systems, associated upgrades of heater controls and ducting to accommodate these controls, and possible complete heater replacement. All affected equipment is located in industrial areas, where storm water drainage has been controlled and no construction activities outside of the existing refineries is expected to be required. Therefore the proposed amendments are 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. Nor are the proposed amendments expected to 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. The proposed amendments are not expected to substantially degrade water quality. Therefore, no significant adverse impacts to storm water runoff are expected.

VIII g – i. The boilers, steam generators, and process heaters affected by the proposed rule amendments are located within industrial areas. No major construction activities outside the boundaries of existing facilities are expected due to the adoption of the proposed amendments to Regulation 9-10. Petroleum refining facilities are generally located to avoid flood zone areas and other areas subject to flooding. Further, storm water is controlled and collected onsite for analysis and subsequent discharge. The proposed amendments are not expected to require any substantial construction activities, place any additional structures within 100-year flood zones, or other areas subject to flooding. Therefore, no significant adverse impacts due to flooding are expected.

VIII j. The petroleum refining facilities affected by the proposed rule amendments are located within industrial areas. No major construction activities are expected outside of the boundaries of the existing refinery facilities due to the adoption of the proposed amendments to Regulation 9-10. The proposed amendments are not expected to place any additional structures within areas subject to inundation by seiche, tsunami or mudflow. Therefore, no significant adverse impacts on hydrology/water due to seiche, tsunami or mudflow are expected.

Based upon these considerations, no significant adverse hydrology and water quality impacts are expected from the implementation of the proposed amendments to Regulation 9-10.

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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 facilities affected by the proposed rule amendments are primarily located in industrial areas throughout 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.

Discussion of Impacts

IX a-c. The boilers, steam generators, and process heaters affected by the proposed rule amendments already exist and are located within the confines of existing petroleum refining facilities. The refineries are expected to comply with Regulation 9-10 by upgrading or installing NOx control equipment or replacing existing equipment with more efficient new equipment. These changes are expected to be made within the confines of existing facilities as it applies to existing equipment. Any modifications required for compliance is expected to be constructed within the confines of the existing facilities. No new construction outside of the confines of the existing facilities is expected to be required due to the adoption of the proposed amendments to Regulation 9-10.

Based upon these considerations, no significant adverse land use impacts are expected from the implementation of the proposed amendments to Regulation 9-10.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

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 facilities affected by the proposed rule amendments are primarily located in industrial areas within 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.

Discussion of Impacts

X a-b. The boilers, steam generators, and process heaters affected by the proposed rule amendments already exist and are located within the confines of existing petroleum refining facilities. Any new boilers or heaters and control equipment are expected to be installed within the confines of existing facilities. The proposed rule amendments 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. Therefore, no impacts on mineral resources are expected.

Based upon these considerations, significant mineral resource impacts are not expected from the implementation of the proposed rule amendments.

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Expose persons to or generate of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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 facilities affected by the proposed rule amendments are located in industrial areas of the Bay Area, which are surrounded by other industrial or commercial facilities.

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.

Discussion of Impacts

XI a-d. The boilers, steam generators and process heaters affected by the proposed rule amendments already exist and are located within the confines of existing petroleum refining facilities. The rule amendments impose limitations on the NO_x emissions from this equipment. Compliance will be achieved in the form of replacement of low-NO_x burners, upgraded or new control equipment, or equipment replacement.

The existing noise environment at each of the affected refinery facilities is typically dominated by noise from existing equipment onsite, vehicular traffic around the facilities, and trucks entering and exiting facility premises. Noise from the proposed project is not expected to produce noise in excess of current operations at each of the existing facilities. Any construction activities required due to the proposed amendments to Regulation 9-10 would occur within the confines of the existing refinery boundaries. No major construction activities are expected to be required, although minor construction activities would be associated with modifications to existing heaters/boilers, construction of air pollution control equipment, or replacement of existing equipment. Noise impacts during the construction period are expected to be minimal and occur during daylight hours. Noise related to construction activities would cease following completion of the construction phase.

It is not expected that any modifications to install air pollution control equipment would substantially increase ambient operational noise levels in the area, either permanently or intermittently, or expose people to excessive noise levels that would be noticeable above and beyond existing ambient levels. Depending on the air pollution control technology installed, replaced, or modified, the operations phase may add new sources of noise to the affected facility. As an example, noise increases associated with SCR units are expected to be limited to small motors for air blowers and or pumps. Burner modifications and replacement equipment is not expected to result in any noise increase. It is expected that each facility affected will comply with all existing noise control laws or ordinances. Further, OSHA and California-OSHA (Cal/OSHA) have established noise standards to protect worker health. These potential noise increases are expected to be small, if at all, and thus less than significant. Therefore, no adverse significant impacts to noise are expected due to the proposed project.

It is also not anticipated that air pollution control devices or other new equipment will cause an increase in groundborne vibration levels because air pollution control equipment is not typically vibration intensive equipment. Consequently, the proposed rule amendments will not directly or indirectly cause substantial noise or excessive groundborne vibration impacts.

The proposed rule amendments would not substantially increase ambient noise levels from stationary sources, either intermittently or permanently. Therefore, noise impacts associated with stationary source control measures are expected to be less than significant.

XI. e-f. If applicable, the refineries would still be expected to comply, and not interfere, with any applicable airport land use plans. All noise producing equipment must comply with local noise ordinances and applicable OSHA or Cal/OSHA workplace noise reduction requirements. In addition to

noise generated by current operations, noise sources in each area may include nearby freeways, truck traffic to adjacent businesses, and operational noise from adjacent businesses.

Based upon these considerations, significant noise impacts are not expected from the implementation of the proposed amendments to Regulation 9-10.

	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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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 areas affected by the proposed rule amendments are located in industrial areas of Solano and Contra Costa counties.

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.

Discussion of Impacts

XII. a. Any construction activities associated with the proposed project at each affected facility are not expected to involve the relocation of individuals, require new housing or commercial facilities, or change the distribution of the population. The reason for this conclusion is that operators of affected facilities who need to perform any construction activities to comply with the proposed rule amendments can draw from the existing labor pool in the local Bay Area, as no major construction activities would be required. Further, it is not expected that replacing existing equipment with new equipment or installing air pollution control equipment will require new employees to operate the new/modified equipment. Human population within the jurisdiction of the BAAQMD is anticipated to grow regardless of implementing the proposed project. As a result, the proposed rule amendments are not anticipated to

generate any significant adverse effects, either direct or indirect, on population growth in the district or population distribution.

XII b-c. Because the proposed project includes modifications and/or changes at existing facilities located in industrial settings, the proposed project is not expected to result in the creation of any industry 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.

Based upon these considerations, significant population and housing impacts are not expected from the implementation of the proposed amendments to Regulation 9-10.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XIII. 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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 areas affected by the proposed rule amendments are primarily located in industrial areas throughout the Bay Area.

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.

Discussion of Impacts

XIII a. Implementation of the proposed project by installing new or modifying existing add-on controls is anticipated to continue current operations at existing refineries. The proposed project may result in greater demand for ammonia, which will need to be transported to the affected facilities that install SCR

and stored onsite prior to use. In the event of an accidental release fire departments are typically first responders for control and clean-up and police may be need to be available to maintain perimeter boundaries. The proposed project is not expected to significantly affect fire or police departments because of the low probability of accidents during transport and the limited number of facilities that are expected to use SCR. Therefore, the proposed project is not expected to increase the need or demand for additional public services (e.g., fire departments, police departments, government, et cetera) above current levels.

As noted in the “Population and Housing” discussion above, the proposed project is not expected to induce population growth in any way because the local labor pool (e.g., workforce) is expected to be sufficient to accommodate any construction activities that may be necessary at affected facilities and operation of new or modified equipment is not expected to require additional employees. Therefore, there will be no increase in local population and thus no impacts are expected to local schools or parks.

Based upon these considerations, significant public services impacts are not expected from the implementation of the proposed rule amendments.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XV. RECREATION. Would the project:

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|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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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 there are numerous areas for recreational activities. The facilities affected by the proposed rule amendments are located in industrial areas throughout the Bay Area. Public recreational land can be located adjacent to, or in reasonable proximity to these areas.

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.

Discussion of Impacts

XIV a-b. As discussed under “Land Use” above, there are no provisions of the proposed project that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments; no land use or planning requirements will be altered by the proposed project. Any required modifications would occur within the confines of the existing refineries so no changes in land use would be required. Further, the proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities or include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment because the proposed project is not expected to induce population growth. Therefore, no significant adverse impacts on recreation are expected.

Based upon these considerations, significant recreation impacts are not expected from the implementation of the proposed rule amendments.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XVI. TRANSPORTATION/TRAFFIC. Would the project:

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|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Substantially increase hazards because of a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in inadequate emergency access? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

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 contains over 19,600 miles of local streets and roads, and over 1,400 miles of state highways. In addition, there are over 9,040 transit route miles of services including rapid rail, light rail, commuter, 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 2007. The portion of commuters that carpool was about 10 percent in 2007. About 4 percent of commuters walked to work in 2007. In addition, other modes of travel (bicycle, motorcycle, etc.), account for 3 percent of commuters in 2007 (MTC, 2008). Cars, buses, and commercial vehicles travel about 145 million miles a day (2000) on the Bay Area Freeways and local roads. Transit serves about 1.6 million riders on the average weekday (MTC, 2008).

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.

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.

Discussion of Impacts

XV a-b. Construction activities resulting from implementing the proposed amendments to Regulation 9-10 may generate a slight, although temporary, increase in traffic in the areas of each affected facility associated with construction workers, construction equipment, and the delivery of construction

materials. Construction activities would be minor and not involve a significant increase in workers or require any substantial equipment. The proposed project is not expected to cause a significant increase in traffic at any refinery or require any additional employees. An increase of a maximum of one truck per day maybe required to deliver ammonia if SCR equipment is installed. Also, the proposed project is not expected to exceed, either individually or cumulatively, the current level of service of the areas surrounding the affected facilities. The work force at each affected facility is not expected to significantly increase as a result of the proposed project and no increase in operation-related traffic is expected. Thus, the traffic impacts associated with the proposed rule amendments are expected to be less than significant.

XV c. Though some of the facilities that will be affected by the proposed project may be 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, actions that would be taken to comply with the proposed project, such as installing new air pollution control equipment, are not expected to significantly influence or affect air traffic patterns. Further, the size and type of air pollution control devices that would be installed would not be expected to affect navigable air space. Thus, the proposed project would not result in a change in air traffic patterns including an increase in traffic levels or a change in location that results in substantial safety risks.

XV d - e. The proposed amendments will not alter traffic patterns or existing roadway. The proposed rule amendments are not expected to substantially increase traffic hazards or create incompatible uses at or adjacent to the affected facilities. All construction activities, if necessary, will occur within the confines of the existing refineries. Aside from the temporary effects due to a slight increase in truck traffic for those facilities that will undergo construction activities, the proposed project is not expected 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. The proposed project does not involve construction of any roadways, so there would be no increase in roadway design feature that could increase traffic hazards. Emergency access at each affected facility is not expected to be impacted by the proposed project. Further, each affected facility is expected to continue to maintain their existing emergency access gates and will not be impacted by the proposed rule amendments.

XV f. Construction and operation activities resulting from the proposed rule amendments are not expected to conflict with policies supporting alternative transportation since the proposed project does not involve or affect alternative transportation modes (e.g. bicycles or buses) because the construction and operation activities related to the proposed project will occur solely in existing industrial, commercial, and institutional areas.

Based upon these considerations, significant transportation/traffic impacts are not expected from the implementation of the proposed rule amendments.

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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.

Given the large area covered by the BAAQMD, public utilities are provided by a wide variety of local agencies. The affected facilities have wastewater and storm water treatment facilities and discharge treated wastewater 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.

There are no hazardous waste disposal sites within the jurisdiction of the BAAQMD. Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. 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.

Discussion of Impacts

XVI a, b, d and e. The boilers, steam generators, and process heaters affected by the proposed rule amendments already exist and are located within the confines of existing petroleum refining facilities. Any modifications would occur within the confines of the existing refineries. The proposed rule amendments would not result in the use of any additional water or an increase in any wastewater generated at the refineries. No increase in water consumption would be associated with NO_x emission control equipment or with new boilers, steam generators or process heaters that replace older equipment of the same size. Therefore, no impacts on wastewater treatment requirements or wastewater treatment facilities are expected.

XVI c. Petroleum refining facilities are expected to comply with the proposed rule amendments by the use of low-NO_x burners, upgraded or new SNCR, SCR or hybrid SNCR/SCR systems, burner modifications, or possible replacement of equipment. Therefore, the proposed amendments are not expected to alter the existing drainage or require the construction of new storm water drainage facilities. Nor are the proposed amendments expected to 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.

XVI f and g. The proposed rule amendments would not affect the ability of petroleum refining facilities to comply with federal, state, and local statutes and regulations related to solid waste. No significant impacts on waste generation are expected from the proposed rule amendments, since the proposed

amendments would retrofit or replace equipment over a period of years. Waste is expected to be limited to metal, in the event that old equipment is replaced with new equipment. Metals are usually recycled so no significant impact to land disposal facilities would be expected.

The proposed project modifications may generate hazardous waste from spent catalyst in SCR units. The catalyst has a life expectancy ranging from about five to ten years, depending on the catalyst reaction rate. Spent catalysts are expected to be recycled offsite for their heavy metal content. Therefore, no significant impacts to hazardous waste disposal facilities are expected due to the proposed rule amendments. Facilities are expected to continue to comply with all applicable federal, state, and local statutes and regulations related to solid and hazardous wastes.

Based upon these considerations, significant impacts to utilities and service systems are not expected from the implementation of the proposed amendments to Regulation 9-10.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.

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|----|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) | Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

18. MANDATORY FINDINGS OF SIGNIFICANCE

Discussion of Impacts

XVII a. The proposed amendments to Regulation 9-10 do 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 rule amendments are expected to result in emission reductions from petroleum refining facilities, thus providing a beneficial air quality impact and improvement in air quality. Further, any modifications would occur within the confines of an existing refinery which has already been graded and disturbed. As discussed in Section IV, Biological Resources and Section V, Cultural Resources, no significant adverse impacts are expected to biological or cultural resources.

XVII b-c. The proposed amendments are expected to result in emission reductions of NO_x from affected petroleum refining facilities, thus providing a beneficial air quality impact through the reduce in NO_x and ambient ozone concentrations. The proposed rule amendments are part of a long-term plan to bring the Bay Area into compliance with the state ambient air quality standards for ozone, thus reducing the potential health impacts due to ozone exposure. The proposed rule amendments do not have adverse environmental impacts that are limited individually, but cumulatively considerable when considered in conjunction with other regulatory control projects. The proposed amendments to Regulation 9-10 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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