BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

BOARD OF DIRECTORS' REGULAR MEETING

July 30, 2008

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 11:00 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 **BOARD ROOM**
JULY 30, 2008 **7TH FLOOR**
9:45 A.M.

CALL TO ORDER

Opening Comments — Chairperson, Jerry Hill
Roll Call — Clerk of the Board
Pledge of Allegiance

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.*

CONSENT CALENDAR (ITEMS 1 – 7)

Staff/Phone (415) 749-

1. Minutes of July 9, 2008 — **L. Harper/5073** lharper@baaqmd.gov

2. Communications — **J. Broadbent/5052** jbroadbent@baaqmd.gov

   Information only.

3. Quarterly Report of Air Resources Board Representative - Honorable Jerry Hill — **J. Broadbent/5052** jbroadbent@baaqmd.gov

   A summary of Chairperson, Hill's activities on the Air Resources Board is provided for information only.

4. Quarterly Report of the Executive Office — **J. Broadbent/5052** jbroadbent@baaqmd.gov

   A summary of Board of Directors, Hearing Board and Advisory Council meeting activities for the second quarter is provided for information only.

5. District Personnel on Out of State Business Travel — **J. Broadbent/5052** jbroadbent@baaqmd.gov

   In accordance with Section 5.4 (b) of the District's Administrative Code, Fiscal Policies and Procedures Section, the Board is hereby notified that the attached memoranda lists District personnel who traveled on out-of-state business.

6. Consideration of Recommendation for Adjustment to Salary Range for the Senior Policy Advisor Classification Series **J. Broadbent/5052**
jbroadbent@baaqmd.gov

The Board of Directors will consider approval of a recommendation for a salary range adjustment to the Senior Policy Advisor classification series from Range 151 to Range 148.

7. Consideration of Recommendation to Establish a Job Classification Description of Communications Director with a Salary Range set at Range 151M **J. Broadbent/5052**
jbroadbent@baaqmd.gov

The Board of Directors will consider approval of a recommendation to establish a job classification description for Communications Director set at pay range 151M.

COMMITTEE REPORTS AND RECOMMENDATIONS

8. Report of the **Mobile Source Committee** Meeting of July 9, 2008
CHAIR: T. SMITH **J. Broadbent/5052**
jbroadbent@baaqmd.gov

Action(s): The Committee recommends Board of Directors' approval of the following:

A) Allocation of $20,276,209 in funding from a combination of Carl Moyer Program funding and Mobile Source Incentive Funding (MSIF) for projects listed in Attachment 1 of Agenda item 4 in reports to the Committee and authorize the Executive Officer/APCO to expend funding on eligible projects and execute all necessary funding agreements with recipients of grant award projects;

B) Expenditure Plans for FY 2008/09 TFCA County Program Manager Projects listed in Attachment 1 of Agenda item 5 of the reports to the Committee and authorization of Executive Officer/APCO to enter into funding agreements with the County Program Managers Board approved projects;

C) Authorization of the Executive Officer/APCO to execute all necessary contract agreements with TIAX LLC for administrative consultation relative to the implementation of I-Bond funding in an amount not to exceed $796,573 with the authorization of the Executive Officer/APCO to renew this contract annually for up to three years based on the performance of the consultant and approval of the Committee; and

D) Allocation of $3.375 million in MSIF revenues to the Lower-Emission School Bus Program(LESBP) for the purchase of new public school buses; and authorize the Executive Officer/APCO to enter into all necessary funding agreements with recipients of grant awards under the LESBP.

RESOLUTION(S)

9. Consideration and Adoption of Resolution Urging the Port of Oakland to Adopt User Fees to Fund the Mitigation of Air Pollution Health Risk in the West Oakland Community

J. Broadbent/5052
jbroadbent@baaqmd.gov

The Board of Directors will consider adopting a resolution in support of the Port of Oakland's container fee proposal.

10. Consideration and Adoption of Proposed Resolution Continuing to Reduce Contaminants in Impacted Communities **J. Broadbent/5052**
jbroadbent@baaqmd.gov

The Board of Directors will consider adopting a resolution regarding continuing to reduce air contaminants in impacted communities.

PUBLIC HEARING

11. Public Hearing to Consider Adoption of Proposed Amendments to Regulation 9, Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters; Amendments to the Manual of Procedures, Volume I, Chapter 5: Boiler, Steam Generator and Process Heater Tuning Procedure; Amendments to Regulation 3: Fees, Schedule R: Equipment Registration Fees; and Adoption of a CEQA Negative Declaration

Proposed amendments to Regulation 9; Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters will extend the applicability of the rule to smaller devices and reduce emissions of NOx, CO, secondary particulate matter and greenhouse gases from all devices subject to the rule.

PRESENTATION

12. Overview of the California Air Resources Board's Draft Scoping Plan Pursuant to AB 32, the California Global Warming Solution Act of 2006 **J. Broadbent/5052**

jbroadbent@baaqmd.gov

Staff will provide an overview of the California Air Resources Board's draft Scoping Plan for implementing AB 32.

CLOSED SESSION

13. **Closed Session with Air District's Labor Negotiators**
(*Government Code § 54957.6(a))*

Agency Negotiators: *Jack P. Broadbent, Executive Officer/APCO*
Michael Rich, Human Resources Officer

Employee Organization: *Bay Area Air Quality Management District Employees'*

OTHER BUSINESS

14. Report of the Executive Officer/APCO

15. Chairperson's Report

16. 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)

17. Time and Place of Next Meeting – 9:45 a.m., Wednesday, September 3, 2008- 939 Ellis Street, San Francisco, CA 94109

18. Adjournment

JPB:MAG

CONTACT EXECUTIVE OFFICE - 939 ELLIS STREET SF, CA 94109 **(415) 749-5073**
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

JULY 2008

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of each month)* **CANCELLED**	**Wednesday**	**23**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Legislative Committee *(Meets 4th Monday of the Month)* - **CANCELLED**	**Monday**	**28**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**30**	**9:45 a.m.**	**Board Room**
Board of Directors Personnel Committee Meeting *(At the Call of the Chair)*	**Thursday**	**31**	**9:30 a.m.**	**4th Floor Conf. Room**

AUGUST 2008

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Advisory Council Technical Committee *(Meets 1st Monday of every even Month)*	**Monday**	**4**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)* - **CANCELLED**	**Wednesday**	**6**	**9:45 a.m.**	**Board Room**
Advisory Council Air Quality Planning Committee *(Meets 2nd Monday Even Month)*	**Monday**	**11**	**9:30 a.m.**	**4th Floor Conf. Room**
Advisory Council Public Health Committee – *(Meets 2nd Wednesday Even Month)* - **CANCELLED**	**Wednesday**	**13**	**1:30 p.m.**	**4th Floor Conf. Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)* - **CANCELLED**	**Wednesday**	**20**	**9:45 a.m.**	**Board Room**
Board of Directors Legislative Committee *(Meets 4th Monday of every Month)* - **CANCELLED**	**Monday**	**25**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of each month)* - **CANCELLED**	**Wednesday**	**27**	**9:30 a.m.**	**4th Floor Conf. Room**

SEPTEMBER 2008

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**3**	**9:45 a.m.**	**Board Room**
Board of Directors Public Outreach Committee *(Meets 1st Thursday every other Month)*	**Thursday**	**4**	**9:30 a.m.**	**4th Floor Conf. Room**
Advisory Council Executive Committee Meeting *(Meets 2nd Wednesday Every Other Month)*	**Wednesday**	**10**	**9:00 a.m.**	**Board Room**
Advisory Council Regular Meeting *(Meets 2nd Wednesday Every Other Month)*	**Wednesday**	**10**	**10:00 a.m.**	**Board Room**
Board of Directors Stationary Source Committee Meeting *(Meets 3rd Monday Quarterly)*	**Monday**	**15**	**9:30 a.m.**	**Board Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**17**	**9:45 a.m.**	**Board Room**
Board of Directors Climate Protection Committee Meeting *(Meets 3rd Thursday Every Other Month)*	**Thursday**	**18**	**9:30 a.m.**	**4th Floor Conf. Room**
Joint Policy Committee	**Friday**	**19**	**10:00 a.m. – 12:00 p.m.**	**MTC 101 - 8th Street Oakland, CA 94607**
Board of Directors Legislative Committee *(Meets 4th Monday of the Month)*	**Monday**	**22**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of each month)*	**Wednesday**	**24**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Mobile Source Committee *– (Meets 4th Thursday of each Month)*	**Thursday**	**25**	**9:30 a.m.**	**4th Floor Conf. Room**

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7/17/08 (9:25 a.m.)
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AGENDA: 1

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Jerry Hill and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 15, 2008

Re: Board of Directors' Draft Meeting Minutes

RECOMMENDED ACTION:

Approve attached draft minutes of the Regular Board of Directors' meeting of July 9, 2008.

DISCUSSION

Attached for your review and approval are the draft minutes of the July 9, 2008 Regular Board of Directors' meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

DRAFT MINUTES

Board of Directors' Regular Meeting– July 9, 2008

Call To Order

Opening Comments: Chairperson Jerry Hill called the meeting to order at 11:00 a.m.

Roll Call: Present: Jerry Hill, Chair, Directors Tom Bates (11:13), Harold Brown, Chris Daly, Dan Dunnigan, Scott Haggerty (11:39), Yoriko Kishimoto, Carol Klatt, Jake McGoldrick, Nate Miley, Mark Ross, Michael Shimansky, Tim Smith, Pamela Torliatt, Brad Wagenknecht, Ken Yeager (11:05)

Absent: Erin Garner, John Gioia, Liz Kniss, John Silva, Gayle Uilkema

Pledge of Allegiance: The Board of Directors recited the Pledge of Allegiance.

Public Comment Period:

Paul D. Spiegel suggested the Air District improve its emissions monitoring methods and use roving monitors.

PROCLAMATIONS/COMMENDATIONS

The Board of Directors recognized the following employees who have completed milestones of thirty (30) and thirty-five (35) years of service with the Air District during this first half of the calendar year: Janet Simon, 30 years; Nancy Balberan, 35 years; Michael Basso, 35 years; Naomi Bernardo, 35 years; Howard Lancer, 35 years; Clifford Sennello 35 years.

Consent Calendar (Items 1 – 5)

1. Minutes of June 4, 2008 Regular Meeting

2. Communications
   Information only

3. District Personnel on Out of State Business Travel
   In accordance with Section 5.4(b) of the District's Administrative Code, Fiscal Policies and Procedures Section, the Board is hereby notified that the attached memoranda lists District personnel who traveled on out-of-state business.

4. Consideration of Recommendation for Salary Range Increase to the Air Quality Instrument Specialist Classification Series
   The Board of Directors' considered approval of a recommendation for a salary range increase to the Air Quality Instrument Specialist classification series.

5. Consideration and Approval of Contractor to Assist with the West Oakland Measurement Study
The Board of Directors considered approval of a contract with Desert Research Institute to assist with the West Oakland Measurement Study for the purpose of gathering data on the sources of particulate matter and its chemical speciation to guide in the selection of effective mitigation plan for reducing emissions in West Oakland and other impacted communities, in an amount not to exceed $243,611.

6. Set Public Hearing Set Public Hearing for July 30, 2008 to Consider Adoption of Proposed Amendments to Regulation 9, Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters; Amendments to the Manual of Procedures, Volume I, Chapter 5: Boiler, Steam Generator and Process Heater Tuning Procedure; Amendments to Regulation 3: Fees, Schedule R: Equipment Registration Fees; and Adoption of a CEQA Negative Declaration
Proposed amendments to Regulation 9; Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters will extend the applicability of the rule to smaller devices and reduce emissions of NOx, CO, secondary particulate matter and greenhouse gases from all devices subject to the rule.

Board Action: Director Daly moved approval of Consent Calendar; seconded by Director Wagenknecht; carried unanimously without opposition.

COMMITTEE REPORTS AND RECOMMENDATIONS

7. Report of the Executive Committee Meeting of June 11, 2008

Committee Chair Hill gave the report of the Executive Committee, stating that the Committee met on Wednesday, June 11, 2008 and approved the Minutes of May 12, 2008. The Committee received an update on the Air District's efforts to work with the Bay Area Environmental Health Collaborative to further refine a draft resolution to continue reducing air contaminants in impacted communities. Next steps will be to meet with industry representatives and thereafter, consideration of the final draft resolution.

The Committee considered establishing a Community Grant Program and after considerable discussion, requested further refinement to the proposed program, an increased budget, and for the matter to return in the fall for reconsideration. The Committee also considered a report to establish a nonprofit Air District Foundation to support Air District programs and recommended that the Board of Directors approve moving forward to establish an Air District Foundation. The Committee considered a recommendation for the selection of a Master Service Agreement for audit services and recommended that the Board of Directors approve Maze and Associates as the Air District's auditor for fiscal years ended June 30, 2008 through June 30, 2010.

The Committee received a recommendation from staff to establish a self-insured dental plan for the Air District and recommended that the Board of Directors approve the establishment

of a self-insured dental plan. He said the Committee then adjourned to Closed Session to discuss employee negotiations; however, due to time considerations, a Closed Session discussion will be agendized for the July 30th Board meeting. The next meeting of the Committee is at the call of the Chair.

Board Action: Chair Hill moved approval of the report and recommendations of the Executive Committee; seconded by Director Smith; carried unanimously without opposition.

8. **Report of the Climate Protection Committee Meeting of June 12, 2008**

Committee Chair Torliatt gave a report of the Climate Protection Committee meeting of June 12, 2008, stating the Committee met on Thursday, June 12, 2008 and approved the minutes of March 13, 2008. The Committee received a status report from staff regarding Air District climate protection activities and discussed the future direction of the program. The report included Greenhouse Gas Technology Phase 2 Study, youth education, local government assistance and AB32 implementation. Staff also discussed the development of a multi-year Strategic Work Plan for Climate Protection activities at the Air District.

The Committee provided direction to staff. The Committee received a status report on the Air District's CEQA Guidelines and Greenhouse Gases, including greenhouse gas impacts and mitigation. A discussion of proposed revisions to the Air District CEQA Guidelines was discussed. This update will revise background information, significance thresholds, emission factors, analytical methodologies and mitigation measures with the most current and "state of the art" practices and methodologies. The Committee provided direction to staff.

The Committee also received a status report from staff on climate protection activities underway by the four regional agencies; in particular, transportation related activities that MTC is undertaking in relation to the Regional Transportation Plan; the T2035 update. The next meeting of the Committee is scheduled for Thursday, September 18, 2008.

Board Action: Chair Torliatt moved the approval of the report of the Climate Protection Committee; seconded by Director Dunnigan; carried unanimously without opposition.

9. **Report of the Ad Hoc Committee on Port Emissions Meeting of July 2, 2008**

Chair Miley gave the report of the Ad Hoc Committee on Port Emissions meeting, stating the Ad Hoc Committee met on Wednesday, July 2, 2008 and approved the minutes of December 6, 2007. The Committee received an update on emission inventories being prepared for the ports of Benicia, Redwood City, Richmond, and San Francisco under a Memorandum of Agreement signed between the Air District, the Bay Planning Coalition, and the Ports. To date, more than 50% of emissions inventory work has been completed and it is anticipated that by late summer/early fall, the inventory will be complete.

The Committee discussed and received an update on the Goods Movement Bond program. $5,000 has been set aside for the Port of Oakland for the retrofit of trucks, which is a significant step toward air quality improvement. Shorter haul trucks will require replacement retrofits which will be addressed in the second year of funding. Six workshops are scheduled to be held to discuss I-Bond and TFCA programs, 20 meetings have been held with truck

owners, and the Air District is partnering with community groups, providing advertising and outreach and assisting in the application process.

Chair Miley further reported that Richard Sinkoff, Director, Port Environmental Planning and Permitting, provided the Committee with a status report on the Port of Oakland's Maritime Air Quality Improvement Plan. He discussed the Port's multi-stakeholder process which provides the framework by which they can define their role and also help move the projects toward implementation. He discussed the Port's outreach efforts to establish a policy basis and identified elements of the Comprehensive Truck Management Program and the Committee and staff were then provided with a tour of the Port of Oakland's facilities. The next meeting of the Committee is at the call of the Chair.

Board Action: Chair Miley moved approval of the report of the Ad Hoc Committee on Port Emissions; seconded by Director Brown; carried unanimously without opposition.

RESOLUTION(S)

10. **Consideration to Adopt Resolution in Support of High Speed Rail in California**
The Board of Directors considered adoption of a resolution in support of high speed rail in California.

Chair Hill requested that Item 10 be considered for discussion at the conclusion of the meeting.

11. **Consideration to Adopt Resolution in Support of Applications for Metropolitan Transportation Commission T2035 Funding**
The Board of Directors will consider adopting a resolution to encourage the Metropolitan Transportation Commission (MTC) to fund two applications that Air District staff submitted for funding in the "Transportation 2035" Regional Transportation Plan: 1) a five-year Transportation Climate Action Campaign, and 2) a project to reduce emissions from trucks in key goods movement corridors in the Bay Area.

Board Action: Vice Chair Torliatt moved to Adopt Resolution in Support of Applications for Metropolitan Transportation Commission T2035 Funding; seconded by Director Brown; carried unanimously without opposition.

PUBLIC HEARING

12. **Public Hearing to Consider Adoption of Proposed Regulation 6, Rule 3: Wood-Burning Devices, Adoption of Proposed Amendments to Regulation 1: General Provisions and Definitions, and Regulation 5: Opening Burning, and Certification of CEQA Environmental Impact Report**
The Board of Directors considered adoption of proposed Regulation 6; Rule 3: Wood-Burning Devices to reduce emissions of particulate matter and visible emissions from fireplaces, wood stoves, pellet stoves, fire pits and other wood-burning devices.

Director of Compliance and Enforcement Kelly Wee gave an overview of the proposed Regulation 6, Rule 3: Wood-burning Devices, stating he would discuss fine particulate matter as a public health issue, the proposed Regulation, the Rule's development process and public outreach efforts and then take public comment, receive and answer questions and provide staff's recommendations.

Proposed requirements will prohibit burning on nights with high PM forecast; limit visible emissions from wood burning devices; require cleaner burning technology for sale of new and used devices; require cleaner burning technology in new construction and remodels; prohibit burning garbage in WBDs; and will require seasoned wood sales and solid fuel labeling.

Mr. Wee discussed the Air District's extensive public outreach, stating 7 public workshops were held to introduce the proposed draft Rule, with a 30-day public comment period, as well as 9 informational meetings held around the Bay Area. He said staff modified the draft Rule in response to workshop comments, the Regulation was subject to CEQA and a Full EIR with a 45-day public comment period, and the final proposed Regulation also had a 30-day public comment period.

Comments/responses received were identified as follows:

- Allow EPA certified devices to burn during curtailment / Unhealthy air necessitates no solid fuel burning.
- Allow masonry heaters in new construction and remodels/Clean burning masonry heaters can be allowed.
- Use smaller curtailment zones / Fine PM acts like a regional air pollutant
- Wood versus natural gas for climate change / Firewood is not sustainably harvested.
- Labeling requirement is too costly / Labeling requirement modified for wider distribution options.
- Manufactured/compressed logs burn cleaner than wood / More information on Bay Area consumer's use wood versus manufactured logs is needed.

Mr. Wee said Air District staff worked extensively with industry on revising labeling, which provides a toll-free number and website address for information and listed below:

> "Use of this and other solid fuels may be restricted at times by law. Please check (Toll-Free Number) or (Web Address) before burning."

Mr. Wee said staff recommendation is that the Board of Directors certify the CEQA Final Environmental Impact Report; adopt proposed Amendments to Regulation 1: General Provisions and Definitions; adopt proposed Amendments to Regulation 5: Open Burning; and Adopt Proposed New Regulation 6, Rule 3: Wood-burning Devices.

Public Comments:

John Balmes, M.D., Professor of Medicine at UCSF and the American Lung Association spoke of his personal and professional experience with family members and patients affected

by smoke, its link to pneumonia, bronchitis, asthma, and other health problems and said he supported the proposed Regulation.

Barbara Lee, Northern Sonoma County Air Pollution Control District, said she and her staff have also worked for many years to better understand and achieve reductions in wood smoke, and she commended the Air District staff for bringing forward the proposed Regulation.

Robert Poindexter spoke on the burning of firewood versus fossil fuels, believed the conclusion in the EIR that the Rule would not affect global warming was false, urged the Board to reject the EIR and direct investigators to conduct a fair assessment.

Dion Aroner, Duraflame, said Durflame supports the Air District's intent to comply with new EPA standards and curtailment days, described their partnership with the Air District on an outreach program to encourage cleaner burning alternatives, but expressed strong opposition to a health warning label, believing it should be initiated by a federal or State agency.

Linda Weiner, Advisory Council Public Health Committee, discussed the extensive research done on the public health dangers of wood smoke, health-related problems, spoke of curtailment days and cleaner burning alternatives, and voiced support for the proposed Regulation.

Linda Regan, American Lung Association, thanked the Board and staff for their leadership on development of the proposed Regulation, noting that 300,000 people in the Bay area suffer from lung disease.

Tom Foley said he has developed lung problems and asthma and voiced support for adoption of the proposed Regulation.

Brian Zamora, Public Health Director for the San Mateo County, Chair of the Advisory Council Public Health Committee, strongly supported the proposed Regulation, cited extensive research to date, and said it will greatly benefit those suffering from respiratory problems.

Petria MacDonnell said she lives in the Berkeley Hills just east of a chronic burner and voiced support for adoption of the proposed Regulation.

Miriam Spross believed the proposed Regulation would improve the quality of life, spoke of other pollutants which are not tolerated and supported the Regulation's adoption.

Anthony Gerben, M.D., California Thoracic Society, voiced strong support of the proposed Regulation, labeling originally included in the Regulation and an education component and discussed his experiences with asthma patients.

Linda Ferzoko said she quit smoking in 1972, developed asthma which is exacerbated by air quality in the peninsula, and she supported the proposed Regulation.

Amy Ryan, Hearth, Patio and BBQ Association, applauded the efforts of Air District staff; however, by the Air District not exempting EPA and pellet stoves, she believed there will be

a limited number of people who will retrofit their older units and urged the Board to exempt them from the Regulation.

Steve Pulone, Hearth, Patio and BBQ Association, believed the proposed Regulation is not strong enough to affect the goals of the Air District, echoed the previous speaker's comments, and asked the Board to make everyday a Burn It Clean Day, which he believed would stimulate the economy and give consumers a choice in how they heat their homes.

Randy Brooks, National Chimney Sweep Guild, said they have several dozen member companies that service the District who identify and recommend replacement of devices and believed it is remiss to exclude products from non-attainment days. He asked the Board to either defer their vote or exempt clean-burning devices.

John Couch, Hearth, Patio and BBQ Association, while he agrees there are many good things about the Regulation; he requested the Board exempt certified stoves similar to what Puget Sound did. He discussed what out of state suppliers would be required to do for packaging and shipping to California and urged the Board to defer the item until more work can be done with exemptions and labeling provisions.

Karen Magliano, California Air Resources Board, spoke in support of the proposed Regulation and agreed particulate matter is a significant health impact and PM mortality even greater than original thought. She said the $PM_{2.5}$ standard is often exceeded, cited the need for strong regulations and a mandatory curtailment program and spoke of San Joaquin Valley and Sacramento Air District's successes.

Susan Goldsborough, Families for Clean Air, said their organization educates the public about the hazards of wood smoke, commended the Air District for their work at workshops, acknowledged the public's support of the proposed Regulation, and spoke of a news release from the National Science Foundation which links PM pollution as a major cause of global warming.

Beryl Shaw, R.N., supported the proposed Regulation, believed there is a public health crisis and work must be done to improve lung health, citing asthma rates as high as 30% among children and adults who were dying from lung disease.

Don Fickes, Hearth, Patio and BBQ Association, believed that a lot of information was tilted, said most problems were from burning green wood, questioned what benefit would be seen after the Regulation was passed, and believed EPA certified and wood pellet stoves burn very clean.

Susan White, Program Director, Solano Asthma Coalition, said their organization has advocated for ordinances relating to wood-burning and Solano County and the City of Berkeley have both passed ordinances. She spoke of personal health impacts relating to respiratory problems and urged the proposed Regulation's adoption.

Helen Chung, Solano County Health and Social Services Department and the Asthma Coalition, said Solano County has the highest asthma rate in the state, discussed the county's

diverse population and disparities in health care, and applauded the work of the Air District to approve the proposed Regulation.

Madeline Landau, UCB, said she previously directed the Program on Community Change and Public Policy, cited the extraordinary rates of asthma and said she had developed it herself. She thanked the Board for moving forward, requested the strongest approach be adopted to address localized neighborhood impacts, and discussed a person who constantly burned wood and debris in her neighborhood which required neighbors to stay indoors for several days.

Karen Cilman said she has mild asthma, has witnessed a neighborhood group attempting to curtail smoke from a chronic burner and someone who is smoking meat and leaves it on unattended. She applauded the efforts of the Air District on their work and suggested more publicity occur on the issue.

Sarah Kidd said she believed it would be irresponsible if the Air District had the capability of passing a regulation that would require all wildfires burn by EPA technology, felt there is a lack of research on the issue, believed that monitors were strategically placed, and suggested the Regulation be further reviewed and not adopted.

Jeff Golden spoke of a family member with asthma and the need to seal off his house and described a situation where a Superior Court Judge tried to have the burning of construction debris enforced in Mill Valley, which was unsuccessful. He commended the Air District and believed the regulation would make a big difference in the quality of his family's lives.

Frank Nieman said his brother died of lung cancer and was not a smoker, said he is on three medications, fireplace smoke has destroyed his quality of life, and thanked the Board for supporting the proposed Regulation.

Lineau Wahamaki said her son and husband are both asthmatics, they cannot open the windows of their home because of fireplace smoke and firmly support the wood smoke ban.

Ron Christy, Warming Trends, Walnut Creek, said there are stoves that reduce emissions by 80-90% and people were now being treated as if they were burning in an open fire pit after they spent the money to do the right thing. He asked the Board to propose something more responsible and exempt EPA certified devices and pellet stoves.

Guy Fasanaro asked that EPA certified devices and pellet stoves be exempt, asked that people follow the Spare the Air Every Night in the Winter, believed the proposed Regulation would provide a disincentive for people to change out their old stoves and would create more burning and said many believe wood burning is banned completely.

Eric Miller said he was happy with EPA certified stoves, noted there were many people who burn and pollute the air everyday and cleaner burning appliances should be exempted from the proposed Regulation.

Tom Swartz said he lives in Lafayette and came home one day thinking his apartment was on fire, but said an adjacent apartment was burning wood. He spoke of how smoke clings inside his apartment throughout the night and supported the proposed Regulation.

Andy Katz, Breathe California, asked the Board to support the proposed Regulation, believed the monitors were under-estimating pollutant levels, and said wood smoke is a serious trigger for asthma. He thanked the Air District for their outreach, workshops and for the ability to comment on the matter.

Suzanne Calmels said in June of 2007 she unknowingly bought a house in a wood-burning neighborhood and said she now has no where to go inside her home to breath well. She now must use an asthma inhaler where she formerly had no history of asthma and recently learned that several people in the neighborhood are dying of cancer, asthma, emphysema, and she supported the proposed Regulation.

Susan McCormick spoke of her neighbors burning garbage, plastic, wood, said black smoke pumps from their fireplace and she has tried to resolve the matter with the Marin County's code enforcement to no avail.

Boardmembers voiced their support for the proposed Regulation and received responses from staff regarding product labeling, EPA certified devices and exemptions, enforcement, outreach efforts and the Board suggested annual review of the Regulation by the Stationary Source or Executive Committee, given its implementation and technological advances.

Boardmember Daly made a motion for approval, and Boardmember Brown seconded the motion.

Board Action: Boardmember Daly moved the adoption of Proposed Regulation 6, Rule 3: Wood-burning Devices, Adoption of Proposed Amendments to Regulation 1: General Provisions and Definitions, and Regulation 5: Opening Burning, and Certification of CEQA Environmental Impact Report; seconded by Director Brown; carried by the following Roll Call Vote: (16-0-0-6) Ayes: Bates, Brown, Daly, Dunnigan, Haggerty, Kishimoto, Klatt, Lockhart, Miley, Ross, Shimansky, Smith, Torliatt, Wagenknecht Yeager and Hill. Noes: None. Abstain: None. Absent: Garner, Gioia, Kniss, McGoldrick, Silva, Uilkema.

RESOLUTION(S)

10. **Consideration to Adopt Resolution in Support of High Speed Rail in California**
The Board of Directors considered adoption of a resolution in support of high speed rail in California.

Chair Hill requested minor amendments to the Resolution as follows:

> First Whereas clause: "WHEREAS, the California High-Speed Rail Authority (Authority), established pursuant to Public Utilities Code Section 185000 et seq., has developed a proposal to finance and construct a statewide high speed rail system for voter consideration on the November, 2008 statewide ballot, known as Proposition 1; and

Second Whereas clause: "WHEREAS, the Authority has released a Final Environmental Impact Statement/Report for potential high speed rail service into the Bay Area, and has adopted and the Final Environmental Impact Statement/Report at its July 9, 2008 meeting unanimously with an 8-0 vote; and

Sixth Whereas clause: "WHEREAS, the Authority's proposal (Proposition 1) that voters will consider in November…."

Seventh paragraph: "NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Bay Area Air Quality Management District supports the efforts by the Authority to develop a High Speed Rail system in California and support Proposition 1; and

Delete the next paragraph, which begins "BE IT FURTHER RESOLVED…"

Board Action: Chair Hill moved to adopt a Resolution of the Board of Directors of the Bay Area Air Quality Management District supporting the development of a high speed rail system in California, as amended; seconded by Boardmember Daily; carried by the following vote: (14-2-0-6) Ayes: Bates, Brown, Daly, Dunnigan, Kishimoto, Klatt, Lockhart, Miley, Ross, Smith, Torliatt, Wagenknecht, Yeager, Hill; Noes: Haggerty and Shimansky; Abstain: None; Absent: Garner, Gioia, Kniss, McGoldrick, Silva, Uilkema.

OTHER BUSINESS

13. **Report of the Executive Officer/APCO**

Mr. Broadbent reported that ozone exceedances occurred on June 20, 22, 24 and 27 and July 7 and 8, 2008; the national ozone standard has been revised from 85 ppb to 76 ppb as of May 27, 2008; and there have been 8 PM health advisors on 7 days exceeding the 24-hr. $PM_{2.5}$ standard due to the summer wildfires.

14. **Chairperson's Report –** None

15. **Board Members' Comments**

Boardmembers provided brief reports on their attendance to various meetings and conferences since the last Board meeting.

16. **Time and Place of Next Meeting** – 9:45 a.m., Wednesday, July 30, 2008 - 939 Ellis Street, San Francisco, CA 94109

17. **Adjournment** - The meeting adjourned at 1:13 p.m.

/s/ Lisa Harper
Clerk of the Boards

AGENDA: 2

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Jerry Hill and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 15, 2008

Re: Board Communications Received from July 9, 2008 through July 29, 2008

RECOMMENDED ACTION:

Receive and file.

DISCUSSION

A list of Communications directed to the Board of Directors' received by the Air District from July 9, 2008 through July 29, 2008, if any, will be at each Board member's place at the July 30, 2008, Regular Board meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

TO: Chairperson Jerry Hill and Members of the Board of Directors

FROM: Jack P. Broadbent
Executive Officer/APCO

DATE: July 16, 2008

RE: Quarterly Report of the Executive Office: April 1 – June 30, 2008

RECOMMENDED ACTION

This report is provided for information only.

DISCUSSION

Listed below is the status of minutes for the Board of Directors and Advisory Council and activities of the Hearing Board for the second quarter of 2008:

Board of Directors

Meeting Type	Meeting Date	Status of Minutes
Regular Meeting	April 2	Minutes Approved
Regular Meeting	April 16	Minutes Approved
Regular Meeting	May 7	Minutes Approved
Regular Meeting	May 21	Minutes Approved
Regular Meeting	June 4	Minutes Approved
Budget & Finance Committee	April 23	Minutes Completed/Pending Approval
Mobile Source Committee	May 14	Minutes Approved
Legislative Committee	April 21	Minutes Completed/Pending Approval
Stationary Source Committee	May 19	Minutes Completed/Pending Approval
Climate Protection Committee	June 12	Minutes Completed/Pending Approval
Executive Committee	April 10	Minutes Approved
Executive Committee	May 12	Minutes Approved
Executive Committee	June 11	Minutes Completed/Pending Approval
Personnel Committee	April 4	Minutes Approved
Personnel Committee	May 30	Minutes Completed/Pending Approval
Public Outreach Committee	May 5	Minutes Completed/Pending Approval

Advisory Council

Meeting Type	Meeting Date	Status of Minutes
Regular Meeting	May 15	Minutes Completed/Pending Approval
Executive Committee	May 15	Minutes Completed/Pending Approval
Public Health Committee	April 9	Minutes Approved
Public Health Committee	June 9	Minutes Completed/Pending Approval
Technical Committee	April 7	Minutes Approved
Technical Committee	June 9	Minutes Completed/Pending Approval
Air Quality Planning Committee	April 10	Minutes Approved
Air Quality Planning Committee	June 16	Minutes Completed/Pending Approval

Hearing Board

1. During the Period April– June 2008, the Hearing Board processed and filed three (3) Applications for Variance; one (1) Emergency Variance; and one (1) Accusation and Request for Order for Abatement. The Clerk attended and took minutes at five hearings and participated in other discussions.

2. A total of $2,773.00 was collected as Hearing Board fees during the second quarter of 2008.

3. At the April 10, 2008 Board Executive Committee meeting, Hearing Board Member Terry Trumbull, Esq. presented the Hearing Board Quarterly Report for the period January-March 2008.

4. The Hearing Board held its Election of Officers and re-elected Thomas M. Dailey, M.D. as Chair and Christian Colline, P.E. as Vice-Chair.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

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AGENDA: 5

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jerry Hill and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: June 30, 2008

Re: District Personnel on Out-of-State Business Travel

RECOMMENDED ACTION:

Receive and file.

BACKGROUND

In accordance with Section 5.4 (b) of the District's Administrative Code, Fiscal Policies and Procedures Section, the Board is hereby notified that the following District personnel have traveled on out-of-state business.

The out-of-state business travel summarized below covers the period from June 1 – June 30, 2008. Out-of-state travel is reported in the month following travel completion.

DISCUSSION

Kelly Wee, Compliance & Enforcement Director, attended NACAA Enforcement Workshop in Denver, CO June 10 – 12, 2008

Mary Keba, Library Specialist, attended Special Libraries Association Annual Conference in Seattle, WA June 14 – 18, 2008

Glen Long, Supervising AQ Engineer, Attended EPA Regional/State/Local Dispersion Modelers Workshop in Denver, CO June 9 – 12, 2008

Jane Lundquist, Principal AQ Engineer, Attended EPA Regional/State/Local Dispersion Modelers Workshop in Denver, CO June 9 – 12, 2008

Eric Stevenson, Air Monitoring Manager, attended NACAA Air Monitoring Steering Committee Meeting in Burlington, VT June 18 – 21, 2008

Richard Lew, AQ Program Manager, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 -27, 2008

Michael Rich, Human Resources Director, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 27, 2008

Eric Stevenson, Air Monitoring Manager, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 26, 2008

Kelly Wee, Compliance & Enforcement Director, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 27, 2008

Gary Kendall, Technical Services Director, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 27, 2008

Linda Weiner, Advisory Council Member, attended A&WMA Annual Conference & Exhibition in Portland, OR June 26 - 28, 2008

Harold Brazil, Advisory Council Member, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 26, 2008

Robert Huang, Advisory Council Member, attended A&WMA Annual Conference & Exhibition in Portland, OR June 23 - 27, 2008

Robert Bornstein, Advisory Council Member, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 27, 2008

John Holtzclaw, Advisory Council Member, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 28, 2008

Mark Ross, Board of Directors Member, attended A&WMA Annual Conference & Exhibition in Portland, OR June 21 - 26, 2008

Pamela Torliatt, Board of Directors Member, attended A&WMA Annual Conference & Exhibition in Portland, OR June 23 - 28, 2008

Brad Wagenknecht, Board of Directors Member, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 26, 2008

Jack Broadbent, Executive Officer / APCO, attended A&WMA Annual Conference & Exhibition in Portland, OR June 25 - 28, 2008

Brian Bunger, District Counsel, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 29, 2008

Jack Colbourn, Director of Administration, attended A&WMA Annual Conference & Exhibition in Portland, OR June 25 - 28, 2008

Henry Hilken, Planning & Research Director, attended A&WMA Annual Conference & Exhibition in Portland, OR June 23 - 27, 2008

David Burch, Principal Environmental Planner, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 27, 2008

Su-Tzai Soong, Senior Atmospheric Modeler, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 27, 2008

Magen Harries, AQ Specialist, attended A&WMA Annual Conference & Exhibition in Portland , OR June 23 - 27, 2008

Toch Mangat, AQ Engineering Manager, attended A&WMA Annual Conference & Exhibition in Portland, OR June 23 - 27, 2008

Daniel Belik, Rule Development Manager, attended A&WMA Annual Conference & Exhibition in Portland, OR June 23 - 27, 2008

Brenda Cabral, Supervising AQ Engineer, attended A&WMA Annual Conference & Exhibition in Portland, OR June 24 - 27, 2008

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Linda J. Serdahl
Reviewed by: Jack M. Colbourn

AGENDA: 6

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jerry Hill and Members of the Board of Directors

From: Jack Broadbent
Executive Officer/APCO

Date: July 15, 2008

Re: Consider Adjusting the Pay Range for the Senior Policy Advisor Job Classification

RECOMMENDATION

Approve adjusting the Pay Range for the Senior Policy Advisor Job Classification to Range 148, effective upon Board of Director approval.

BACKGROUND

In the FY 08/09 Budget the Board approved a title change from Senior Policy Advisor to Communications Director. However, the job classification of Senior Policy Advisor is still needed and one position is budgeted for the classification currently. Prior to filling the vacant position staff reviewed the compensation and is recommending that it be adjusted.

DISCUSSION

The pay range for the Senior Policy Advisor is set at Pay Range 151 currently, which is mid-way between that of a Section Manager level position and a Division Director level position. After reviewing the anticipated reporting relationships for the Senior Policy Advisor position, staff is recommending that the Pay Range for the classification be changed from 151 to 148, a reduction of 7.5%. There is no incumbent in the position currently. Adjusting the Pay Range for the Senior Policy Advisor will make it consistent with the salary of most of the job classifications at the Section Manager level.

BUDGET CONSIDERATION/FINANCIAL IMPACT

The recommended adjustment will result in a savings of approximately $8,389 this fiscal year.

Respectfully Submitted,

Jack Broadbent
Executive Officer/APCO

Prepared by: Michael Rich

AGENDA: 7

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jerry Hill and Members of the Board of Directors

From: Jack Broadbent
Executive Officer/APCO

Date: July 15, 2008

Re: Consider Establishing a New Job Classification Description of Communications Director with a Salary Set at Pay Range 151M

RECOMMENDATION

Approve establishing a new job classification description of Communications Director with a salary set at Pay Range 151M.

Background

In the FY 08/09 Budget the Board of Directors approved a title change for one executive management position from Senior Policy Advisor to Communications Director. The title change reflected that the incumbent would be providing executive level management and oversight to the Air District's public information and community outreach programs. A new job classification description has been developed that reflects the duties and responsibilities of the Communications Director position.

DISCUSSION

The pay range for the Communications Director will be the same as it was prior to the title change. Further, approval of the new job classification description does not entail any change in budgeted FTE.

BUDGET CONSIDERATION/FINANCIAL IMPACT

There is no financial impact beyond what is contemplated in the budget adopted for FY 2008-09.

Respectfully Submitted,

Jack Broadbent
Executive Officer/APCO

Prepared by: Michael Rich

DRAFT
BAY AREA AIR QUALITY MANAGEMENT DISTRICT **JUNE 2008**

COMMUNICATIONS DIRECTOR

DEFINITION

Under executive direction, plans, organizes and directs the public information and community outreach programs and activities of the Bay Area Air Quality Management District; provides expert professional assistance to District management and staff in public information, community outreach and related matters; performs related work as assigned.

DISTINGUISHING CHARACTERISTICS

This single position class directs all activities of the Communications and Outreach Office which includes public information activities, media relations, community outreach, youth outreach and public awareness campaigns. The incumbent is accountable for accomplishing goals and objectives related to the above activities and for furthering District goals and objectives within general policy guidelines. This class is distinguished from Deputy Air Pollution Control Officer in that the latter has managerial responsibility for multiple divisions of the District.

EXAMPLES OF DUTIES (Illustrative Only)

Develops and directs the implementation of goals, objectives, policies, procedures and work standards for the Communications and Outreach Office.

Directs the preparation and administration of the Communication and Outreach Office budget.

Plans, organizes, administers, reviews and evaluates the activities of professional, technical and support staff.

Communicates District policies, rules and regulations to staff and is responsible for staff productivity and discipline.

Selects personnel and provides for their training and professional development.

Coordinates and directs Communication and Outreach Office staff and activities such as preparing and disseminating pamphlets, news sheets and other informational materials about the District's programs and activities, coordinating news releases for the media and responding to questions and concerns about the District's activities, developing and administering public awareness campaign, and building and supporting community (including youth) involvement in District activities.

Provides technical and managerial direction to District staff and others regarding public information and community outreach matters for the District.

Manages contracts with outside consultants and other agencies involving public awareness campaigns and community outreach.

Represents the District at meetings with the public, industry and other agencies.

Develops and presents programmatic and policy issues and recommendations to the District Board and executive management.

QUALIFICATIONS

Knowledge of:

Administrative principles and practices, including goal setting, program and budget development and implementation and employee supervision.

Applicable District, state and federal laws, rules and regulations.

Principles and practices of public administration.

Principles and practices of effective public and community relations.

Organization and functions of local, state and federal government.

Principles, practices and techniques of journalism, expository writing and editing.

Skill in:

Planning, organizing, assigning, directing, reviewing and evaluating the work of assigned staff.

Selecting and motivating staff and providing for their training and professional development.

Interpreting, explaining and applying District, state and federal laws, rules and regulations.

Analyzing complex media, community, and administrative problems, evaluating alternative solutions and adopting effective courses of action.

Representing the District effectively in contacts with the public, industry, the media and other agencies.

Establishing and maintaining effective working relationships with those contacted in the course of the work.

Preparing clear and concise reports, correspondence and other written materials.

Exercising sound independent judgment within policy guidelines.

Other Requirements:

Must possess a valid California driver's license.

Education and Experience:

A typical way to gain the knowledge and skills is:
Equivalent to graduation from a four year college or university with major coursework in journalism, writing, political science or a closely related field and five years of communications and/or community outreach experience, preferably with a public agency, including three years of lead or supervisory experience.

AGENDA: 8

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jerry Hill and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 15, 2008

Re: Report of the Mobile Source Committee Meeting of July 9, 2008

RECOMMENDED ACTIONS

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

A) Allocation of $20,276,209 in funding from a combination of Carl Moyer Program funding and Mobile Source Incentive Funding (MSIF) for projects listed in Attachment 1 of Agenda item 4 in reports to the Committee and authorize the Executive Officer/APCO to expend funding on eligible projects and execute all necessary funding agreements with recipients of grant award projects;

B) Expenditure Plans for FY 2008/09 TFCA County Program Manager Projects listed in Attachment 1 of Agenda item 5 of the reports to the Committee and authorization of Executive Officer/APCO to enter into funding agreements with the County Program Managers for Board approved projects;

C) Authorization of the Executive Officer/APCO to execute all necessary contract agreements with TIAX LLC for administrative consultation relative to the implementation of I-Bond funding in an amount not to exceed $796,573 with the authorization of the Executive Officer/APCO to renew this contract annually for up to three years based on the performance of the consultant and approval of the Committee; and

D) Allocation of $3.375 million in MSIF revenues to the Lower-Emission School Bus Program (LESBP) for the purchase of new public school buses; and authorize the Executive Officer/APCO to enter into all necessary funding agreements with recipients of grant awards under the LESBP.

DISCUSSION

The Mobile Source Committee met on Wednesday, July 9, 2008. The Committee considered and received the following reports and recommendations;

A) Consideration of Carl Moyer Year 10 Funding and Mobile Source Year 10 Funding and Mobile Source Incentive Fund Projects;

B) Consideration of Expenditure Plans for Transportation for Clean Air (TFCA) County Program Managers;

C) Consideration of $796,573 in California Goods Movement Bond Funding to Engage an Administrative Consultant to Assist in Program Execution; and

D) Consideration of Approval to Reserve $3.375 Million in Mobile Source Incentive Funds (MSIF) to Match Funds from the School Bus Program Portion of the California Goods Movement Bond.

Attached are the staff reports presented in the Mobile Source Committee packet.

Chairperson, Tim Smith will give an oral report of the meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

A) None. The Air District distributes "pass-through" funds from CARB to public agencies and private entities on a reimbursement basis. Therefore, the grant funds awarded do not directly impact the Air District's budget. Staff costs for the administration of the CMP and MSIF are included in the FY 2007/2008 and FY 2008/2009 budgets under *Program 307– Mobile Source Grants and Program 310– Mobile Source Incentive Funds*. MSIF revenues come from a dedicated external funding source. MSIF grant allocations do not impact the Air District's general fund or operating budget.

   By law, the Air District is required to provide a specified percentage of local funds to match its CMP funds. For the Year 10 CMP funding cycle, the Air District's required match amount is $1,729,930. The Air District expects to fulfill this match obligation through the allocation of MSIF funds to projects that comply with CMP guidelines and criteria.

B) None. Approval of the recommended projects will have no impact on the Air District's budget. TFCA revenues are generated from a dedicated outside funding source and passed through to counties. TFCA allocations do not impact the Air District's general fund or operating budget.

C) None. The I-Bond Program distributes funds from ARB to the District and then to eligible equipment owners. Costs for the administration of the Program are included under Programs 321 "California Goods Movement Bond - Early Grants" and 323 "California Goods Movement Bond Grants" in the FY 2008/2009 budget.

D) None. The requested amount of additional funding to cover costs associated with the replacement of school buses would come from the additional $2 surcharge in motor vehicle registrations fees within the Air District's jurisdiction.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Mary Ann Goodley

Attachment(s)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Smith and
Members of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 2, 2008

Re: Consideration of Carl Moyer Year 10 Funding and Mobile Source Incentive Fund Projects

RECOMMENDED ACTIONS

1. Recommend Board of Directors' approval of the allocation of $20,756,901 in funding from a combination of Carl Moyer Program (CMP) funds and Mobile Source Incentive Fund (MSIF) funds for the projects listed in Attachment 1;
2. Recommend Board of Directors' authorization for the Executive Officer/APCO to expend funding on eligible projects and to enter into funding agreements with recipients of grant awards for the projects listed in Attachment 1.

BACKGROUND

Carl Moyer Program (CMP)
The main purpose of the CMP is to provide funds for the implementation of projects that reduce emissions from heavy-duty engines. Heavy-duty diesel engines are major sources of oxides of nitrogen (NO_x), reactive organic gases (ROG), and particulate matter (PM). Diesel PM has been identified by the California Air Resources Board (CARB) as a toxic air contaminant.

The 2005 CMP guidelines incorporated light-duty vehicle scrap programs into the list of CMP eligible equipment categories. In June 2008 CARB approved the Air District's CMP implementation plan for the Vehicle Buy-back program (VBB). The approval of the plan provides the Air District with the flexibility of counting vehicles scrapped under the VBB program as match or CMP projects. The approval also allows the Air District to expend CMP funds on the VBB program.

CARB administers the CMP in partnership with local air districts. CARB develops CMP guidelines, and allocates funds to the local air districts on an annual basis for the implementation of eligible projects. Local air districts are responsible for soliciting project applications, selecting and awarding grant funds to projects consistent with CARB guidelines and criteria, and administering the awarded CMP grants.

The most common types of projects funded as part of the CMP are: 1) the repowering of existing

diesel vehicles or equipment by installing newer, cleaner engines; and 2) the installation of CARB-verified retrofit systems or devices to reduce emissions from existing and new diesel engines. The types of equipment eligible for CMP funding include: on-road heavy-duty vehicles, off-road equipment, marine vessels, locomotives, stationary agricultural irrigation pumps, forklifts, and airport ground support equipment. CMP funds can only be awarded to implement projects that will result in *surplus* emission reductions, i.e., emission reductions that are not required by adopted regulations or standards, or by any other legally binding document.

CARB has allocated to the Air District $11,209,947 for the Year 10 CMP funding cycle $560,497 of which has been designated for administrative costs, while the remaining $10,649,450 will be used to fund emission reduction projects. The CMP Year 10 funds have a minimum match requirement of $1,729,930. To achieve the minimum matching fund requirements staff recommends that the Air District fund additional projects using MSIF revenues.

On September 20, 2006 the Board authorized the Executive Officer/APCO to initiate a program with the Sacramento Metropolitan Air Quality Management District for joint use of Carl Moyer Program Funds for multi-regional projects in the amount of $500,000.

Mobile Source Incentive Fund (MSIF)
AB 923 (Firebaugh), enacted in 2004 (codified in part in Health and Safety Code Section 44225), authorized local air districts to increase their motor vehicle registration surcharge up to an additional $2 per vehicle. AB 923 stipulates that air districts may use the revenues generated by the additional $2 surcharge for any of the four programs listed below:

- Projects eligible for grants under the CMP;
- New purchase of clean school buses;
- Accelerated vehicle retirement or repair program; and
- Projects to reduce emissions from previously unregulated agricultural sources.

On December 21, 2004, the Board adopted Resolution 2004-16 to increase the surcharge on vehicles registered within the Air District boundaries from $4 to $6 per vehicle. The Department of Motor Vehicles began to collect the increased surcharge in May 2005. The revenues from the additional $2 surcharge are deposited in the Air District's MSIF. These funds may be used to meet the match requirements of the CMP.

DISCUSSION

Guidelines and Procedures
On January 6, 2006, CARB issued the 2005 guidelines and criteria for local air districts to follow to implement the fiscal year (FY) 2005/2006 and FY 2006/2007 CMP, which corresponds to the Year 8 and Year 9 CMP funding cycles. For the Year 10 CMP funding cycle CARB gave districts the choice of using either the 2005 guidelines or the newly revised 2008 guidelines. Because of the timing of the release of the new 2008 CMP guidelines and staff's familiarity with the current guidelines, the Air District elected to use the 2005 CMP guidelines and interim Program Advisories for Year 10 implementation. The 2008 Program guidelines will be used by the Air District to implement Year 11 of the CMP.

CARB CMP guidelines require that each project achieve a cost-effectiveness of $14,300 or less per ton of emissions reduced to be eligible for funding. Under the terms of the California Health & Safety Code Section 43023.5 (AB 1390, Lowenthal), the Air District is required to allocate at least 50 percent of its CMP funds to the implementation of projects that will reduce emissions in communities with the most significant exposure to air pollution, including, but not limited to, communities of minority or low-income populations. The Air District has adopted a methodology for the purpose of selecting projects to comply with the AB 1390 requirement. As part of the Air District's integrated targeting strategy for grant funding programs approved by the Board on March 5, 2008 staff prioritized projects reducing emissions in the six most impacted communities identified by the Community Air Risk Evaluation (CARE) program. The six communities identified as most highly impacted are: Concord, Eastern San Francisco, East Oakland/San Leandro, Richmond, San Jose and West Oakland.

Solicitation and Outreach

Air District staff began soliciting Year 10 CMP/ MSIF grant applications on February 1, 2008. Staff developed and executed an extensive outreach campaign to encourage the submittal of grant applications. Part of this campaign was a series of seven public workshops in the following locations: Richmond, San Francisco, two in West Oakland, Vallejo, East Palo Alto and San Jose. In addition to the public workshops staff also distributed outreach materials at nineteen other events, including: Speaking at the CA Trucking Association Annual Dinner, speaking at County Farm Bureau meetings, meetings with equipment vendors and having a booth with CMP/ MSIF materials at the Small Boat Commercial Salmon Fishermen's Association Sponsored 2008 Swap Meet. Staff also utilized the services of a contractor to assist with the outreach efforts. The deadline for submittal of grant applications was April 4, 2008.

Grant Applications Evaluation

Air District staff reviewed and evaluated the Year 10 CMP grant applications based upon:

- The 2005 CMP guidelines issued by CARB on January 6, 2006;
- The Air District's Year 10 CMP procedures approved by CARB
- Applicable regulations; and
- The Air District's AB 1390 methodology.

Project Recommendations

The Air District received 173 grant applications requesting incentive funds to reduce emissions from 770 heavy-duty engines. The results of the grant application evaluations performed by staff are summarized in Attachment 1 "Projects Recommended for Funding." Attachment 1 lists 359 engines that staff recommends be awarded grants for an aggregate of $20,256,901 in funding, using a combination of CMP funds and MSIF revenues. These projects would reduce approximately 1,132 tons of oxides of nitrogen (NOx), 113 tons of reactive organic gases (ROG), and 45 tons of particulate matter (PM) over their project life. Over 90% of the funds recommended for allocation will be for projects that reduce emissions in impacted communities. Table 1 summarizes the projects recommended for funding by impacted community designation. Table 2 provides a summary of the recommended grant awards by equipment category.

Table 1: Recommended grant awards by AB1390 designation

Designation	Number of engines	Total grant awards	Lifetime emissions reduction (tons)		
			NOx	ROG	PM
AB1390: Highly Impacted*	118	$5,372,981	251.76	14.47	12.71
AB1390: Impacted	157	$13,034,932	790.34	96.12	27.18
Not AB1390	84	$1,848,988	90.88	3.30	5.79
Total	**359**	**$20,256,901**	**1,132.98**	**113.89**	**45.69**

**Six most highly impacted communities: Concord, Eastern San Francisco, East Oakland/San Leandro, Richmond, San Jose and West Oakland.*

Table 2: Recommended grant awards by equipment category

Project category	Number of engines	Total grant awards	Lifetime emissions reduction (tons)		
			NOx	ROG	PM
On-Road	198	$4,423,969	167.28	0.73	13.08
Off-Road	21	$939,778	34.54	4.66	1.87
Marine	134	$12,548,910	776.04	95.55	25.98
Locomotive	2	$2,300,948	146.61	11.75	4.39
Ag (Irrigation) Pump	4	$43,296	8.52	1.21	0.37
Total	**359**	**$20,256,901**	**1,132.98**	**113.89**	**45.69**

Staff recommends the allocation of $20,756,901 for the CMP eligible projects listed in Attachment 1 and $500,000 for multi-regional projects with the Sacramento Metropolitan Air Quality Management District using a combination of CMP funds and MSIF funds. Staff also recommends that your Board authorize the Executive Officer to enter into funding agreements with recipients of grant awards for the projects listed in Attachment 1.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None. The Air District distributes "pass-through" funds from CARB to public agencies and private entities on a reimbursement basis. Therefore, the grant funds awarded do not directly impact the Air District's budget. Staff costs for the administration of the CMP and MSIF are included in the FY 2007/2008 and FY 2008/2009 budgets under *Program 307– Mobile Source Grants and Program 310– Mobile Source Incentive Funds*. MSIF revenues come from a dedicated external funding source. MSIF grant allocations do not impact the Air District's general fund or operating budget.

By law, the Air District is required to provide a specified percentage of local funds to match its CMP funds. For the Year 10 CMP funding cycle, the Air District's required match amount is $1,729,930. The Air District expects to fulfill this match obligation through the allocation of MSIF funds to projects that comply with CMP guidelines and criteria.

Respectfully submitted,

Jack P. Broadbent
Executive Director/APCO

Prepared by: Anthony Fournier
Reviewed by: Jack M. Colbourn

Attachment

Attachment 1:
BAAQMD Year 10 Carl Moyer Program/ MSIF Project Recommendations

Project Group Designation - AB1390: Highly Impacted

Cost-Effectiveness	*Project #: 10MOY__*	*Equipment ID/ Unit #*	*Applicant*	*Equipment Category*	*Project Type*	*NOx (TPY)*	*ROG (TPY)*	*PM (TPY)*	*Proposed Award*
$6,287	143	1004	Cooper Crane & Rigging	Off-road	Repower & Retrofit	0.61941	0.08544	0.03127	$54,749
$6,441	120	1115	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.42450	0	0.04449	$23,495
$6,486	123	16099	Norcal Waste Systems, Inc.	On-road	Retrofit only	0.51013	0	0.03976	$23,495
$6,735	123	16101	Norcal Waste Systems, Inc.	On-road	Retrofit only	0.49124	0	0.03829	$23,495
$8,180	132	1	Royal Trucking Company	On-road	Retrofit only	0.35461	0	0.02764	$20,598
$8,430	7	42	C & A Trucking	On-road	Retrofit only	0.41763	0	0.03255	$25,000
$8,530	132	21	Royal Trucking Company	On-road	Retrofit only	0.34009	0	0.02651	$20,598
$8,695	14	3	Rich Ladeira Trucking, Inc.	On-road	Repower & retrofit	0.60915	0.03534	0.08457	$56,364
$9,188	7	40	C & A Trucking	On-road	Retrofit only	0.41021	0	0.02852	$25,000
$9,391	113	598	Petaluma Acquisitions LLC	On-road	Retrofit only	0.37488	0	0.02922	$25,000
$9,744	120	2114	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.24885	0	0.02608	$20,836
$9,788	60	16	PJ's Lumber Inc.	On-road	Retrofit only	0.24002	0	0.01668	$25,000
$9,799	135	15	S.S. Skikos Trucking	On-road	Retrofit only	0.35929	0	0.02800	$25,000
$9,980	143	1002	Cooper Crane & Rigging	Off-road	Repower & Retrofit	0.38683	0.05391	0.01981	$43,439
$10,322	88	1	Salt River Construction Inc.	Off-road	Repower & Retrofit	0.92254	0.12719	0.04821	$128,206
$10,403	88	2	Salt River Construction Inc.	Off-road	Repower & Retrofit	0.91542	0.12621	0.04784	$127,216
$10,418	132	31	Royal Trucking Company	On-road	Retrofit only	0.27844	0	0.02170	$20,598

$10,566	7	43	C & A Trucking	On-road	Retrofit only	0.33319	0	0.02597	$25,000
$10,754	120	2118	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.29209	0	0.02030	$20,836
$10,812	7	45	C & A Trucking	On-road	Retrofit only	0.32563	0	0.02538	$25,000
$10,880	120	3101	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.30412	0	0.02370	$23,495
$10,896	132	45	Royal Trucking Company	On-road	Retrofit only	0.33427	0	0.02463	$25,000
$10,959	103	1	Economy Lumber Company	On-road	Retrofit only	0.20296	0	0.02127	$25,000
$11,251	60	30	PJ's Lumber Inc.	On-road	Retrofit only	0.19506	0	0.01520	$25,000
$11,408	154	T110	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.23593	0	0.01839	$25,000
$11,488	109	2209	Diana Zesati	On-road	Retrofit only	0.30646	0	0.02389	$25,000
$11,559	103	2	Economy Lumber Company	On-road	Retrofit only	0.14536	0	0.0317	$25,000
$11,594	142	168	Bode Gravel Company	On-road	Retrofit only	0.20711	0	0.01526	$21,559
$11,823	7	38	C & A Trucking	On-road	Retrofit only	0.31877	0	0.02216	$25,000
$11,847	108	93	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.18524	0	0.01444	$25,000
$11,869	120	121	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.26464	0	0.0184	$20,836
$11,878	41	44	Timothy Ore	On-road	Repower & retrofit	0.39210	0.02533	0.0568	$66,977
$11,881	142	154	Bode Gravel Company	On-road	Retrofit only	0.25553	0	0.01992	$21,559
$11,884	113	539	Petaluma Acquisitions LLC	On-road	Retrofit only	0.1977	0	0.01374	$25,000
$11,932	103	3	Economy Lumber Company	On-road	Retrofit only	0.15189	0	0.03015	$25,000
$11,962	53	19	North Bay Construction	On-road	Retrofit only	0.1858	0	0.01418	$25,000
$11,963	145	92	Rock Transport	On-road	Retrofit only	0.22499	0	0.01754	$25,000
$12,039	135	108	S.S. Skikos Trucking	On-road	Retrofit only	0.29244	0	0.02279	$25,000
$12,046	149	256	Rodolfo Mendoza	On-road	Repower & retrofit	0.38664	0.02498	0.05601	$66,977
$12,069	142	159	Bode Gravel Company	On-road	Retrofit only	0.25155	0	0.01961	$21,559
$12,098	142	169	Bode Gravel Company	On-road	Retrofit only	0.25961	0	0.01913	$21,559

$12,141	142	155	Bode Gravel Company	On-road	Retrofit only	0.25007	0	0.01949	$21,559
$12,143	121	TP5	Argonaut Constructors	On-road	Retrofit only	0.22166	0	0.01728	$25,000
$12,199	154	T12	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.28859	0	0.02249	$25,000
$12,213	135	11	S.S. Skikos Trucking	On-road	Retrofit only	0.28827	0	0.02247	$25,000
$12,343	145	91	Rock Transport	On-road	Retrofit only	0.30535	0	0.02123	$25,000
$12,365	145	93	Rock Transport	On-road	Retrofit only	0.21768	0	0.01697	$25,000
$12,369	154	T9	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.21761	0	0.01696	$25,000
$12,377	120	2116	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.19592	0	0.02054	$20,836
$12,432	120	1120	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.20347	0	0.01586	$23,495
$12,551	37	757142-18	California Northern Railroad	Locomotive	New Purchase	4.1757	0.38401	0.14417	$1,269,600
$12,645	145	95	Rock Transport	On-road	Retrofit only	0.21286	0	0.01659	$25,000
$12,704	60	9	PJ's Lumber Inc.	On-road	Retrofit only	0.08245	0	0.01798	$25,000
$12,806	142	156	Bode Gravel Company	On-road	Retrofit only	0.23707	0	0.01848	$21,559
$12,807	142	160	Bode Gravel Company	On-road	Retrofit only	0.23706	0	0.01848	$21,559
$12,815	105	805	Gurpreet Singh	On-road	Retrofit only	0.17125	0	0.01335	$25,000
$12,833	142	171	Bode Gravel Company	On-road	Retrofit only	0.24476	0	0.01803	$21,559
$12,853	142	161	Bode Gravel Company	On-road	Retrofit only	0.23621	0	0.01841	$21,559
$12,896	142	162	Bode Gravel Company	On-road	Retrofit only	0.23542	0	0.01835	$21,559
$12,913	142	173	Bode Gravel Company	On-road	Retrofit only	0.24324	0	0.01792	$21,559
$12,945	142	166	Bode Gravel Company	On-road	Retrofit only	0.24263	0	0.01787	$21,559
$13,042	142	158	Bode Gravel Company	On-road	Retrofit only	0.23280	0	0.01814	$21,559
$13,107	135	134	S.S. Skikos Trucking	On-road	Retrofit only	0.17322	0	0.01276	$25,000
$13,147	135	135	S.S. Skikos Trucking	On-road	Retrofit only	0.21180	0	0.01560	$25,000
$13,197	154	T16	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.21833	0	0.01518	$25,000

$13,300	120	123	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.18055	0	0.01255	$20,835
$13,307	142	170	Bode Gravel Company	On-road	Retrofit only	0.23603	0	0.01739	$21,559
$13,335	135	29	S.S. Skikos Trucking	On-road	Retrofit only	0.17025	0	0.01254	$25,000
$13,340	145	94	Rock Transport	On-road	Retrofit only	0.26393	0	0.02057	$25,000
$13,393	142	163	Bode Gravel Company	On-road	Retrofit only	0.2267	0	0.01767	$21,559
$13,399	142	167	Bode Gravel Company	On-road	Retrofit only	0.23442	0	0.01727	$21,559
$13,402	113	554	Petaluma Acquisitions LLC	On-road	Retrofit only	0.26269	0	0.02047	$25,000
$13,445	142	172	Bode Gravel Company	On-road	Retrofit only	0.23361	0	0.01721	$21,559
$13,508	7	44	C & A Trucking	On-road	Retrofit only	0.19926	0	0.01553	$25,000
$13,661	108	109	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.19703	0	0.01536	$25,000
$13,723	13	60	Mid Coast Trans. Inc.	On-road	Retrofit only	0.15993	0	0.01247	$25,000
$13,733	6	39	Frank Ted Ekler	On-road	Repower & retrofit	0.31230	0.01182	0.05097	$66,977
$13,790	7	39	C & A Trucking	On-road	Retrofit only	0.27330	0	0.019	$25,000
$13,796	155	794	Amtrak	Locomotive	New Purchase	4.85347	0.31295	0.11600	$1,031,348
$13,956	120	2119	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.22507	0	0.01565	$20,836
$13,960	142	164	Bode Gravel Company	On-road	Retrofit only	0.22499	0	0.01658	$21,559
$14,004	23	717	Victor M Valencia	On-road	Repower & retrofit	0.3252	0.01887	0.04515	$63,389
$14,137	154	T11	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.24905	0	0.01941	$25,000
$14,137	120	122	Monaghan Enterprise Inc. dba Cros	On-road	Retrofit only	0.13850	0	0.00963	$20,836
$14,139	142	165	Bode Gravel Company	On-road	Retrofit only	0.22215	0	0.01637	$21,559
$14,168	154	00	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.19653	0	0.01448	$25,000
$14,191	145	88	Rock Transport	On-road	Retrofit only	0.20305	0	0.01411	$25,000
$14,299	144	459	Right Away Redy Mix	On-road	Retrofit only	0.0789	0	0.00615	$12,851
$14,299	108	106	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.08846	0	0.00628	$13,625

$14,299	144	460	Right Away Redy Mix	On-road	Retrofit only	0.08667	0	0.00675	$14,117
$14,299	144	52	Right Away Redy Mix	On-road	Retrofit only	0.08443	0	0.00587	$12,847
$14,299	135	27	S.S. Skikos Trucking	On-road	Retrofit only	0.12223	0	0.00901	$19,246
$14,299	144	57	Right Away Redy Mix	On-road	Retrofit only	0.09343	0	0.00728	$15,218
$14,300	132	35	Royal Trucking Company	On-road	Retrofit only	0.23293	0	0.01716	$22,863
$14,300	108	97	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.14627	0	0.01078	$23,031
$14,300	144	56	Right Away Redy Mix	On-road	Retrofit only	0.08719	0	0.0068	$14,203
$14,300	108	91	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.14799	0	0.01153	$24,106
$14,300	144	465	Right Away Redy Mix	On-road	Retrofit only	0.08337	0	0.0065	$13,580
$14,300	135	35	S.S. Skikos Trucking	On-road	Retrofit only	0.14162	0	0.01043	$22,299
$14,300	108	75	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.12261	0	0.00852	$18,657
$14,300	135	19	S.S. Skikos Trucking	On-road	Retrofit only	0.13893	0	0.01024	$21,876
$14,300	143	1030	Cooper Crane & Rigging	Off-road	Repower & Retrofit	0.19721	0.02462	0.00872	$20,571
$14,300	135	33	S.S. Skikos Trucking	On-road	Retrofit only	0.12422	0	0.00915	$19,560
$14,300	108	108	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.10432	0	0.00769	$16,426
$14,300	144	54	Right Away Redy Mix	On-road	Retrofit only	0.08485	0	0.00661	$13,822
$14,300	135	31	S.S. Skikos Trucking	On-road	Retrofit only	0.12823	0	0.00945	$20,191
$14,300	144	464	Right Away Redy Mix	On-road	Retrofit only	0.08415	0	0.00656	$13,708
$14,300	108	102	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.11738	0	0.00865	$18,482
$14,300	135	191	S.S. Skikos Trucking	On-road	Retrofit only	0.07758	0	0.00605	$12,638
$14,300	109	2202	Diana Zesati	On-road	Retrofit only	0.13791	0	0.00947	$20,831
$14,300	135	192	S.S. Skikos Trucking	On-road	Retrofit only	0.10795	0	0.00841	$17,585
$14,300	108	31	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.10481	0	0.00772	$16,503
$14,300	143	1022	Cooper Crane & Rigging	Off-road	Repower & Retrofit	0.51805	0.06868	0.02559	$57,020

$14,300	143	1209	Cooper Crane & Rigging	Off-road	Repower & Retrofit	0.2835	0.02332	0.02150	$38,248
$14,300	109	2299	Diana Zesati	On-road	Retrofit only	0.13549	0	0.0093	$20,466
$14,300	135	5	S.S. Skikos Trucking	On-road	Retrofit only	0.15616	0	0.01086	$23,762
$14,300	144	47	Right Away Redy Mix	On-road	Retrofit only	0.08372	0	0.00582	$12,740
$14,300	108	92	Greg's Trucking Service, Inc.	On-road	Retrofit only	0.13925	0	0.01026	$21,926

Summary for 'AB1390 Designation' = AB1390: Highly Impacted (118 projects)

	NOx (TPY)	*ROG (TPY)*	*PM (TPY)*	*Proposed Award*
Group Total	*37.3236*	*1.32265*	*2.52775*	*$5,372,981*

Project Group Designation - AB1390: Impacted

Cost-Effectiveness	*Project #: 10MOY__*	*Equipment ID/ Unit #*	*Applicant*	*Equipment Category*	*Project Type*	*NOx (TPY)*	*ROG (TPY)*	*PM (TPY)*	*Proposed Award*
$2,306	73	Liberty	Amnav Maritime Services	Marine	Repower	1.21786	0.20605	0.05613	$16,297
$2,689	125	Provider	Westar Marine Services	Marine	Repower	1.15344	0.23675	0.07118	$21,000
$3,563	125	Ms Katie	Westar Marine Services	Marine	Repower	0.87064	0.17871	0.05373	$21,000
$4,083	167	Amy Elise	Southampton Towing Company	Marine	Repower	4.34722	0.47024	0.13624	$85,464
$4,083	167	Amy Elise	Southampton Towing Company	Marine	Repower	4.34722	0.47024	0.13624	$85,464
$4,303	34	Bay Monarch (p)	Blue and Gold Ferry	Marine	Repower	9.20112	0.99262	0.28965	$190,898
$4,452	34	Bay Monarch (s)	Blue and Gold Ferry	Marine	Repower	8.89215	0.95929	0.27992	$190,898
$4,496	125	Fatcat (s)	Westar Marine Services	Marine	Repower	0.98847	0.14681	0.03875	$23,832
$4,496	125	Fatcat (p)	Westar Marine Services	Marine	Repower	0.98847	0.14681	0.03875	$23,832
$4,810	124	CB60 (AW)	Vortex Marine Construction, Inc.	Marine	Repower	1.54405	0.16702	0.05168	$36,638
$4,852	124	Vantage (JPD)	Vortex Marine Construction, Inc.	Marine	Repower	2.70776	0.27977	0.09865	$66,796

$4,862	124	Victory	Vortex Marine Construction, Inc.	Marine	Repower	1.4422	0.14849	0.05623	$36,638
$4,900	125	Baycat (p)	Westar Marine Services	Marine	Repower	0.85266	0.1356	0.03822	$23,832
$4,900	125	Baycat (s)	Westar Marine Services	Marine	Repower	0.85266	0.1356	0.03822	$23,832
$5,341	124	Vantage (SW)	Vortex Marine Construction, Inc.	Marine	Repower	1.21898	0.13079	0.04116	$32,204
$5,341	124	Vantage (AW2)	Vortex Marine Construction, Inc.	Marine	Repower	1.21898	0.13079	0.04116	$32,204
$5,341	124	Vantage (w/SN)	Vortex Marine Construction, Inc.	Marine	Repower	1.21898	0.13079	0.04116	$32,204
$5,620	5	Royal Melbourne (s)	Tom Larsen	Marine	Repower	0.99529	0.1684	0.04587	$32,455
$5,664	124	CB60 (SW)	Vortex Marine Construction, Inc.	Marine	Repower	1.14940	0.12333	0.03881	$32,204
$5,889	171	Gwendolyn Grace (s aux)	Marine Express, Inc.	Marine	Repower	0.28005	0.05406	0.01220	$9,448
$5,889	171	Gwendolyn Grace (p aux)	Marine Express, Inc.	Marine	Repower	0.28005	0.05406	0.01220	$9,448
$5,956	10	Happy Days (s)	Joe Nazar	Marine	Repower	1.88961	0.21515	0.06922	$57,673
$5,956	10	Happy Days (p)	Joe Nazar	Marine	Repower	1.88961	0.21515	0.06922	$57,673
$6,285	39	Beaver (s)	Bay Marine Services	Marine	Repower	1.19003	0.12785	0.03772	$36,142
$6,285	39	Beaver (p)	Bay Marine Services	Marine	Repower	1.19003	0.12785	0.03772	$36,142
$6,890	165	New Salmon Queen	New Salmon Queen Sportfishing,LL	Marine	Repower	1.47532	0.18495	0.04903	$50,497
$6,890	165	New Salmon Queen	New Salmon Queen Sportfishing,LL	Marine	Repower	1.47532	0.18495	0.04903	$50,497
$6,935	125	Taurus (p)	Westar Marine Services	Marine	Repower	0.62721	0.10248	0.02543	$23,832
$6,935	125	Taurus (s)	Westar Marine Services	Marine	Repower	0.62721	0.10248	0.02543	$23,832
$7,389	125	Kitsap	Westar Marine Services	Marine	Repower	1.05194	0.13188	0.01043	$28,549
$7,451	164	Liberty II	Robert G. Anthony	Marine	Repower	0.85279	0.11521	0.03048	$32,620
$7,491	65	Guard (hydaux)	Crowley Maritime Corporation/Vess	Marine	Repower	0.76227	0.09556	0.00756	$20,973
$7,579	12	New Rayann (s)	John J. Atkinson Jr.	Marine	Repower	1.53184	0.19204	0.05091	$57,674
$7,579	12	New Rayann (p)	John J. Atkinson Jr.	Marine	Repower	1.53184	0.19204	0.05091	$57,674
$7,645	65	Protector (hydaux)	Crowley Maritime Corporation/Vess	Marine	Repower	0.74684	0.09363	0.00740	$20,973

$7,697	126	Williamette Hustler	Salt River Construction Inc.	Marine	Repower	0.66799	0.07606	0.02601	$27,007
$7,697	126	Williamette Hustler	Salt River Construction Inc.	Marine	Repower	0.66799	0.07606	0.02601	$27,007
$7,783	19	Flash	Steve Talmadge	Marine	Repower	1.41699	0.17315	0.04782	$55,000
$7,790	69	Shelley Lind (s)	Jerico Products/Aaron Lind	Marine	Repower	1.00198	0.11409	0.03671	$40,000
$7,790	69	Shelley Lind (p)	Jerico Products/Aaron Lind	Marine	Repower	1.00198	0.11409	0.03671	$40,000
$7,883	169	Butchie B	Phil Bentivegna	Marine	Repower	1.77246	0.18225	0.06475	$71,093
$7,883	169	Butchie B	Phil Bentivegna	Marine	Repower	1.77246	0.18225	0.06475	$71,093
$8,065	34	Zelinsky (p)	Blue and Gold Ferry	Marine	Repower	0.72766	0.10893	0.02822	$59,230
$8,164	124	Vulcan	Vortex Marine Construction, Inc.	Marine	Repower	0.90973	0.09841	0.03045	$36,638
$8,258	171	Marin Sunshine (sm)	Marine Express, Inc.	Marine	Repower	0.31962	0.03138	0.00404	$12,945
$8,299	125	Sagittarian (p)	Westar Marine Services	Marine	Repower	0.91306	0.08683	0.01	$27,635
$8,299	125	Sagittarian (s)	Westar Marine Services	Marine	Repower	0.91306	0.08683	0.01	$27,635
$8,352	124	Victory	Vortex Marine Construction, Inc.	Marine	Repower	2.07205	0.25352	0.06987	$86,296
$8,448	171	Marin Sunshine (p aux)	Marine Express, Inc.	Marine	Repower	0.22049	0.03308	0.00843	$12,945
$8,708	88	4	Salt River Construction Inc.	Off-road	Repower & Retrofit	0.33232	0.03859	0.01400	$41,438
$9,036	171	Gwendolyn Grace (pm)	Marine Express, Inc.	Marine	Repower	1.71525	0.19644	0.06274	$103,853
$9,036	171	Gwendolyn Grace (sm)	Marine Express, Inc.	Marine	Repower	1.71525	0.19644	0.06274	$103,853
$9,344	162	Peralta	City of Alameda/Ferry E. Sanchez	Marine	Repower	0.56771	0.09414	0.02563	$30,455
$9,344	162	Peralta	City of Alameda/Ferry E. Sanchez	Marine	Repower	0.56771	0.09414	0.02563	$30,455
$9,520	124	Vengeance	Vortex Marine Construction, Inc.	Marine	Repower	0.44933	0.06833	0.01561	$21,924
$9,588	124	Joey (p)	Vortex Marine Construction, Inc.	Marine	Repower	0.92982	0.10598	0.03621	$61,258
$9,588	124	Joey (s)	Vortex Marine Construction, Inc.	Marine	Repower	0.92982	0.10598	0.03621	$61,258
$9,668	28	California Dawn (p)	James B. Smith	Marine	Repower	1.30962	0.16244	0.04381	$63,000
$9,668	28	California Dawn (s)	James B. Smith	Marine	Repower	1.30962	0.16244	0.04381	$63,000

$9,840	5	Royal Melbourne (p)	Tom Larsen	Marine	Repower	0.56843	0.09617	0.0262	$32,455
$9,909	128	DelNorte	Golden Gate Bridge Highway and Tr	Marine	Repower	15.9826	2.07913	0.51903	$782,127
$9,909	128	DelNorte	Golden Gate Bridge Highway and Tr	Marine	Repower	15.9826	2.07913	0.51903	$782,127
$9,909	128	DelNorte	Golden Gate Bridge Highway and Tr	Marine	Repower	15.9826	2.07913	0.51903	$782,127
$9,909	128	DelNorte	Golden Gate Bridge Highway and Tr	Marine	Repower	15.9826	2.07913	0.51903	$782,127
$10,203	65	Guard (S aux)	Crowley Maritime Corporation/Vess	Marine	Repower	0.51476	0.06335	0.0173	$26,166
$10,203	65	Guard (P aux)	Crowley Maritime Corporation/Vess	Marine	Repower	0.51476	0.06335	0.0173	$26,166
$10,226	46	F/V Blizzard (s)	Michael K. Peery	Marine	Repower	0.7339	0.08594	0.02865	$51,700
$10,226	46	F/V Blizzard (p)	Michael K. Peery	Marine	Repower	0.7339	0.08594	0.02865	$51,700
$10,414	65	Protector (S aux)	Crowley Maritime Corporation/Vess	Marine	Repower	0.50434	0.06207	0.01695	$26,166
$10,414	65	Protector (P aux)	Crowley Maritime Corporation/Vess	Marine	Repower	0.50434	0.06207	0.01695	$26,166
$10,997	171	Lana (s)	Marine Express, Inc.	Marine	Repower	1.68430	0.17205	0.06176	$123,403
$10,997	171	Lana (p)	Marine Express, Inc.	Marine	Repower	1.68430	0.17205	0.06176	$123,403
$11,094	166	Saratoga	Power Engineering Contractors	Marine	Repower	0.63111	0.0666	0.02085	$44,891
$11,250	62	Brittany (gen)	C&W Diving Services, Inc.	Marine	Repower	0.09421	0.07294	0.01172	$16,395
$11,478	124	Vigor	Vortex Marine Construction, Inc.	Marine	Repower	0.52111	0.0605	0.00534	$21,924
$11,539	171	Delta Captain (s aux)	Marine Express, Inc.	Marine	Repower	0.34184	0.03356	0.00432	$19,345
$11,539	171	Delta Captain (p aux)	Marine Express, Inc.	Marine	Repower	0.34184	0.03356	0.00432	$19,345
$11,629	16	Allied Mariner (s)	Redwood Shore Diving Inc.	Marine	Repower	0.94889	0.10181	0.03204	$87,569
$12,010	163	Old Habits	Phillip Gray Sanchez	Marine	Repower	0.47451	0.05636	0.01627	$45,785
$12,094	8	KD17	Kadon Trucking Inc.	On-road	Retrofit only	0.23024	0	0.01696	$25,000
$12,169	9	Tigerfish	Allen Chin/A.C. Fishing Charters, In	Marine	Repower	0.83295	0.10990	0.02680	$65,322
$12,169	9	Tigerfish	Allen Chin/A.C. Fishing Charters, In	Marine	Repower	0.83295	0.10990	0.02680	$65,322
$12,219	10	Kitty Kat (p)	Joe Nazar	Marine	Repower	1.65795	0.21515	0.05393	$100,086

$12,219	10	Kitty Kat (s)	Joe Nazar	Marine	Repower	1.65795	0.21515	0.05393	$100,086
$12,320	50	Hayden Bay (p)	Associated Dock Enterprises	Marine	Repower	1.36927	0.14621	0.04383	$106,970
$12,320	50	Hayden Bay (s)	Associated Dock Enterprises	Marine	Repower	1.36927	0.14621	0.04383	$106,970
$12,438	39	Pacific Navigator (p)	Bay Marine Services	Marine	Repower	2.28876	0.23379	0.08392	$145,000
$12,438	39	Pacific Navigator (s)	Bay Marine Services	Marine	Repower	2.28876	0.23379	0.08392	$145,000
$12,574	54	Josephine	Rich Fitzpatrick	Marine	Repower	0.17384	0.02357	0.00617	$17,955
$12,633	16	Allied Mariner (p)	Redwood Shore Diving Inc.	Marine	Repower	0.82265	0.09367	0.03204	$87,569
$12,723	88	3	Salt River Construction Inc.	Off-road	Repower & Retrofit	0.62531	0.07476	0.02957	$82,213
$12,770	113	599	Petaluma Acquisitions LLC	On-road	Retrofit only	0.27569	0	0.02149	$25,000
$12,896	44	Play'n Hooky (p)	Art Roby	Marine	Repower	1.25048	0.14238	0.04581	$82,634
$12,896	44	Play'n Hooky (s)	Art Roby	Marine	Repower	1.25048	0.14238	0.04581	$82,634
$12,924	121	TP4	Argonaut Constructors	On-road	Retrofit only	0.0994	0	0.02168	$25,000
$13,120	71	Predator	Michael Andrews	Marine	Repower	0.36080	0.04543	0.01196	$44,391
$13,132	171	Ailene Elizabeth (s)	Marine Express, Inc.	Marine	Repower	1.85273	0.21026	0.06793	$124,688
$13,132	171	Ailene Elizabeth (p)	Marine Express, Inc.	Marine	Repower	1.85273	0.21026	0.06793	$124,688
$13,146	62	Brittany (s)	C&W Diving Services, Inc.	Marine	Repower	0.98	0.12286	0.03257	$102,666
$13,146	62	Brittany (p)	C&W Diving Services, Inc.	Marine	Repower	0.98	0.12286	0.03257	$102,666
$13,388	123	16077	Norcal Waste Systems, Inc.	On-road	Retrofit only	0.18894	0	0.01473	$23,495
$13,572	8	KD18	Kadon Trucking Inc.	On-road	Retrofit only	0.20516	0	0.01511	$25,000
$13,631	171	Southern Cross (m)	Marine Express, Inc.	Marine	Repower	3.59555	0.38579	0.11419	$310,000
$13,664	72	Cub	California Maritime Academy-CSU	Marine	Repower	0.9627	0.12513	0.04082	$156,169
$13,664	72	Little Bear	California Maritime Academy-CSU	Marine	Repower	0.9627	0.12513	0.04082	$156,169
$13,748	129	CAHornblower	Hornblower Cruises & Events	Marine	Repower	2.09305	0.26084	0.06982	$187,152
$13,748	129	CAHornblower	Hornblower Cruises & Events	Marine	Repower	2.09305	0.26084	0.06982	$187,152

$13,750	166	Saratoga	Power Engineering Contractors	Marine	Repower	0.50101	0.05264	0.01729	$44,891
$13,828	26	Dawn (p)	North Coast Divers Inc.	Marine	Repower	0.46473	0.05015	0.01462	$75,164
$13,828	26	Dawn (s)	North Coast Divers Inc.	Marine	Repower	0.46473	0.05015	0.01462	$75,164
$13,992	31	Nan	Jesse D. Langley	Marine	Repower	0.46192	0.05329	0.01686	$43,295
$14,084	42	Lynn Marie (p)	Foss Maritime Company	Marine	Repower	0.65425	0.08052	0.00873	$35,542
$14,084	42	Lynn Marie (s)	Foss Maritime Company	Marine	Repower	0.65425	0.08052	0.00873	$35,542
$14,164	62	Addison (s)	C&W Diving Services, Inc.	Marine	Repower	0.86567	0.10852	0.02877	$79,672
$14,164	62	Addison (p)	C&W Diving Services, Inc.	Marine	Repower	0.86567	0.10852	0.02877	$79,672
$14,184	151	T19	SMCP Corp.	On-road	Retrofit only	0.09769	0	0.01939	$25,000
$14,192	72	Black Bear	California Maritime Academy-CSU	Marine	Repower	1.15658	0.15203	0.04923	$219,108
$14,216	171	Ailene Elizabeth (gen)	Marine Express, Inc.	Marine	Repower	0.04634	0.04732	0.00658	$14,257
$14,299	114	3212	Leland Stanford Junior University	On-road	Retrofit only	0.08311	0	0.00612	$13,085
$14,299	114	3210	Leland Stanford Junior University	On-road	Retrofit only	0.08102	0	0.00597	$12,756
$14,299	133	1221	Cooper Crane & Rigging	Off-road	Retrofit	0	0	0.00843	$10,733
$14,299	114	3211	Leland Stanford Junior University	On-road	Retrofit only	0.09072	0	0.00668	$14,284
$14,299	122	TF52	DillonRyan Associates	On-road	Retrofit only	0.09416	0	0.00734	$15,338
$14,299	171	Southern Cross (s aux)	Marine Express, Inc.	Marine	Repower	0.13066	0.02522	0.00569	$14,000
$14,299	171	Southern Cross (p aux)	Marine Express, Inc.	Marine	Repower	0.13066	0.02522	0.00569	$14,000
$14,299	114	3214	Leland Stanford Junior University	On-road	Retrofit only	0.08339	0	0.00614	$13,130
$14,299	114	3206	Leland Stanford Junior University	On-road	Retrofit only	0.08407	0	0.00619	$13,237
$14,299	27	Betty Jane	Ernie Koepf	Marine	Repower	0.21586	0.03264	0.00782	$25,772
$14,300	114	3202	Leland Stanford Junior University	On-road	Retrofit only	0.08784	0	0.00647	$13,831
$14,300	162	Bay Breeze (s)	City of Alameda/Ferry E. Sanchez	Marine	Repower	0.13322	0.02273	0.0055	$16,927
$14,300	114	3209	Leland Stanford Junior University	On-road	Retrofit only	0.09438	0	0.00695	$14,860

$14,300	133	1220	Cooper Crane & Rigging	Off-road	Retrofit	0	0	0.01089	$13,859
$14,300	114	3203	Leland Stanford Junior University	On-road	Retrofit only	0.0848	0	0.00625	$13,352
$14,300	122	TF58	DillonRyan Associates	On-road	Retrofit only	0.11643	0	0.00907	$18,965
$14,300	124	CB60 (M)	Vortex Marine Construction, Inc.	Marine	Repower	0.0477	0.04871	0.00677	$19,902
$14,300	162	Bay Breeze (p)	City of Alameda/Ferry E. Sanchez	Marine	Repower	0.20722	0.03536	0.00855	$26,330
$14,300	36	Yardbird	Ovlan Fritz, Jr.	Marine	Repower	0.16615	0.02029	0.00428	$23,343
$14,300	128	DelNorte	Golden Gate Bridge Highway and Tr	Marine	Repower	0.19958	0.02502	0.00198	$22,673
$14,300	128	DelNorte	Golden Gate Bridge Highway and Tr	Marine	Repower	0.19958	0.02502	0.00198	$22,673
$14,300	34	Zelinsky (s)	Blue and Gold Ferry	Marine	Repower	0.40638	0.06083	0.01576	$58,653
$14,300	51	Jennifer Louise	Bennie Anselmo	Marine	Repower	0.16482	0.01782	0.00333	$28,905
$14,300	127	SF Marina Workboat	San Francisco Recreation and Park	Marine	Repower	0.20084	0.02284	0.00399	$35,189
$14,300	42	Keegan Foss (s)	Foss Maritime Company	Marine	Repower	0.27874	0.03494	0.00276	$23,487
$14,300	42	Keegan Foss (p)	Foss Maritime Company	Marine	Repower	0.50338	0.06311	0.00499	$42,416
$14,300	133	1219	Cooper Crane & Rigging	Off-road	Retrofit	0	0	0.01423	$18,115
$14,300	114	3205	Leland Stanford Junior University	On-road	Retrofit only	0.09066	0	0.00668	$14,275
$14,300	129	CAHornblower	Hornblower Cruises & Events	Marine	Repower	0.85141	0.10779	0.02813	$114,075
$14,300	129	CAHornblower	Hornblower Cruises & Events	Marine	Repower	0.85141	0.10779	0.02813	$114,075
$14,300	114	3208	Leland Stanford Junior University	On-road	Retrofit only	0.08927	0	0.00658	$14,056
$14,300	45	R/V Lakota (p)	Dixon Marine Services Inc.	Marine	Repower	1.26101	0.13723	0.03912	$86,539
$14,300	45	R/V Lakota (s)	Dixon Marine Services Inc.	Marine	Repower	1.26101	0.13723	0.03912	$86,539
$14,300	69	Michael Lind (p)	Jerico Products/Aaron Lind	Marine	Repower	1.24835	0.16045	0.04085	$166,856
$14,300	69	Michael Lind (s)	Jerico Products/Aaron Lind	Marine	Repower	1.24835	0.16045	0.04085	$166,856
$14,300	171	Delta Captain (pm)	Marine Express, Inc.	Marine	Repower	2.28061	0.29188	0.07484	$432,659
$14,300	171	Delta Captain (sm)	Marine Express, Inc.	Marine	Repower	2.28061	0.29188	0.07484	$432,659

$14,300	171	Marin Sunshine (pm)	Marine Express, Inc.	Marine	Repower	3.78548	0.40617	0.12023	$342,390
$14,300	171	Marin Sunshine (s aux)	Marine Express, Inc.	Marine	Repower	3.78548	0.40617	0.12023	$342,390

Summary for 'AB1390 Designation' = AB1390: Impacted (157 projects)

	NOx (TPY)	ROG (TPY)	PM (TPY)	Proposed Award
Group Total	*223.845*	*27.2008*	*7.64101*	*$13,034,932*

Project Group Designation - Not AB1390

Cost-Effectiveness	Project #: 10MOY__	Equipment ID/ Unit #	Applicant	Equipment Category	Project Type	NOx (TPY)	ROG (TPY)	PM (TPY)	Proposed Award
$1,706	148	38	C & A Trucking	On-road	Idle reduction	0.73592	0	0.04240	$7,499
$1,772	4	Ag pump	Simoni & Massoni Farms	Agriculture	Repower	1.79291	0.23151	0.07787	$17,614
$1,841	148	39	C & A Trucking	On-road	Idle reduction	0.68203	0	0.0393	$7,499
$1,982	148	46	C & A Trucking	On-road	Idle reduction	0.63349	0	0.0365	$7,499
$2,755	148	54	C & A Trucking	On-road	Idle reduction	0.45575	0	0.02626	$7,499
$2,755	148	48	C & A Trucking	On-road	Idle reduction	0.45575	0	0.02626	$7,499
$2,755	148	55	C & A Trucking	On-road	Idle reduction	0.45575	0	0.02626	$7,499
$2,755	148	52	C & A Trucking	On-road	Idle reduction	0.45575	0	0.02626	$7,499
$2,755	148	49	C & A Trucking	On-road	Idle reduction	0.45575	0	0.02626	$7,499
$2,755	148	47	C & A Trucking	On-road	Idle reduction	0.45575	0	0.02626	$7,499
$2,755	148	45	C & A Trucking	On-road	Idle reduction	0.45575	0	0.02626	$7,499
$2,879	148	51	C & A Trucking	On-road	Idle reduction	0.43615	0	0.02513	$7,499
$2,988	58	Ag pump	Dittmer Ranch	Agriculture	Repower	0.35617	0.07246	0.02186	$7,179
$3,181	148	42	C & A Trucking	On-road	Idle reduction	0.39468	0	0.02274	$7,499

$3,582	148	40	C & A Trucking	On-road	Idle reduction	0.35047	0	0.02019	$7,499
$3,636	84	Ag pump	Ferdinando Muzzi/R. Rossi Co.	Agriculture	Repower	0.60589	0.08033	0.01859	$10,675
$3,880	148	53	C & A Trucking	On-road	Idle reduction	0.32358	0	0.01864	$7,499
$5,466	148	41	C & A Trucking	On-road	Idle reduction	0.2297	0	0.01323	$7,499
$5,466	148	34	C & A Trucking	On-road	Idle reduction	0.2297	0	0.01323	$7,499
$8,884	116	BD6	W.R. Forde Associates	Off-road	Repower	0.69305	0.12044	0.03039	$35,040
$9,385	117	2011	Pacific Rim Recycling	On-road	Retrofit only	0.17903	0	0.03904	$25,000
$10,178	136	3	Nick Taylor	On-road	Repower & retrofit	0.68273	0.04299	0.06677	$58,218
$10,398	138	18	Billet Transportation, Inc.	On-road	Retrofit only	0.35028	0	0.02581	$25,000
$11,069	118	3	Saxco-Demptos Inc.	On-road	Retrofit only	0.20095	0	0.02106	$25,000
$11,069	118	5	Saxco-Demptos Inc.	On-road	Retrofit only	0.20095	0	0.02106	$25,000
$11,069	118	1	Saxco-Demptos Inc.	On-road	Retrofit only	0.20095	0	0.02106	$25,000
$11,069	118	2	Saxco-Demptos Inc.	On-road	Retrofit only	0.20095	0	0.02106	$25,000
$11,069	118	4	Saxco-Demptos Inc.	On-road	Retrofit only	0.20095	0	0.02106	$25,000
$11,314	147	BCRS10	Greg Christie	On-road	Retrofit only	0.36703	0	0.01788	$22,750
$11,433	119	42389	JBA Company	On-road	Retrofit only	0.23543	0	0.01835	$25,000
$11,638	140	8060	Baldwin S. Pannu	On-road	Retrofit only	0.28932	0	0.02255	$23,909
$11,816	154	6	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.19215	0	0.01416	$25,000
$11,849	130	07	Jose M. Flores	On-road	Repower & retrofit	0.54704	0.02666	0.04097	$59,917
$11,921	154	8	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.19045	0	0.01403	$25,000
$12,145	111	R92	Robert Michael Renner	On-road	Retrofit only	0.18071	0	0.01408	$25,000
$12,166	154	3	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.18662	0	0.01375	$25,000
$12,253	116	WL5	W.R. Forde Associates	Off-road	Repower	0.627	0.07755	0.01993	$49,060
$12,379	154	T98	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.28441	0	0.02217	$25,000

$12,450	154	1	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.18236	0	0.01343	$25,000
$12,463	117	2015	Pacific Rim Recycling	On-road	Retrofit only	0.17609	0	0.01372	$25,000
$12,480	154	4	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.18192	0	0.01340	$25,000
$12,536	102	M104	Denis Van Dera for MAG Trucking I	On-road	Retrofit only	0.16453	0	0.01282	$23,495
$12,537	154	2	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.1811	0	0.01334	$25,000
$12,543	102	M103	Denis Van Dera for MAG Trucking I	On-road	Retrofit only	0.17603	0	0.01224	$23,495
$12,695	148	43	C & A Trucking	On-road	Idle reduction	0.0989	0	0.0057	$7,499
$12,710	154	7	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.17863	0	0.01316	$25,000
$12,787	154	9	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.17756	0	0.01308	$25,000
$13,127	83	117	Rich Doss inc.	On-road	Retrofit only	0.27745	0	0.02044	$25,000
$13,194	119	42387	JBA Company	On-road	Retrofit only	0.26684	0	0.0208	$25,000
$13,219	138	19	Billet Transportation, Inc.	On-road	Retrofit only	0.17175	0	0.01265	$25,000
$13,488	154	5	CAL Rock Transport/ TRI County Tr	On-road	Retrofit only	0.26103	0	0.02034	$25,000
$13,630	83	116	Rich Doss inc.	On-road	Retrofit only	0.20429	0	0.01505	$25,000
$13,667	83	115	Rich Doss inc.	On-road	Retrofit only	0.20373	0	0.01501	$25,000
$13,726	139	05	Amarjit Singh	On-road	Repower & retrofit	0.55611	0.00331	0.05534	$63,462
$13,767	113	589	Petaluma Acquisitions LLC	On-road	Retrofit only	0.25573	0	0.01993	$25,000
$13,824	89	WC17 #2	Fremont Paving Co. Inc.	Off-road	Repower & Retrofit	0.42045	0.05501	0.02121	$46,700
$13,987	25	136 SG	Solano Garbage Company	On-road	New Purchase	0.74846	0	0	$38,001
$14,244	153	450	Challenge Dairy Products, Inc.	On-road	Retrofit only	0.24718	0	0.01927	$25,000
$14,264	83	112	Rich Doss inc.	On-road	Retrofit only	0.15917	0	0.01173	$25,000
$14,298	82	6	Black Point Inc.	Off-road	Repower	0.05359	0.00935	0.00243	$8,356
$14,299	99	Ag pump	Imhof Tractor Service Inc	Agriculture	Repower	0.08449	0.01741	0.00477	$7,828
$14,299	147	BCRS4	Greg Christie	On-road	Retrofit only	0.07791	0	0.00607	$12,690

$14,299	83	114	Rich Doss inc.	On-road	Retrofit only	0.10294	0	0.00758	$16,208
$14,299	83	122	Rich Doss inc.	On-road	Retrofit only	0.1076	0	0.00793	$16,942
$14,299	83	123	Rich Doss inc.	On-road	Retrofit only	0.0973	0	0.00717	$15,320
$14,299	83	110	Rich Doss inc.	On-road	Retrofit only	0.08046	0	0.00593	$12,669
$14,299	119	42385	JBA Company	On-road	Retrofit only	0.18626	0	0.01452	$24,739
$14,299	102	M105	Denis Van Dera for MAG Trucking I	On-road	Retrofit only	0.11036	0	0.00813	$17,377
$14,300	83	121	Rich Doss inc.	On-road	Retrofit only	0.09244	0	0.00681	$14,555
$14,300	83	118	Rich Doss inc.	On-road	Retrofit only	0.15705	0	0.01157	$24,728
$14,300	66	140	Friedman Brothers Hardware	On-road	Retrofit only	0.11658	0	0.00909	$18,990
$14,300	118	6	Saxco-Demptos Inc.	On-road	Retrofit only	0.19786	0	0.01375	$24,549
$14,300	22	8	Victor M. Valencia	On-road	Retrofit only	0.13080	0	0.01019	$21,307
$14,300	82	5	Black Point Inc.	Off-road	Repower	0.09276	0.02882	0.00907	$22,707
$14,300	143	1380	Cooper Crane & Rigging	Off-road	Repower & Retrofit	0.21731	0.02899	0.01068	$23,870
$14,300	119	42367	JBA Company	On-road	Retrofit only	0.16703	0	0.01302	$22,185
$14,300	83	119	Rich Doss inc.	On-road	Retrofit only	0.09486	0	0.00699	$14,936
$14,300	98	19507	City of San Jose	Off-road	Repower & Retrofit	0.26999	0.03277	0.01307	$35,910
$14,300	83	124	Rich Doss inc.	On-road	Retrofit only	0.09661	0	0.00712	$15,212
$14,300	134	3	S.S. Skikos Trucking	On-road	Repower & retrofit	0.36089	0.01063	0.01991	$48,999
$14,300	89	WC17 #1	Fremont Paving Co. Inc.	Off-road	Repower & Retrofit	0.34236	0.04447	0.01709	$37,817
$14,300	116	S1	W.R. Forde Associates	Off-road	Repower	0.45096	0.05522	0.01757	$44,511
$14,300	83	113	Rich Doss inc.	On-road	Retrofit only	0.09725	0	0.00716	$15,313
$14,300	83	120	Rich Doss inc.	On-road	Retrofit only	0.15415	0	0.01136	$24,272

Summary for 'AB1390 Designation' = Not AB1390 (84 projects)

	NOx (TPY)	*ROG (TPY)*	*PM (TPY)*	*Proposed Award*
Group Total	*25.2*	*0.93791*	*1.59030*	*$1,848,988*

		NOx (TPY)	*ROG (TPY)*	*PM (TPY)*	*Proposed Award*
Grand Totals:	*359* ***Engines***	*286.4*	*29.46*	*11.76*	*$20,256,901*

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Office Memorandum

To: Chairperson Smith and
Members of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 2, 2008

Re: Consideration of Expenditure Plans for Transportation Fund for Clean Air (TFCA) County Program Managers

RECOMMENDED ACTIONS

1. Recommend Board of Directors' approval of staff recommendations on the fiscal year (FY) 2008/2009 Transportation Fund for Clean Air (TFCA) County Program Manager projects listed on the attached Table 1.

2. Recommend Board of Directors' authorization for the Executive Officer/APCO to: enter into funding agreements with the County Program Managers implementing Board-approved projects; and reallocate funds among a County Program Manager's Board-approved projects, consistent with Board-adopted TFCA Program Manager Policies.

BACKGROUND

Pursuant to California Health and Safety Code (HSC) Sections 44241 and 44242, the Air District Board of Directors has imposed a $4 per vehicle annual surcharge on all motor vehicles registered within the boundaries of the Air District[a]. The revenues fund the implementation of transportation control measures and mobile source control measures. By law, The Air District applies forty percent of the revenues generated by this surcharge to the TFCA Program Manager Fund. Each county has a designated County Program Manager that submits to the Air District an annual expenditure plan of projects in its county that it recommends for funding with its share of the Fund. If a Program Manager has not allocated its entire share within six months of the date of formal approval of its expenditure plan by the Air District, then the Air District is required to allocate the unallocated funds itself. On May 21, 2008, the Board of Directors approved allocations of TFCA funds to cover Program Manager administrative costs for the 2008-2009 fiscal year.

[a] Revenues from an additional $2 surcharge in motor vehicle registrations, authorized by Assembly Bill 923 (Firebaugh, 2004), are not part of TFCA. These revenues are directed to the Air District's Mobile Source Incentive Fund to provide incentives for the implementation of additional mobile source projects.

Pursuant to Board approval of expenditure plan projects, the Air District enters into funding agreements with each of the Program Managers. Projects are implemented as set forth in the expenditure plans.

DISCUSSION

Air District staff has reviewed the TFCA County Program Manager expenditure plans submitted for FY 2008/2009, as discussed below.

Project Evaluation

To determine eligibility, Air District staff evaluated the projects in the TFCA County Program Manager expenditure plans for compliance with the following requirements:

1. *Consistency with State Law:* the projects shall be consistent with one of the eligible project categories listed in HSC Section 44241.
2. *Consistency with the Ozone Strategy:* pursuant to HSC Sections 40233, 40717, and 40719, the projects shall be consistent with the appropriate transportation control measures or mobile source measures contained in the Ozone Strategy.
3. *Reduction of Emissions from Motor Vehicles:* pursuant to HSC Section 44220(b), the projects shall reduce emissions from motor vehicles.
4. *Consistency with Board-Adopted Policies:* the projects shall be consistent with policies adopted by the Air District Board of Directors.

TFCA Cost Effectiveness

Pursuant to policies adopted by the Air District Board of Directors, individual projects included in the annual expenditure plans for County Program Manager funds must achieve a TFCA cost-effectiveness of equal to or less than $90,000 per ton (TFCA dollars per weighted ton[b] of emissions reduced over the life of the project). Only TFCA County Program Manager administrative costs are excluded from the calculation of TFCA cost-effectiveness.

Project List

Originally, 46 projects were submitted for consideration. One project was considered ineligible, as discussed in the next section. Staff recommends the approval of the remaining 45 projects.

Summary information for all of the projects in the FY 2008/2009 TFCA County Program Manager expenditure plans is provided in Table 1 (attached). Table 1 lists the project sponsor, the project description, years of effectiveness, the TFCA funds requested, the TFCA cost-effectiveness, and staff's recommended action for the Air District Board of Directors. The Napa County Program Manager has not submitted an FY 2008/2009 expenditure plan to date.

[b] Consistent with California Air Resources Board guidelines for the Carl Moyer Program, for the purposes of cost effectiveness, emission reductions equal the sum of reactive organic gases, oxides of nitrogen, and particulate matter (PM) eliminated, with the exhaust portion of PM weighted by a factor of 20.

Table 2 shows, for each county, the total amount of TFCA County Program Manager funds available and the amount recommended for programming. The total funds available for programming represents the sum of projected calendar year 2008 Department of Motor Vehicles (DMV) receipts, interest earned on TFCA funds in calendar year 2007, and funds available for reprogramming from prior-year projects that were canceled or completed under budget. As required by a policy adopted by the Air District Board of Directors, all projects recommended for funding comply with the $90,000-per-ton TFCA threshold cost-effectiveness on an individual basis, as calculated by Air District staff.

Table 2 also provides a breakdown of TFCA County Program Manager funds by county and project type. The highest level of TFCA Program Manager funds are requested for arterial management (32.1%), trip reduction/ridesharing (25.8%), bicycle facilities (15.1%), and shuttle services (13.9%). The remaining funds are requested for other eligible project categories. Program administration costs are no more than the maximum of five percent of new FY 2008/2009 revenues in each county, as required by the TFCA enabling legislation.

The combined lifetime reductions of reactive organic gases, oxides of nitrogen, and particulate matter (PM10) of the recommended projects are 410 tons. The combined lifetime reductions of carbon dioxide, a greenhouse gas, total 181,000 tons. The average weighted cost-effectiveness of the projects is $40,580/ton.

Withdrawn/Ineligible Projects

One project was considered ineligible. The Santa Clara Program Manager proposed a project to operate a fixed-route shuttle from the Diridon Caltrain station in San Jose to locations in the area. This project did not meet the cost-effectiveness criterion based on Air District default values, and insufficient data were available to support different values. The funds originally proposed for this project are instead to be included for enhancements to other FY 2008/2009 Santa Clara Program Manager projects.

Recommendation for authorization to contract and to reallocate

Recommendation #2 is for the authorization for the Executive Officer to enter into funding agreements with the County Program Managers to implement Board-approved projects, and to reallocate funds among Board-approved projects within a County Program Manager, consistent with TFCA policies. The second part of this recommendation stems from an occasional need to reprogram funds before the next Program Manager funding cycle. For example, in 2007, in response to the closure of a portion of the MacArthur Maze in Oakland due to a gasoline tanker fire, the Contra Costa Program Manager requested a reprogramming of funds from existing projects that were under budget to an existing county transit incentive project which was inundated with requests. Authorizing the executive officer to make such adjustments can provide Program Managers and Air District staff with flexibility to respond to emergent needs and achieve emissions reductions in a timely fashion, while ensuring that only Board-approved projects receive funding. Air District staff anticipates that such

reallocations would be infrequent, and, in all cases reallocations would have to comply with Board-approved policies, including the cost-effectiveness limit.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None. Approval of the recommended projects will have no impact on the Air District's budget. TFCA revenues are generated from a dedicated outside funding source and passed through to counties. TFCA allocations do not impact the Air District's general fund or operating budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

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

Table 1: TFCA County Program Manager
FY08/09 Project List

Project Number	Sponsor	Project Description	Yrs Eff	TFCA Funding Requested	TFCA$ Cost-Effectiveness Per Ton (1)	Action
ALAMEDA COUNTY						
08ALA00	Alameda County CMA	Program Manager costs to administer TFCA funds within the County.	1	$92,997	NA	Approve
08ALA01	City of Alameda	Implementation of Transit Signal Prioritization and Closed-Circuit Television for real time traffic management at six intersections along the Webster Corridor.	4	$420,000	$4,613	Approve
08ALA02	Alameda County Public Works Agency	Installation and design of 20 electronic bicycle lockers at the Castro Valley BART Station.	10	$66,500	$89,906	Approve
08ALA03	City of Berkeley	Extend 9th Street Bicycle Boulevard project by 0.22 miles and close gap in an 8.22 mile segment of the County-wide Bicycle Plan.	20	$247,316	$89,492	Approve
08ALA04	City of Oakland	Construct 0.5 mile segment to connect trail between the Fruitvale and Park Street Bridges in the Regional Bay Trail along the Oakland Estuary.	20	$125,000	$89,292	Approve
08ALA05	City of Oakland/ACCMA	Upgrade outdated Transit Signal Prioritization equipment in support of the San Pablo Rapid Bus System.	4	$174,493	$1,344	Approve
08ALA06	City of Pleasanton	Operate Pleasanton's Citywide Trip Reduction employer and school based programs.	1	$77,000	$76,762	Approve
08ALA07	City of San Leandro	Provide San Leandro LINKS peak-commute-period shuttle services to transport residents in West San Leandro to the San Leandro BART station and BART riders to the industrial area west of I-880.	1	$165,000	$48,972	Approve
08ALA08	AC Transit	Install (1) changeable message sign along Route #84 (westbound) showing the number of spaces available at the Ardenwood Park and Ride facility, and (2) “Nextbus” signs at the bus stops within the facility.	1	$100,000	$68,293	Approve
08ALA09	Livermore Amador Valley Transit Authority	Provide (3) ACE peak-commute shuttle services to link ACE and Pleasanton employers.The grant will provide funding for 2 yr. period.	2	$59,864.00	$50,101	Approve
08ALA10	Livermore Amador Valley Transit Authority	Provide (4) ACE peak-commute shuttle services to link between ACE and Pleasanton employers.The grant will provide funding for 2 yr. period.	2	$84,950.00	$31,608	Approve
08ALA11	Livermore Amador Valley Transit Authority	Provide shuttle services between Livermore and the Dublin/Pleasanton BART station, purchase and install TSP devices on all buses serving BRT route, and develop queue jumper lanes to improve route efficiency.	4	$444,722.00	$10,662	Approve

Notes:
(1) TFCA$ per ton = TFCA$ divided by the estimated lifetime emission reductions (ozone precursors and weighted particulate matter) for the project. NA = not applicable.

Table 1: TFCA County Program Manager
FY08/09 Project List

Project Number	Sponsor	Project Description	Yrs Eff	TFCA Funding Requested	TFCA$ Cost-Effectiveness Per Ton (1)	Action
CONTRA COSTA COUNTY						
08CC00	Contra Costa Transportation Authority	Program Manager costs to administer TFCA funds within the County.	1	$67,460	NA	Approve
08CC01	West Contra Costa Transportation Advisory Committee	Provide financial incentives and distribute public information to increase transit ridership among West County residents, students, and commuters in the I-80 corridor in Contra Costa County.	1	$163,096	$34,246	Approve
08CC02	West Contra Costa Transportation Advisory Committee	Provide financial incentives, outreach and distribute public information to promote transportation alternatives to employers at worksites in western Contra Costa County.	1	$57,000	$11,088	Approve
08CC03	West Contra Costa Transportation Advisory Committee	Provide up to six taxi or rental car vouchers per year to registered participants working in Contra Costa County who regularly use alternative commute modes.	1	$133,000	$30,931	Approve
08CC04	Transportation Partnership and Cooperation (TRANSPAC)/City of Pleasant Hill	Provide comprehensive trip reduction services to employers at worksites in Central and Eastern Contra Costa County, including providing information and workshops, developing a ridematch database, and promoting carpools, vanpools and bicycling.	1	$338,000	$20,783	Approve
08CC05	Transportation Partnership and Cooperation (TRANSPAC)/City of Pleasant Hill	Provide financial incentives to encourage residents, students, and employees in Contra Costa County to use carpools and transit. Includes carpool and transit incentive programs, a Carpool to BART project, a SchoolPool program, and rideshare campaigns.	1	$490,250	$27,776	Approve
08CC06	City of San Ramon	Provide incentives to new vanpool passengers and drivers in Contra Costa County.	1	$83,275	$26,171	Approve
08CC07	City of San Ramon	Provide outreach on trip reduction services to employers at worksites in southern Contra Costa County.	1	$92,146	$14,883	Approve
08CC08	City of San Ramon	Provide transit passes to 1200 students in southwest areas of Contra Costa County and develop a ride-matching service for the San Ramon Valley and Lamorinda School areas.	1	$96,303	$22,735	Approve

Notes:
(1) TFCA$ per ton = TFCA$ divided by the estimated lifetime emission reductions (ozone precursors and weighted particulate matter) for the project. NA = not applicable.

Table 1: TFCA County Program Manager
FY08/09 Project List

Project Number	Sponsor	Project Description	Yrs Eff	TFCA Funding Requested	TFCA$ Cost-Effectiveness Per Ton (1)	Action
MARIN COUNTY						
08MAR00	Transportation Authority of Marin	Program Manager costs to administer TFCA funds within the County.		$18,062	NA	Approve
08MAR01	County of Marin	Provide bicycle racks to accommodate approximately 2336 bicycles and lockers to accommodate approximately 50 bicycles throughout Marin County.	10	$410,000	$36,449	Approve
08MAR02	Transportation Authority of Marin	Provide subsidies or leased vans as an incentive for employers to increase vanpooling as an alternative to single occupancy vehicles.	1	$75,350	$75,580	Approve
08MAR03	Transportation Authority of Marin	Set up a Guaranteed Ride Home Program (GRH) for employees of public and private employer worksites within Marin County.	1	$50,000	$80,244	Approve

Notes:
(1) TFCA$ per ton = TFCA$ divided by the estimated lifetime emission reductions (ozone precursors and weighted particulate matter) for the project. NA = not applicable.

Table 1: TFCA County Program Manager
FY08/09 Project List

Project Number	Sponsor	Project Description	Yrs Eff	TFCA Funding Requested	TFCA$ Cost-Effectiveness Per Ton (1)	Action
SAN FRANCISCO COUNTY						
08SF00	San Francisco County Transportation Authority	Program Manager costs to administer TFCA funds within the County.	1	$36,827	NA	Approve
08SF01	County of San Francisco	TFCA funds will purchase 35 bicycles, 10 bicycle trailers, 5 Indoor Bicycle Storage Racks and 35 helmets for the City and County of San Francisco bicycle fleet program.	5	$31,500	$62,146	Approve
08SF02	County of San Francisco	Offset the incremental cost of 52 light-duty clean air vehicles.	4	$109,200	$48,152	Approve
08SF03	San Francisco Municipal Transportion Agency	Update existing traffic signals, controllers and cabinets at six intersections along a one mile stretch of Geneva Avenue immediately south of Mission Street. Intersections include Geneva Avenue crossing Paris, Madrid, Naples, Moscow, Prague and Carter Streets.	15	$400,684	$7,302	Approve
08SF04	San Francisco Municipal Transportation Agency	Stripe bicycle lanes on Kirkham Street in both directions from the Great Highway to 19th Avenue (1.8 miles). This bike lane will connect to an already existing Class I bicycle path on the Great Highway to improve safety for bicyclist.	15	$115,000	$87,473	Approve
08SF05	Presidio Trust	Offset the incremental cost of one heavy-duty compressed natural gas vehicle (37-passenger capacity). The vehicle will replace an existing compressed natural gas vehicle that is used for the PresidiGo weekday peak period shuttle operation.	10	$46,884	$22,103	Approve
08SF06	San Francisco State University	Construct a Class I bicycle path from 20th Avenue (South of Stonestown Mall) through San Francisco State University to Holloway Avenue via Font Boulevard on the campus' south side. The path will provide public access through the campus and link to the City's Lake Merced neighborhood.	20	$363,000	$87,107	Approve

Notes:
(1) TFCA$ per ton = TFCA$ divided by the estimated lifetime emission reductions (ozone precursors and weighted particulate matter) for the project. NA = not applicable.

Table 1: TFCA County Program Manager
FY08/09 Project List

Project Number	Sponsor	Project Description	Yrs Eff	TFCA Funding Requested	TFCA$ Cost-Effectiveness Per Ton (1)	Action
SAN MATEO COUNTY						
08SM00	San Mateo C/CAG	Program Manager costs to administer TFCA funds within the County.	1	$57,400	NA	Approve
08SM01	Peninsula Traffic Congestion Relief Alliance	County-wide incentive program to reduce single-occupancy vehicle commuting. Includes employer and commuter outreach, incentive programs, and a guaranteed ride home program.	1	$500,000	$10,905	Approve
08SM02	SamTrans	Operate nine peak-commute shuttle routes between BART stations and major employers in the county.	1	$636,000	$37,882	Approve

Notes:
(1) TFCA$ per ton = TFCA$ divided by the estimated lifetime emission reductions (ozone precursors and weighted particulate matter) for the project. NA = not applicable.

Table 1: TFCA County Program Manager
FY08/09 Project List

Project Number	Sponsor	Project Description	Yrs Eff	TFCA Funding Requested	TFCA$ Cost-Effectiveness Per Ton (1)	Action
SANTA CLARA COUNTY						
08SC00	Santa Clara Valley Transportation Authority	Program Manager costs to administer TFCA funds within the County.	1	$123,020	NA	Approve
08SC01	Santa Clara Valley Transportation Authority	Provide for the continued operation and expansion of light rail shuttle services from Santa Clara VTA light rail stations to employment destinations within Santa Clara County.	1	$458,000	$89,954	Approve
08SC02	City of San Jose	Install approximately 200 bike racks in San Jose City.	10	$50,000	$20,081	Approve
08SC03	County of Santa Clara	Develop and implement AM and PM weekday peak signal timing plans and retime 38 intersections on Almaden and San Tomas Expressways.	2	$150,000	$7,745	Approve
08SC04	City of San Jose	Replace 40 traffic signal controllers within the city of San Jose and an additional 13 controllers along the light rail corridor within the city of Sunnyvale.	2	$545,450	$63,391	Approve
08SC05	City of Milpitas	Replace all field traffic signal controllers & conflict monitors, the VMS Central System including the communications & software servers, 4 new work stations, an upgrade to the city's Traffic Operations Center, and a retiming of the 69 traffic signals maintained by the City.	4	$775,000	$34,028	Approve
08SC07	City of Mountain View	Upgrade the traffic signal interconnect system with new adaptive traffic signal technology along a 1.6-mile portion of Grant Road in the cities of Mountain View and Los Altos.	4	$330,058	$45,976	Approve
08SC08	City of Morgan Hill	Construct a paved bikeway adjacent to West Little Llagas Creek between Edes Court and Spring Avenue.	20	$134,000	$89,846	Approve

Notes:
(1) TFCA$ per ton = TFCA$ divided by the estimated lifetime emission reductions (ozone precursors and weighted particulate matter) for the project. NA = not applicable.

Table 1: TFCA County Program Manager
FY08/09 Project List

Project Number	Sponsor	Project Description	Yrs Eff	TFCA Funding Requested	TFCA$ Cost-Effectiveness Per Ton (1)	Action
SOLANO COUNTY						
08SOL00	Solano Transportation Authority	Program Manager costs to administer TFCA funds within the County.	1	$15,609	NA	Approve
08SOL01	Solano Transportation Authority	Develop and promote Education and Encouragement projects and programs as part of the Solano Transportation Authority's Safe Routes to School Program.	1	$116,263	$17,078	Approve
08SOL02	Solano Napa Commuter Information	Promote alternative modes of transportation to Solano employers and commuters through outreach and incentive programs.	1	$207,253	$65,096	Approve

Notes:
(1) TFCA$ per ton = TFCA$ divided by the estimated lifetime emission reductions (ozone precursors and weighted particulate matter) for the project. NA = not applicable.

Table 1: TFCA County Program Manager
FY08/09 Project List

Project Number	Sponsor	Project Description	Yrs Eff	TFCA Funding Requested	TFCA$ Cost-Effectiveness Per Ton (1)	Action
SONOMA COUNTY						
08SON00	Sonoma County Transportation Authority	Program Manager costs to administer TFCA funds within the County.	1	$31,571	NA	Approve
08SON01	Sonoma County Transit	Construct a Park & Ride / Intermodal facility. The facility will be served by local and intercity transit services and will serve as Cotati's main transit center, as well as promote carpooling.	20	$360,000	$36,110	Approve
08SON02	Sonoma County Transit	The Sonoma County Transit Marketing Program will promote Sonoma County's natural gas powered transit system. Marketing efforts will include: "Think Green" messages on billboards and bus advertising, newspaper ads, Rider's Guides and television commercials.	1	$89,485	$81,055	Approve
08SON03	City of Santa Rosa	The Student Bus Pass Subsidy program will shift student travel to transit by subsidizing Santa Rosa CityBus Student passes by $10 per pass.	1	$88,000	$52,330	Approve
08SON04	City of Santa Rosa	Maintain and expand of a comprehensive incentive program to reduce single-occupied vehicles in congested target areas. Incentives include: a guaranteed ride home program, transit pass subsidies, incentives/rewards for carpooling, walking and bicycling and bicycle parking facilities for employers.	1	$189,856	$83,177	Approve
08SON05	Town of Windsor	Install mechanical bicycle lockers at the Town Hall/Community Center to accommodate 4 bicycles.	10	$4,001	$80,336	Approve
08SON06	Town of Windsor	Construct Class II bicycle lanes on Mitchell Lane between North Western Pacific Railroad and Conde Lane. The segment will close a 0.35 mile gap in the Town's bicycle facilities.	15	$10,400	$48,782	Approve

Notes:
(1) TFCA$ per ton = TFCA$ divided by the estimated lifetime emission reductions (ozone precursors and weighted particulate matter) for the project. NA = not applicable.

Table 2: TFCA County Program Manager
FY2007/08 Projects by County and Project Type

	Alameda	Contra Costa	Marin	San Francisco	San Mateo	Santa Clara	Solano	Sonoma	Grand Total	Percent
Total Available TFCA Funds *	$2,057,842	$1,520,530	$553,412	$1,103,095	$1,193,400	$2,565,528	$339,125	$773,312	**$10,106,244**	
Program Administration	$92,997	$67,460	$18,062	$36,827	$57,400	$123,020	$15,609	$31,571	$442,945	4.4%
Trip Reduction/Ridesharing	$177,000	$1,453,070	$125,350	$31,500	$500,000	$0	$323,516	$0	$2,610,436	25.8%
Bicycle Facility Projects	$438,816	$0	$410,000	$478,000	$0	$184,000	$0	$14,401	$1,525,217	15.1%
Arterial Management	$1,039,215	$0	$0	$400,684	$0	$1,800,508	$0	$0	$3,240,407	32.1%
Shuttle/Feeder Bus Service	$309,814	$0	$0	$0	$636,000	$458,000	$0	$0	$1,403,814	13.9%
Clean Fuel Buses	$0	$0	$0	$46,884	$0	$0	$0	$0	$46,884	0.5%
Low Emission Light Duty Vehicles	$0	$0	$0	$109,200	$0	$0	$0	$0	$109,200	1.1%
Transit Information/Telecommuting	$0	$0	$0	$0	$0	$0	$0	$367,341	$367,341	3.6%
Smart Growth	$0	$0	$0	$0	$0	$0	$0	$360,000	$360,000	3.6%
Total Allocated Funds*	$2,057,842	$1,520,530	$553,412	$1,103,095	$1,193,400	$2,565,528	$339,125	$773,312	**$10,106,244**	100.0%
Unallocated Funds	$0	$0	$0	$0	$0	$0	$0	$0		

* The total funds available for programming represents the sum of projected calendar year 2008 DMV receipts, interest earned on TFCA funds in calendar year 2007, and funds available for reprogramming from prior year projects that were canceled or completed under budget.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Smith and
Members of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 1, 2008

Re: Consideration of $796,573 in California Goods Movement Bond Funding to Engage an Administrative Consultant to Assist in Program Execution

RECOMMENDED ACTION

1. Recommend that the Board of Directors authorize the Executive Officer/APCO to execute all necessary agreements to enter into a contract for administrative services related to the I-Bond program with TIAX LLC (TIAX) for an amount not to exceed $796,573.

2. Recommend that the Board of Directors authorize the Executive Officer/APCO to renew this contract annually for up to three years based on the performance of the consultant.

BACKGROUND

In November 2006, California voters authorized the Legislature to appropriate $1 billion in bond funding to the California Air Resources Board (ARB) to quickly reduce air pollution emissions and health risk from freight movement along California's priority trade corridors. On February 28, 2008, ARB approved an allocation of $140 million for the Bay Area trade corridor ($35 million per year over the next four years.) This funding share represents 14% of the total funding that will be distributed statewide.

As part of its plan for emissions reductions under this program, the District will attempt to retrofit and replace up to 1,500 pieces of equipment over the next 18 months. In order to accomplish this task, the District solicited requests for proposals (RFP) from various consulting firms to assist with the administration and operation of this program.

DISCUSSION

As part of the preparation for the execution of this program, the District analyzed the funding available from the I-Bond program in order to determine how best to achieve the goals of the program within the constraints of the administrative budget allowed. As part of this analysis, staff looked at the following factors:

- Funding from the program will only be available for the next three fiscal years as it is anticipated that the next funding will be offered to District in October of 2008 and will be combined with the funding already available for fiscal year (FY) 08/09.
- The volume of anticipated work associated with the program would require extensive hiring and training of permanent staff.
- Administrative funds for salaries for new staff would run out at the end of FY 10/11.
- The Board of Directors has mandated a zero (full-time equivalents) FTE increase as part of its budget direction for FY 08/09.

Based on these factors, staff prepared an RFP for a consultant to assist with the administration and operation of this program.

Staff opened the RFP on April 21, 2008 and as part of the outreach for this process contacted over 40 environmental, accounting and administrative firms in order to inform them of the District's search for assistance with the I-Bond program. As part of the RFP process, staff stressed that the District required a consultant with: … "*a demonstrated track record in reviewing and processing grant applications, interpretation of grant requirements, grants data management, grants selection, contract execution, tracking and report writing"...* to augment existing resources.

The RFP closed May 16, 2008, and the District received proposals from two environmental consulting firms. These proposals were then analyzed and ranked by staff familiar with the requirements of the I-Bond program and general program administration. Based on scores given to these proposals as part of the ranking process, TIAX emerged as the consultant with the outstanding proposal. Some highlights of the proposal are as follows:

- TIAX has extensive experience in the Los Angeles area including running the $30 million San Pedro Ports truck replacement project. This experience includes:
  - Processing applications
  - Prioritizing applications for grants
  - Issuing contracts
  - Managing program maintenance
  - Providing quarterly status reports to funding agencies
- TIAX has extensive pre-existing knowledge of the I-Bond program. This is demonstrated by the fact that they helped prepare the truck replacement portion of the application for the I-Bond funding for the Port of Los Angeles and South Coast Air Quality Management District.
- TIAX is familiar with the Port of Oakland and assisted them in the design of their fleet modernization program.

- TIAX's local office is located in Concord and will provide four to six multilingual administrative personnel to assist with the completion of project applications, project ranking and contract execution as part of the proposed contract.
- TIAX's proposal leverages their knowledge of the I-Bond program and the trucking industry to keep the costs of their services to a minimum. The total cost of their bid (see Attachment 1 - $796,573) includes over 7,000 hours of work and is approximately 50% less than the other respondent to the RFP

Based on this analysis staff is recommending that the Executive Officer be authorized to enter into a one-year contract with TIAX with an option to extend based on an annual performance review of their execution of the program for up to three years.

BUDGET CONSIDERATION / FINANCIAL IMPACT

None. The I-Bond Program distributes funds from ARB to the District and then to eligible equipment owners. Costs for the administration of the Program are included under Programs 321 "California Goods Movement Bond - Early Grants" and 323 "California Goods Movement Bond Grants" in the FY 2008/2009 budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Damian Breen
Reviewed by: Jack M. Colbourn

Attachment 1

ATTACHMENT 2 -- BUDGET SUMMARY

TIAX LLC
California Goods Movement Bond - Program Administration

TIAX REF. NO. B2130

TIAX Empl#	Company Class/Functional Position	Base Rate/Hr	Task 1 Support to Grant Applicants		Task 2 Application File Construction (Assume 1500 projects)		Task 3 Analysis of Projects, Ranking & Recommendations (Assume 1500 projects)		Task 4 Preparation of Grant Funding Agreement (Assume 1500 projects)		Task 5 Review of Invoices Associated with the Program (Assume 1500 projects)		Task 6 Asistance in Preparation of Reporting to Oversight Agencies		Total Project Cost	
			Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars	Hours	Dollars
004928	Technologist 6/Senior Advisor	$ 250.00	25	6,250	12	3,000	12	3,000	8	2,000	8	2,000	16	4,000	81	20,250
010016	Technologist 4/Project Manager	$ 200.00	242	48,400	124	24,800	114	22,800	80	16,000	82	16,400	50	10,000	692	138,400
010069	Technologist 3/Task Manager	$ 180.00	16	2,880	-	-	24	4,320	-	-	-	-	16	2,880	56	10,080
010086	Technologist 3/Project Engineer	$ 180.00	185	33,300	16	2,880	14	2,520	-	-	8	1,440	98	17,640	321	57,780
004901	Technologist 2/Project Engineer	$ 165.00	185	30,525	16	2,640	14	2,310	-	-	8	1,320	98	16,170	321	52,965
005793	Technologist 2/Sr. Publications Admin	$ 165.00	-	-	-	-	16	2,640	24	3,960	-	-	20	3,300	60	9,900
010064	Technologist 1/Administrative Advisor	$ 130.00	36	4,680	16	2,080	14	1,820	12	1,560	12	1,560	4	520	94	12,220
Various	Project Assistant 2/Admin Supervisor	$ 90.00	224	20,160	142	12,780	128	11,520	95	8,550	95	8,550	24	2,160	708	63,720
Various	Project Assistant 1/Project Assistants	$ 78.00	1,665	129,870	1,050	81,900	932	72,696	675	52,650	675	52,650	132	10,296	5,129	400,062
	SubTotal			276,065		130,080		123,626		84,720		83,920		66,966		765,377
	Fringe Benefits	0.0%		-		-		-		-		-		-		-
	SubTotal Direct Labor		2,578	276,065	1,376	130,080	1,268	123,626	894	84,720	888	83,920	458	66,966	7,462	765,377
	AWI on DL	0.57%		1,574		741		705		483		478		382		4,363
	SubTotal DL + AWI			277,639		130,821		124,331		85,203		84,398		67,348		769,740
				-		-		-		-		-		-		-
				$ 277,639		$ 130,821		$ 124,331		$ 85,203		$ 84,398		$ 67,348		$ 769,740
	Expenses															
	Subcontractor		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Materials			-		-		-		-		-		-		-
	Equipment			-		-		-		-		-		2,000		2,000
	Travel			-		-		-		-		-		12,933		12,933
	Consultants			-		-		-		-		-		-		-
	Miscellaneous			-		-		-		-		-		8,750		8,750
	SubTotal ODCs			-		-		-		-		-		23,683		23,683
	Expense Overhead	13.3%		-		-		-		-		-		3,150		3,150
				$ -		$ -		$ -		$ -		$ -		$ 26,833		$ 26,833
	Total Estimated Cost			$ 277,639		$ 130,821		$ 124,331		$ 85,203		$ 84,398		$ 94,181		$ 796,573
		0.0%		-		-		-		-		-		-		-
	Total		2,578	$ 277,639	1,376	$ 130,821	1,268	$ 124,331	894	$ 85,203	888	$ 84,398	458	$ 94,181	7,462	$ 796,573

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Smith and Members of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: June 26, 2008

Re: Consideration of Recommending Board of Directors' Approval to Reserve $3.375 Million in Mobile Source Incentive Funds (MSIF) to Match Funds from the School Bus Program Portion of the California Goods Movement Bond

RECOMMENDED ACTION

Recommend Board of Directors approval of:

(1) Allocation of $3,375,000 of Mobile Source Incentive Fund (MSIF) revenues to the Lower-Emission School Bus Program (LESBP) for the purchase of new public school buses, and

(2) Authorization for the Executive Officer to enter into funding agreements with recipients of grant awards under the LESBP.

BACKGROUND

Mobile Source Incentive Fund (MSIF)
Assembly Bill (AB) 923 (Firebaugh, 2004) authorized local air districts to increase their motor vehicle registration fee surcharge up to an additional $2 per vehicle. AB 923 stipulates that local air districts may use the revenues generated by the additional $2 surcharge for any of the four project types listed below:

- Purchase of new clean school buses;
- Projects eligible for grants under the Carl Moyer Program;
- Accelerated vehicle retirement or repair program; and
- Projects that reduce emissions from previously unregulated agricultural sources.

On December 21, 2004, the Air District Board of Directors adopted Resolution 2004-16 to increase the fee surcharge on vehicles registered within the Air District boundaries from $4 to $6 per vehicle. The Department of Motor Vehicles began to collect the increased surcharge in May 2005. The revenues from the additional $2 surcharge are

deposited in the Air District's MSIF, which currently accrue at an average rate of just over $900,000 per month.

Lower-Emission School Bus Program

The LESBP was created by the California Air Resources Board (ARB) in fiscal year (FY) 2000-2001. The goal of the LESBP is to provide financial incentives to (1) purchase new clean public school buses to replace pre-1987, high-emitting buses, manufactured before particulate matter (PM) emission standards were in place, and (2) retrofit in-use diesel school buses with PM emission control devices. The Air District has been involved with the LESBP since its inception and to date has received $12 million in State LESBP funding to replace just over 100 pre-1987 school buses with less polluting buses. This State allocation includes $560,000 allocated to the Air District in FY 2005-2006 that helped fund the replacement of four (4) pre-1977 public school buses. Pre-1977 buses were targeted for replacement in FY 2005-2006 since these buses are high polluting and do not meet the federal safety standards for school buses, which took effect in 1977.

On September 20, 2006, the Air District Board of Directors supplemented the FY 2005-2006 State bus replacement funds with $2.24 million in MSIF revenues as allowed by ARB's *2006 Lower-Emission School Bus Program Guidelines*. The MSIF revenues were allocated to the LESBP for the replacement of sixteen (16) pre-1977 public school buses in the Bay Area without requiring matching funds from participating school districts. All sixteen (16) buses have now been replaced by new clean public school buses currently in operation in the Bay Area.

On May 21, 2008, the Air District Board of Directors approved the acceptance of up to $8.4 million in LESBP funding from the ARB.[1] As described in ARB's *2008 Lower-Emission School Bus Program Guidelines*, after allowing for the Air District's two percent administrative costs, these funds are first to be used to replace any remaining pre-1977 public school buses in the Bay Area. LESBP funds are then available for the replacement of 1977-1986 model year public school buses. The Air District is known to have seven pre-1977 public school buses and approximately 100 model-year 1977-1986 public school buses. ARB has set a cost cap of $140,000 per bus for all buses replaced and, in addition, will require a $25,000 match from school districts for each 1977-1986 bus replaced. Based on the cost cap and school match requirement, State LESBP funds are expected to cover the replacement of a total of 70 buses—the seven known remaining pre-1977 buses in the Bay Area and 63 of the 1977-1986 buses.

DISCUSSION

Staff recommends the allocation of $3.375 million in MSIF revenues to supplement the $8.4 million in State LESBP funds accepted by the Air District Board of Directors in May 2008. These funds would be used to cover:

[1] These State LESBP funds come from Proposition 1B (the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006), approved by California voters in November 2006.

(1) the school district match of $25,000 for 1977-1986 buses replaced with State LESBP funds ($1.575 million based on an expected total of 63 buses),

(2) the replacement of additional 1977-1986 public school buses at a rate of $140,000 per bus ($1.4 million based on 10 additional buses), and

(3) up to $5,000 per bus for all buses purchased, to cover any costs beyond the cost cap set by ARB of $140,000 per bus ($400,000 based on an expected total of 80 buses—seven pre-1977 buses and 73 total 1977-1986 buses).

School District Match
Staff recommends that the school districts that are awarded funds to replace 1977-1986 model year buses not be required to provide matching funds. First, the 2008 LESBP Guidelines note that an Air District's AB 923 funds can be used to cover this match. Second, a requirement of matching funds could pose a financial hardship on public school districts that could discourage LESBP participation, resulting in the continued operation of older, more polluting school buses in the Bay Area. Lastly, the Air District has previously covered the school district's matching requirement set by the LESBP Guidelines.

Replacement of Additional 1977-1986 Buses
Staff recommends that MSIF funds be allocated to replace 1977-1986 buses in addition to those that would be replaced with State funds. While State funds would replace a significant number of the existing 1977-1986 model year public school buses in the Bay Area, some 30 buses are expected to remain in service after State funds are exhausted.

Covering Full Cost of Bus
Staff recommends that MSIF revenues be set aside to cover the full cost of new buses. In implementing the FY 2005-2006 LESBP, Air District staff noted that 14 of the 20 buses purchased during that funding cycle cost $141,350, $1,350 above the current cost cap set by ARB for new buses. By allowing for a "cushion" of up to $5,000 per bus, costs beyond the cost cap set by ARB can be addressed.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None. The requested amount of additional funding to cover costs associated with the replacement of school buses would come from the additional $2 surcharge in motor vehicle registrations fees within the Air District's jurisdiction.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Geraldina Grünbaum
Reviewed by: Jack M. Colbourn

AGENDA: 9

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jerry Hill and
Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 18, 2008

Re: Consideration and Adoption of Resolution Urging the Port of Oakland to adopt User Fees to Fund the Mitigation of Air Pollution Health Risk in the West Oakland Community

RECOMMENDED ACTION:

Recommend the Board of Directors adopt a resolution urging the Port of Oakland (Port) to impose User Fees dedicated to:

1) Fund the mitigation of air pollution health risk from Port, tenant, rail and trucking operations in the West Oakland Community.
2) Match District Incentive funds to mitigate these emissions as quickly as possible in advance of regulations.
3) Utilize these funds to take emission reductions measures that go beyond what is or will be required by regulations.

BACKGROUND

On March 18, 2008, the Board of Port of Oakland Commissioners ("Port Commissioners") adopted a resolution "*Air Quality Policy Statement and "Early Actions" to Reduce Air Pollutant Emissions and Related Human Health Risk*" which committed the Port to the goal of reducing the West Oakland community's excess cancer risk attributable to diesel particulate matter (DPM) emissions from Port sources by 85% between 2005 and 2020 by taking all feasible measures to reach that goal.

Subsequently, the Port Commissioners adopted a further resolution on July 1, 2008, in an effort to provide funding to assist in achieving this goal. This resolution directed the Port's Executive Officer to prepare and present to them for approval an ordinance to enact an infrastructure and air quality improvement fee ("User Fee") on container cargo in the amount of $12.50 per twenty foot container equivalent unit (TEU) and not more than $25 per loaded container and authorization to amend Port rates and charges under Tariff 2-A in Port Ordinance No.2833.

In order to ensure that this funding is spent to expeditiously reduce the air emissions from Port, tenant, rail and trucking operations, to achieve the Port's stated goal, Staff proposes that the Board of Directors adopt a resolution urging action on behalf of the Port.

DISCUSSION

Results of a recent health risk assessment (HRA) performed jointly by the California Air Resources Board (ARB), the Air District and the Port, demonstrated that the cancer risk from diesel particulate matter (DPM) in West Oakland is three times the Bay Area average. Additionally, this assessment identified the Port and the associated Union Pacific Railroad facility as contributing up to 20% of this cancer risk.

In order to quickly mitigate this health risk, early action by the Port to comply with and go beyond upcoming port-related regulations is necessary. The User Fees to be raised by the Port are seen a crucial component of this effort.

These fees used as matching funds or in conjunction with Air District incentives can provide impetus and an economic stimulus to companies engaged in Port operations to ensure that the 85% health risk reduction target is achieved. However, it is vital that the fees raised be segregated and dedicated to achieving this goal.

Based on discussions with Port staff and answers provided to the District Board of Directors' Ad-Hoc Committee on Port Emissions, it is clear that funds raised from User Fees are not guaranteed to be applied to environmental projects.

Additionally, through its review of the recent draft Maritime Air Quality Improvement Plan (MAQIP), staff remains unconvinced that the current course charted by the Port towards its emissions reduction goal will be successful.

Therefore, staff is recommending that the Air District's Board of Directors provide leadership by adopting a resolution that urges action towards early compliance with regulatory standards by the described utilization of Port User Fees.

BUDGET CONSIDERATION/FINANCIAL IMPACT:

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer /APCO

Prepared by: Damian Breen
Reviewed by: Jack M. Colbourn

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

RESOLUTION No. 2008 -

A Resolution from the Board of Directors of the Bay Area Air Quality Management District (District) Urging the Port of Oakland to adopt User Fees to Fund the Mitigation of Air Pollution Health Risk in the West Oakland Community.

WHEREAS, The Port of Oakland (Port) is an independent department of the City of Oakland, which owns and manages the Oakland Seaport, Airport, and Commercial Real Estate.

WHEREAS, The Oakland City Charter specifically established the Port Department as an operating department with its own Board of Port Commissioners ("Port Commissioners") and the Charter grants to the Board the "exclusive control and management of the Port Department" and "all rights, powers and duties" of the City in respect to the Port.

WHEREAS, the Port Commissioners adopted a resolution "*Air Quality Policy Statement and "Early Actions" to Reduce Air Pollutant Emissions and Related Human Health Risk*" on March 18, 2008 which committed the Port to the goal of reducing the community's excess cancer risk attributable to diesel particulate matter (DPM) emissions from Port sources by 85% between 2005 and 2020 by taking all feasible measures to reach that goal.

WHEREAS, the Port Commissioners adopted a resolution on July 1, 2008 directing the Port's Executive Officer to prepare and present to them for approval an ordinance to enact an infrastructure and air quality improvement fee ("User Fee") on container cargo in the amount of $12.50 per twenty foot container equivalent unit (TEU) and not more than $25 per loaded container and authorization to amend Port rates and charges under Tariff 2-A in Port Ordinance No.2833.

WHEREAS, a health risk assessment (HRA) performed jointly by the California Air Resources Board (ARB), the District and the Port demonstrated that the cancer risk from DPM in West Oakland is three times the Bay Area average.

WHEREAS, DPM from the Port's operations and tenants are a contributor to this cancer risk.

NOW, THEREFORE, BE IT RESOLVED, the Board of Directors hereby urges the Port to adopt an ordinance to provide a dedicated and separate fund for the mitigation of air pollution impacts from Port, tenant, rail and trucking operations associated with cargo movement in West Oakland.

BE IT FURTHER RESOLVED, the Board of Directors urges the Port to utilize these funds to match District funds including California Goods Movement Bond Funding (I-Bond) to effect all possible air pollution emission reductions from Port, tenant, rail and trucking operations as expeditiously as possible and in advance of upcoming regulatory requirements.

BE IT FURTHER RESOLVED, the Board of Directors urges the Port to take action utilizing these funds as expeditiously as possible to mitigate air pollution emissions from Port, tenant, rail and trucking operations through efforts that go beyond the requirements of upcoming regulatory standards.

The foregoing resolution was duly and regularly introduced, passed and adopted at a regular meeting of the Board of Directors of the Bay Area Air Quality Management District on the Motion of Director _____, seconded by Director _____, on the ____ day of _____, 2008 by the following vote of the Board:

AYES:

NOES:

ABSENT:

_____
Jerry Hill
Chairperson of the Board of Directors

ATTEST:

_____
Brad Wagenknecht
Secretary of the Board of Directors

AGENDA: 10

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jerry Hill and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 16, 2008

Re: Approval of Proposed Resolution to Continue Reducing Air Contaminants in Impacted Communities

RECOMMENDED ACTION

Adopt resolution .

DISCUSSION

At the May 12, 2008 Executive Committee meeting, the Committee discussed the District's various programs to address air quality impacts in Bay Area communities and a proposed resolution regarding cumulative risk submitted by members of the Bay Area Environmental Health Collaborative (BAEHC). At the June 11, 2008 Executive Committee meeting, the Committee continued discussion of the proposed resolution and directed staff to work with stakeholders to craft a resolution for consideration by the full Board of Directors. Since the June 11 Committee meeting, staff has had additional discussions with the California Council for Environmental and Economic Balance (CCEEB) and BAEHC regarding the wording of such a resolution. Based on these discussions, staff has prepared and will present a resolution for consideration by the Board of Directors.

BUDGET CONSIDERATION/FINANCIAL IMPACT
No impact.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Phil Martien
Reviewed by: Henry Hilken

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

DRAFT RESOLUTION No. 2008-

A Resolution of the Board of Directors of the Bay Area Air Quality Management District to Continue Reducing Air Contaminants in Impacted Communities

WHEREAS, it is the intent of the Bay Area Air Quality Management District (District) to achieve clean and healthful air for all who live and work in the Bay Area, including segments of the population that bear disproportionately high and adverse health impacts from air pollution;

WHEREAS, the governing Board of Directors (Board) of the District recognizes that while most criteria and toxic air contaminants have been substantially reduced in the Bay Area, these contaminants continue to pose serious health risks;

WHEREAS, the Board further recognizes that these health risks are not equally distributed throughout the region and that some areas, where pollution levels are higher than others and where residents are particularly vulnerable to the adverse effects of air pollution, are more impacted;

WHEREAS, the Board has expressed its strong commitment to reduce toxic air contaminants in the Bay Area through its creation of the Community Air Risk Evaluation (CARE) program;

WHEREAS, the District has demonstrated its commitment to focus efforts to reduce toxic air contaminants in communities with high emissions and large populations of sensitive people through its implementation of the CARE Mitigation Action Plan that calls for

- Identifying impacted communities
- Focusing grant and incentive funding in impacted communities
- Increasing outreach efforts in impacted communities
- Developing land use guidance for local decision makers
- Updating CEQA guidelines
- Increasing collaboration with public health officials;

WHEREAS, the District has begun focusing grants and incentive funds from the Carl Moyer Program, the Transportation Fund for Clean Air, and the Goods Movement Bond on impacted areas as identified by the CARE program;

WHEREAS, the District has created and staffed a Community Outreach Program to increase and improve outreach and collaboration with community groups in impacted areas;

WHEREAS, the District recognizes that ongoing collaboration with impacted communities, including input to the CARE Mitigation Action Plan, is desirable;

WHEREAS, the Board has adopted a rule (Regulation 2, Rule 5) for new source review for toxic air contaminants, requiring best available control technology of toxic contaminants to reduce risks from new sources and from existing sources when they are modified or replaced;

WHEREAS, the District has developed enhanced complaint response programs, working with community groups to improve the District's reporting and response times;

WHEREAS, the District has collaborated with the California Air Resources Board and the Port of Oakland in the West Oakland Health Risk Assessment to identify health risks from diesel emissions in and around West Oakland and encourage community participation in the study;

WHEREAS, the District has participated in the implementation of the memorandum of understanding between the California Air Resources Board and the Union Pacific and Burlington Northern Santa Fe Railroads to ensure that rail emissions are reduced and their health impacts are clearly identified, and ensure that the public may actively participate in these processes;

WHEREAS, the District considers these activities to be a furtherance of its long-standing commitment to address disproportionate impacts of air pollution;

NOW, THEREFORE, BE IT RESOLVED that the Board commits to continue to address the cumulative impact of new and existing mobile and stationary sources of air pollution—particularly in disproportionately impacted communities—for sources that on a relative basis contribute most to health risk at a local and regional level;

BE IT FURTHER RESOLVED that the Board will continue its commitment to reduce air quality impacts throughout the Bay Area and will continue to implement the CARE Mitigation Action Plan to address health risks related to air quality in impacted communities.

BE IT FURTHER RESOLVED, that the Board will continue to explore and consider additional actions to reduce cumulative impacts throughout the Bay Area and that these actions will include, but not be limited to

* Participation in Statewide processes to address cumulative impacts; and
* In partnership with community groups, industry, health officials, and other agencies, development of new tools and methods, potentially including regulatory approaches, to consider and reduce cumulative impacts for sources that contribute most to health risk at a local and regional level,
* Promotion of interagency collaboration in impacted communities.

The foregoing resolution was duly and regularly introduced, passed and adopted at a regular meeting of the Board of Directors of the Bay Area Air Quality Management District on the Motion of Director _____, seconded by Director _____, on the ____ day of _____, 2008 by the following vote of the Board:

AYES:

NOES:

ABSENT:

_____
Jerry Hill
Chairperson of the Board of Directors

ATTEST:

_____
Brad Wagenknecht
Secretary of the Board of Directors

AGENDA: 11

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jerry Hill and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 17, 2008

Re: Public Hearing to Consider Adoption of Proposed Amendments to Regulation 9, Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters; Regulation 3: Fees, Schedule R: Equipment Registration Fees; Manual of Procedures, Volume I, Chapter 5: Boilers, Steam Generators and Process Heaters Tuning Procedure; and the 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 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters;
- Adopt proposed amendments to Regulation 3: Fees, Schedule R: Equipment Registration Fees;
- Adopt proposed amendments to Manual of Procedures, Volume I, Chapter 5: Boilers, Steam Generators and Process Heaters Tuning Procedure; and
- Adopt a California Environmental Quality Act (CEQA) Negative Declaration.

BACKGROUND

Regulation 9, Rule 7 sets emission limits for nitrogen oxides (NOx) and carbon monoxide (CO) from boilers, steam generators and process heaters used in industrial, institutional and commercial applications in order to reduce ozone forming emissions to the atmosphere, and reduce exposure to CO. NOx reductions also reduce the formation of secondary particulate matter (PM). The rule requires each gaseous fuel-fired device of 10 million BTU/hr (MM BTU/hr) heat input and above to meet a 30 parts per million by volume (ppmv) NOx emission limit unless it has an annual heat input of less than 90,000 therms. The proposed amendments will implement control measure SS-12 from the Bay Area 2005 Ozone Strategy.

DISCUSSION

Proposed amendments to Regulation 9, Rule 7 will: 1) expand the rule applicability for gaseous fuel-fired devices to those with a heat input rating of greater than 2 MM BTU/hr and establish NOx and CO emission limits for this size category; 2) reduce the NOx emission limit for devices already subject to this rule; 3) establish a manufacturer certification requirement

for new devices with a heat input rating greater than 2 and less than 10 MM BTU/hr, operator registration requirements for new and existing devices in this size range, and a prohibition of commerce in uncertified devices; and 4) establish insulation requirements, stack gas temperature limits and tune-up requirements for devices in all size ranges. In addition, the proposed amendments provide new exemptions from some of the requirements; new definitions; and administrative, recordkeeping and monitoring requirements where necessary to clarify and enforce the provisions in the rule.

The proposed amendments are estimated to reduce NOx emissions from heaters subject to this rule by about 60% (3.2 ton/day NOx), and also to reduce the formation of secondary PM by about 0.4 ton/day. The cost effectiveness of the retrofit or replacement of heaters to comply with the proposed NOx standards ranges from $17,200 to $27,700 per ton of NOx emissions reduced, for all heaters subject to this rule except for one very large heater. The cost-effectiveness for the largest heater currently subject to this rule is about $47,600 per ton of NOx emissions reduced.

Proposed amendments to Regulation 3: Fees will add a one-time registration fee of $425 per facility for devices requiring registration (those devices that do not currently require Air District permits), with an additional fee of $50 per device after the first at each facility.

Amendments to the Manual of Procedures will add procedures to monitor surface temperatures, stack gas temperatures and blowdown rates for devices subject to these requirements.

A socioeconomic analysis has found that the costs of the rule would not create significant economic dislocation or loss of jobs, including to small businesses. Pursuant to the California Environmental Quality Act (Public Resources Code 21000 et seq.), an initial study for the proposed amendments has been conducted, concluding that the proposed rule would not create significant adverse environmental impacts. A Negative Declaration was posted for public review and comment.

RULE DEVELOPMENT PROCESS

The proposed rule amendments were developed with significant public input. Staff held a public workshop on June 29, 2007 to solicit public input on a draft regulation. After this workshop, an amended draft regulation was prepared in response to comments by the public and the California Air Resources Board, further staff evaluation of potential control measures, and the report prepared for the Air District by the URS Corporation "*Opportunities for Further Greenhouse Gas Reductions for the BAAQMD Stationary Sources, Phase II: Landfills; Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters; and Cement Manufacturing*". A second public workshop was held on April 14, 2008. Twenty parties submitted written comments after this workshop. The Air District contacted most of these parties to discuss their comments, and meetings were held with two parties that requested to meet with Air District staff. Discussions also were held with a burner manufacturer, a supplier of NOx emission control systems and several boiler suppliers to further address technical comments.

Subsequent to the April 2008 workshop, staff contacted each of the 10 largest school districts in the Bay Area to ensure that they were aware of the proposed new requirements and to

verify the impact the rule would have on their equipment. Staff contacted each of the facilities that operate heaters rated 75 MM BTU/hr or higher, and that were potentially subject to the strictest NOx emission limit (5 ppmv) in order to ensure that they were aware of the proposed new requirements. Air District staff inspected heaters at several dozen facilities to validate our understanding of the impact of the proposed amendments on operators of small heaters. Several discussions were held with staff of the San Joaquin Valley APCD and the South Coast AQMD to discuss their experience in implementing NOx control measures included in the proposed amendments.

CHANGE TO THE RULE SINCE PUBLICATION

Air District staff has made one minor change to the proposed amendments to Regulation 9, Rule 7 since publication. A future compliance date for the proposed 40 ppmv NOx limit, consistent with that provided for other heaters, has been added for liquid fuel-fired boilers with less than 10 MM BTU/hr heat input capacity. Six small boilers at three facilities in the District use fuel oil as a primary fuel because their location makes access to a natural gas supply impractical. Because these six boilers would otherwise be subject to a 40 ppmv NOx limit upon rule adoption, a future effectiveness date of January 1, 2011 has been added to the draft rule. This change is shown in double strikethrough and double underline format in Section 9-7-308. The change is minor, preserves the intent of the rule and does not require that the public hearing be continued to adopt the proposed amendments.

BUDGET CONSIDERATION/FINANCIAL IMPACTS

Costs to the Air District to administer and enforce the amended rule will be recovered by registration fees set out in proposed Regulation 3 Fees, Schedule R.

Respectfully submitted,

Jack P. Broadbent
Executive Officer / APCO

Prepared by: Julian Elliot
Reviewed by: Henry Hilken

Attachments:

Proposed amendments to Regulation 9, Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters

Proposed amendments to Regulation 3: Fees, Schedule R, Equipment Registration Fees;

Proposed amendments to Manual of Procedures, Volume I, Chapter 5: Boilers, Steam Generators and Process Heaters Tuning Procedure;

Staff Report including appendices

- Appendix A: Responses to Comments
- Appendix B: Socioeconomic Analysis
- Appendix C: CEQA Initial Study and Negative Declaration

REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 7
NITROGEN OXIDES AND CARBON MONOXIDE FROM INDUSTRIAL, INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS, AND PROCESS HEATERS

INDEX

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(Adopted September 16, 1992)

9-7-100 GENERAL

9-7-101 Description: This rule limits the emissions of nitrogen oxides (NOx) and carbon monoxide (CO) from industrial, institutional, and commercial boilers, steam generators, and process heaters.

9-7-110 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 10~~of 2 million BTU/hour or less, 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 Boilers, steam generators, and process heaters that are used in petroleum refineries~~.~~;

110.4 Boilers used by public electric utilities or qualifying small power production facilities, as defined in Section 228.5 of the Public Utilities Code, to generate electricity;

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

110.6 Kilns, ovens, and furnaces used for drying, baking, heat treating, cooking, calcining, or vitrifying.

9-7-111 Limited Exemption, Low Fuel Usage - Section 9-7-301: The requirements of Section 9-7-301 shall not apply to the use of any boiler, steam generator, or process heater with an annual heat input less than 90,000 therms during each consecutive 12-month period after July 1, 1993, or that accepts a limiting condition in their operating permit to limit the annual heat input to less than 90,000 therms, provided the requirements of Sections 9-7-304 and 504 are satisfied.

9-7-112 Limited Exemption, Low Fuel Usage: The requirements of Sections 9-7-307 (except as specified below), 311 and 312 shall not apply to the use of any boiler, steam generator, or process heater provided that all of the following conditions are met:

112.1 For devices with a rated heat input less than 10 million BTU/hr, the device uses less than 10% of its annual maximum heat capacity in each consecutive 12-month period beginning January 1, 2011 and the requirements of Section 9-7-309 are satisfied;

112.2 For devices with a rated heat input of 10 million BTU/hr or more, the device uses less than 10% of its annual maximum heat capacity in each consecutive 12-month period beginning January 1, 2012 and the requirements of Section 9-7-307.10 are satisfied.

An operator of a boiler, steam generator, or process heater that loses eligibility for this exemption by using more than the specified amount of fuel in any consecutive 12-month period shall comply with the applicable standards of Section 9-7-307 within 24 months.

9-7-113 Limited Exemption, Natural Gas Curtailment and Testing: The requirements of Section 9-7-307 shall not apply to any boiler, steam generator or process heater while it burns LPG or other non-gaseous fuel during a natural gas curtailment or during testing to verify readiness for such a curtailment, provided that all of the following conditions are met:

113.1 The device does not burn LPG or other non-gaseous fuel for more than 168 total hours in each consecutive 12-month period, plus 48 hours in each consecutive 12-month period for oil-burn readiness testing or state, federal, or local agency-required performance testing,

113.2 The device does not exceed a NOx exhaust concentration of 150 ppmv, and

113.3 The records specified in Section 9-7-503.3 are maintained.

9-7-114 Limited Exemption, Tune-up: The emission limits of Section 9-7-307 shall not apply during the tune-up of a boiler, steam generator or process heater required by Section 9-7-313. Emissions shall be minimized to the extent possible during the exemption period and the tune-up shall be completed in as little time as necessary.

9-7-115 Limited Exemption, Startup and Shutdown: The emission limits of Section 9-7-307 shall not apply during startup and shutdown periods provided that all of the following conditions are met:

115.1 Each startup and shutdown period shall not exceed two hours, unless otherwise allowed in a District Permit to Operate. In no case shall the startup period exceed 12 hours, or the shutdown period exceed 9 hours.

115.2 All emission control systems shall be in operation and emissions shall be minimized, to the extent possible, during startup and shutdown periods.

9-7-116 Limited Exemption, Compliance Extension for Facilities Subject to Regulation 9, Rule 9: Boilers, steam generators or process heaters located at the same facility as a turbine that is subject to Regulation 9, Rule 9 and that is modified or replaced to comply with Section 9-9-301.2 of that regulation, shall comply with the requirements of Section 9-7-307 no later than 24 months after the date otherwise specified for compliance in Section 9-7-308.

9-7-117 Limited Exemption, Devices Rated 75 MM BTU/hr or Higher Limited to 9 PPMV NOx: The emission limits of Section 9-7-307.6 shall not apply to any boiler, steam generator or process heater that is limited to 9 ppmv NOx or less by a District Permit to Operate in effect on or before July 30, 2008 as long as that permit limit remains in effect.

9-7-200 DEFINITIONS

9-7-201 Annual Heat Input: The total heat input of fuels burned by a combustion source during any consecutive 12-month period, as determined from the higher heating value and cumulative annual usage of each fuel.

9-7-202 Annual Maximum Heat Capacity: The amount of heat input that a device would have if it operated at its rated heat input continuously for 365 consecutive days.

9-7-203~~202~~ Boiler or Steam Generator: Any combustion equipment used to produce steam or to heat water.

9-7-204~~203~~ British Thermal Unit (BTU): The amount of heat required to raise the temperature of one pound of water from 59^{o} to 60^{o}F at one atmosphere.

9-7-205 Digester Gas: Gas derived from the decomposition of organic matter in a digester.

9-7-206 Digester Gas-Fired Device: A boiler, steam generator or process heater that fires or co-fires digester gas at least 90% of its operating time, on a calendar year basis.

9-7-207 Gaseous Fuel: Any fuel that is a gas at 68^{o}F and one atmosphere.

9-7-208~~204~~ Heat Input: The heat of combustion released due to burning a fuel in a source, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.

9-7-209~~205~~ Heat-Input Weighted Average: The heat input of the gaseous fuel per unit time divided by the total heat input per unit time and the heat input per unit time of the non-gaseous fuel divided by the total heat input per unit time. The calculated fractions are used to calculate the applicable weighted average ppmv emission limit of Section 9-7-301.3~~303~~.

9-7-210~~206~~ 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. The HHV is determined as specified in Section 9-7-605.

9-7-211 Landfill Gas: Gas derived from the decomposition of waste in a landfill.

9-7-212 **Landfill Gas-Fired Device:** A boiler, steam generator or process heater that fires or co-fires landfill gas at least 90% of its operating time, on a calendar year basis.

9-7-213 **Load-Following Unit:** A unit that cannot be operated in a base-loaded mode, and that has normal operational load fluctuations and requirements, imposed by fluctuations in the process(es) served by the unit, that exceed the operational response range of a Ultra-Low NOx burner system operating at 9 ppmv NOx, as determined by the District and indicated on the device's permit to operate.

9-7-214~~207~~ Natural Gas: Any mixture of gaseous hydrocarbons containing at least 80 percent methane by volume, as determined according to Standard Method ASTM D1945-64.

9-7-215 **Natural Gas Curtailment:** A shortage in the supply of pipeline natural gas, due solely to supply limitations or restrictions in distribution pipelines by the utility supplying the gas, and not due to the cost of natural gas.

9-7-216~~208~~ Nitrogen Oxide (NOx) Emissions: The sum of nitric oxide (NO) and nitrogen dioxide (NO_2) in the flue gas, collectively expressed as nitrogen dioxide.

~~**9-7-209 Non-Gaseous Fuel:** Any fuel which is not a gas at 68°F and one atmosphere.~~

9-7-217~~210~~ Process Heater: Any combustion equipment that~~which~~ transfers heat from combustion gases to water or process streams. A process heater does not include any kiln, furnace~~,~~ or oven, which is used for drying, baking, heat treating, cooking, calcining, or vitrifying. A process heater also does not include a space heating device that is primarily intended to only heat ambient air.

9-7-218~~211~~ Rated Heat Input: The heat input capacity specified on the nameplate of the boiler, steam generator or process heater, or the sum of the capacities on the nameplates of the burners in the boiler, steam generator or process heater, whichever is greater~~combustion source. If the combustion source has been physically modified such that its maximum heat input is different than the heat input capacity specified on the nameplate, the modified maximum heat input, per Section 9-7-502, shall be considered as the rated heat input.~~

9-7-219 **Shutdown Period:** The period of time during which a unit is taken from an operational to a non-operational status.

9-7-220 **Startup Period:** The period of time during which a unit is brought from a non-operational status to operating temperature, including the time required for the unit's emission control system to reach full operation.

9-7-221~~212~~ Therm: One hundred thousand (100,000) BTU's.

9-7-300 STANDARDS

9-7-301 **Interim Emission Limits~~ – Gaseous Fuel~~:** ~~Effective January 1, 1996,~~No~~a~~ person shall ~~not~~ operate a boiler, steam generator, or process heater with a rated heat input greater than or equal to 10 million BTU per hour~~, fired on gaseous fuel,~~ unless the following emission limits are met:

301.1 Nitrogen oxides (NOx) emissions shall not exceed 30 ppmv, dry at 3 percent oxygen when gaseous fuel is used;

301.2 Nitrogen oxides (NOx) emissions shall not exceed 40 ppmv, dry at 3 percent oxygen when non-gaseous fuel is used;

301.3 Nitrogen oxides (NOx) emissions shall not exceed the heat-input weighted average of the limits in Sections 9-7-301.1 and 301.2 when a combination of gaseous and non-gaseous fuel is used;

301.4~~2~~ Carbon monoxide (CO) emissions shall not exceed 400 ppmv, dry at 3 percent oxygen.

This section shall not apply to any boiler, steam generator, or process heater subject to a NOx or CO emission limit in Section 9-7-307.

~~**9-7-302 Emission Limits - Non-Gaseous Fuel:** Effective January 1, 1996, a person shall not operate a boiler, steam generator, or process heater, with a rated heat input greater than or equal to 10 million BTU per hour, fired on non-gaseous fuel, unless the following emission limits are met:~~

~~302.1 Nitrogen oxides (NOx) shall not exceed 40 ppmv, dry at 3 percent oxygen;~~

~~302.2 Carbon monoxide (CO) shall not exceed 400 ppmv, dry at 3 percent oxygen.~~

~~**9-7-303 Emission Limits - Gaseous and Non-Gaseous Fuel:** Effective January 1, 1996, a person shall not operate a boiler, steam generator, or process heater, with a rated heat input greater than or equal to 10 million BTU per hour, fired simultaneously on combinations of gaseous and non-gaseous fuels, unless the heat-input weighted average of the emission limits specified in subsections 9-7-301.1, 301.2, 302.1, and 302.2 are not exceeded.~~

9-7-304 Interim Low Fuel Usage Requirements: ~~Effective January 1, 1996, a~~No person shall~~who~~ operate~~s~~ any boiler, steam generator, or process heater under~~with rated heat input greater than or equal to 10 million BTU per hour and qualifying for~~ the limited exemption in Section 9-7-111, or with rated heat input less than 10 million BTU per hour with the capability of firing any non-gaseous fuel ~~other than natural gas or liquefied petroleum gas,~~ without doing at least~~shall meet~~ one of the following ~~conditions~~:

304.1 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

304.2 Perform an inspection and tune-up~~Tune~~ at least once every 12~~twelve~~ months by a technician in accordance with the procedure specified in Section 9-7-604; or

304.3 Meet the emission limits specified in Sections 9-7-301~~, 302, or 303~~.

~~**9-7-305 Natural Gas Curtailment - Non-Gaseous Fuel:** Effective January 1, 1996, if natural gas is unavailable to use, a person shall not operate a boiler, steam generator, or process heater, fired on non-gaseous fuel, unless the following emission limits are met:~~

~~305.1 Nitrogen oxides (NOx) shall not exceed 150 ppmv, dry at 3 percent oxygen;~~

~~305.2 Carbon monoxide (CO) shall not exceed 400 ppmv, dry at 3 percent oxygen.~~

~~**9-7-306 Equipment Testing - Non-Gaseous Fuel:** Effective January 1, a person shall not operate a boiler, steam generator, or process heater, fired on non gaseous fuel for equipment testing, unless the following limits are met:~~

~~306.1 Nitrogen oxides (NOx) shall not exceed 150 ppmv, dry at 3 percent oxygen.~~

~~306.2 Carbon monoxide (CO) shall not exceed 400 ppmv, dry at 3 percent oxygen.~~

~~306.3 Equipment testing shall not exceed a combined total of 48 hours during any calendar year.~~

9-7-307 Final Emission Limits: No person shall operate a boiler, steam generator, or process heater with a rated heat input listed in the table below that exceeds the corresponding NOx and CO emission limits on or after the corresponding effective date specified in Section 9-7-308. Where more than one NOx limit applies to a device, the device will be subject only to the higher (less restrictive) NOx limit.

Emission Limit	Rated Heat Input (million BTU/hr)	NOx Limit (ppmv)	CO Limit (ppmv)
307.1	>2 to 5	30	400
307.2	>5 to <10	15	400
307.3	10 to <20	15	400
307.4	20 or more, load-following unit	15	400
307.5	20 to <75	9	400
307.6	75 or more	5	400
307.7	10 or more, landfill gas-fired or digester gas-fired device	30	400
307.8	1 or more while firing only non-gaseous fuel	40	400
307.9	1 or more while firing a combination of gaseous and non-gaseous fuel	heat-input weighted average of gaseous & non-gaseous limit	400
307.10	10 or more, while operated under	30	400

	exemption 9-7-112.2		

9-7-308 Compliance Schedule: Boilers, steam generators and process heaters subject to the requirements of Section 9-7-307 shall comply with those requirements in accordance with the schedule in the table below.

Section	At least 33% of devices at a single facility	At least 66% of devices at a single facility	100% of devices at a single facility
9-7-307.1	Effective Date: Later of January 1, 2011 OR 10 years after original manufacture date if manufactured prior to January 1, 2011	One year after Effective Date	Two years after Effective Date
9-7-307.2 9-7-307.3	Effective Date: Later of January 1, 2012 OR 10 years after original manufacture date if manufactured prior to January 1, 2012	One year after Effective Date	Two years after Effective Date
9-7-307.4 9-7-307.5 9-7-307.6	Effective Date: Later of January 1, 2012 OR 5 years after original manufacture date if manufactured prior to January 1, 2012	One year after Effective Date	Two years after Effective Date
9-7-307.7 ~~9-7-307.8~~ ~~9-7-307.9~~ 9-7-307.10	upon adoption	upon adoption	upon adoption
9-7-307.8 9-7-307.9	Effective Date: January 1, 2011 for devices with rated input <10 MM BTU/hr; Upon adoption for devices with rated input ≥10 MM BTU/hr	One year after Effective Date	Two years after Effective Date

9-7-309 Final Low Fuel Usage Requirements: No person shall operate any boiler, steam generator, or process heater under the limited exemption in Section 9-7-112.1 without doing at least one of the following:

309.1 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

309.2 Perform an inspection and tune-up at least once per calendar year by a technician in accordance with the procedure specified in Section 9-7-604; or

309.3 Meet the applicable emission limits in Section 9-7-307.

9-7-310 Prohibition of Commerce in Uncertified Devices: No person shall sell, offer for sale, or install of any boiler, steam generator or process heater subject to Section 9-7-307.1 or 307.2 unless the device is certified in accordance with Sections 9-7-405 and 406.

9-7-311 Insulation Requirements: Effective January 1, 2010, no person shall operate a boiler or steam generator unless the exposed, external surface of the device, including all pipes and ducts heated by the device, does not exceed a temperature of 120ºF. This requirement shall not apply to any of the following:

311.1 Any device that meets the definition of a high-temperature water boiler in California Code of Regulations, Title 8.

311.2 Any surface or appurtenance that must remain un-insulated for safety or operational reasons.

311.3 Any surface that has at least one inch of insulation, or that does not exceed a temperature of 140ºF with no insulation.

311.4 Any surface heated by a source other than the boiler or steam generator, including sunlight.

311.5 Any exhaust stack surface.

9-7-312 Stack Gas Temperature Limits: Effective January 1, 2011, no person shall operate a boiler or steam generator with a stack gas temperature (downstream of any economizer) that exceeds the indicated maximum temperature:

Heater Design	Maximum Temperature (ºF)	
	Gaseous Fuel	Non-Gaseous Fuel
firetube	100ºF over saturated steam temperature for steam boiler, 100ºF over hot water temperature for hot water boiler OR 250 ºF greater than ambient temperature, whichever is higher	100ºF over saturated steam temperature for steam boiler, 100ºF over hot water temperature for hot water boiler OR 300 ºF greater than ambient temperature, whichever is higher
watertube	150ºF over saturated steam temperature for steam boiler, 150ºF over hot water temperature for hot water boiler OR 250 ºF greater than ambient temperature, whichever is higher	150ºF over saturated steam temperature for steam boiler, 150ºF over hot water temperature for hot water boiler OR 300 ºF greater than ambient temperature, whichever is higher

9-7-313 Tune-up Requirements: Effective January 1, 2009, no person shall operate a boiler, steam generator, or process heater unless they do at least one of the following each calendar year:

313.1 Operate at less than 10% of its annual maximum heat capacity during the calendar year; or

313.2 Perform an inspection and tune-up at least once per calendar year by a technician in accordance with the procedure specified in Section 9-7-604.

9-7-400 ADMINISTRATIVE REQUIREMENTS

~~**9-7-401 Compliance Schedule – Emissions and Usage Limits:** A person who must modify existing sources` or equipment to comply with the requirements of Sections 9-7-301, 302, 303, 305, or 306 shall comply with the following increments of progress:~~

~~401.1 By January 1, 1994: Submit an application for any required Authority to Construct to achieve compliance with such requirements.~~

~~401.2 By January 1, 1995: Submit a status report to the APCO stating the progress of the modification or installation.~~

~~401.3 By January 1, 1996: Be in compliance with all the requirements of this rule.~~

~~**9-7-402 Compliance Schedule - Low Fuel Usage Requirements:** A person who must comply with the requirements of Section 9-7-304 shall comply with the following increments of progress:~~

~~402.1 By January 1, 1995: Submit a plan for approval by the APCO containing the following items:~~

~~1.1 A list of all sources with the rated heat input capacities and anticipated annual heat inputs; and~~

~~1.2 A selection of one of the three options specified in subsections 9-7-304.1, 304.2, and 304.3.~~

~~402.2 By January 1, 1996: Be in compliance with all the requirements of this rule.~~

9-7-403 Initial Demonstration of Compliance: ~~By July 1, 1996, any person subject to this rule shall conduct source tests, as specified in Sections 9-7-601 or 602, for the purpose of demonstrating compliance with Sections 9-7-301, 302, 303, or subsection 9-7-304.1.~~No person shall operate a boiler, steam generator or process heater that is subject to the requirements of Sections 9-7-307.3, 307.4, 307.5, 307.6 or 309.1 unless an initial source test to verify compliance with these requirements is conducted in accordance with Sections 9-7-601 or 602 within 1 year of the date these requirements are effective. Alternatively, devices subject to Sections 9-7-307.3, 307.4 or 309.1 may be tested using a portable analyzer that meets the specification standards and using the testing protocol in Attachment 1. This section does not apply to any device required to perform verification testing to establish compliance with applicable requirements of Sections 9-7-307.3, 307.4, 307.5, 307.6 or 309.1 in accordance with a District Authority to Construct issued on or after January 1, 2011.

9-7-404 Registration: Effective January 1, 2011, no person shall operate any boiler, steam generator or process heater subject to Section 9-7-307.1 or 307.2 unless the device is registered in accordance with Regulation 1, Section 410. Any person registering a device shall pay the fees specified in Regulation 3. This registration requirement shall not apply to any device for which the operator holds a District Permit to Operate.

9-7-405 Compliance with Emissions Standards – Devices Rated Less Than 10 Million BTU/hr Input: The manufacturer shall obtain confirmation from an independent testing laboratory that each boiler, steam generator or process heater model it sells or distributes for sale into the District that is subject to the requirements of Section 9-7-307.1 or 307.2 has been tested in accordance with the procedures in Sections 9-7-601 and 602. This requirement shall not apply to burner assemblies sold as retrofit packages.

9-7-406 Application for Certification:

406.1 Each manufacturer shall submit an application to the APCO for certification of their compliant boiler, steam generator or process heater model. The application must:

406.1.1 Provide the following general information: name and address of manufacturer, brand name, trade name, model number and heat input rating as it appears on the water heater rating plate.

406.1.2 Provide a description of the model being certified

406.1.3 Include a complete certification source test report demonstrating that the boiler or water heater model was tested in accordance with procedures in Sections 9-7-601 and 602 and a written statement that the model complies with Section 9-7-307.1 or 307.2 and is tested in accordance with procedures in Sections 9-7-601 and 602.

406.1.4 Be submitted to the District no more than 90 days after the date of the emissions compliance test conducted in accordance with Section 9-7-405.

406.1.5 Be submitted to the District no less than 90 days before the first sale or distribution within the District that occurs on or after January 1, 2011, of a boiler, steam generator or process heater model.

406.2 After completing review of the application for certification and source test report, the APCO will approve, or will deny approval of, the device.

406.3 Certification status shall be valid for three years from the date of approval by the APCO. After the third year, recertification shall be required according to the requirements in 9-7-406.

9-7-407 Identification: The boiler, steam generator or process heater manufacturer shall display the model number and the certification status of the boiler, steam generator or process heater on the shipping carton and on the rating plate of each unit.

9-7-408 Designation of Load-Following Units: To be eligible for the load-following emission standard in section 9-7-307, a unit must be designated a load-following unit by the APCO on the unit Permit to Operate. In order to support this designation, the unit operator shall include the following information with an application for an Authority to Construct or an application for a modification to a Permit to Operate, as specified in Regulation 2:

408.1 A description of the processes the unit serves and the normal operational load fluctuations and load requirements imposed on the unit, verifying that the unit cannot be operated in a base-loaded mode.

408.2 A detailed report on the design and condition of the unit, burner(s), burner controls, and any other subsystem that may affect the ability of the unit to comply with a 9 ppmv NOx limit, including a verification that the unit is free of air leaks, and is operated within normal design parameters, and is otherwise free of significant design defects and physical defects and is operated within reasonable parameters. This report shall verify that the inability of the unit to comply with a 9 ppmv NOx limit is substantially caused by the system load fluctuations and the limitations of state-of-the-art, commercially-available, 9 ppmv burners and burner controls, rather than any other factor.

408.3 Technical data such as steam demand charts or other information to support the description and report described above.

9-7-500 MONITORING AND RECORDS

9-7-501 Combinations of Different Fuels: No person shall~~Any person who~~ simultaneously fire~~s~~ combinations of different fuels in a device~~source with a rated heat input greater than or equal to 10 milliion BTU per hour and is~~ subject to the requirements of Section~~s~~ 9-7-301.3 or 307.9~~303~~ without first~~shall~~ install~~ing~~ a non-resettable totalizing fuel meter in each fuel line for each source.

~~**9-7-502 Modified Maximum Heat Input:** Any person who operates a boiler, steam generator, or process heater 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 by a fuel meter, while operating the source at maximum capacity.~~

9-7-503 Records: Any person subject to the requirements of this rule shall keep records of the following:

503.1 Documentation verifying ~~annual~~ tune-ups performed in accordance with Section~~subsection~~ 9-7-304.2, 309.2 or 313.2.

503.2 In the event that the limited exemption in Section 9-7-113 is invoked~~natural gas is unavailable for use~~, documentation from the natural gas supplier verifying that natural gas was unavailable due to a natural gas curtailment.

503.3 Documentation verifying the hours of equipment testing using non-gaseous fuel, and of total operating hours using non-gaseous fuel during each calendar month~~ to demonstrate compliance with subsection 9-7-306.3~~.

503.4 The results of any ~~source~~ testing required by Section~~s~~ 9-7-403 or 506.

503.5 Digester gas-fired and landfill gas-fired devices operating under Section 9-7-307.7 shall maintain records of total operating hours and operating hours firing or co-firing digester or landfill gas.

Such records shall be retained for a minimum of 24 months from date of entry and be made available to District staff upon request.

9-7-504 Low Fuel Usage - Monitoring and Records: Any person who operates a boiler~~s~~, steam generator~~s~~, or process heater~~s with rated heat inputs greater than or equal to 10 million BTU per hour and qualifying for~~under the limited exemption of Section 9-7-111 or 112 shall comply with the following requirements:

504.1 Operate~~Install by July 1, 1993,~~ a non-resettable totalizing meter for each fuel that demonstrates that the source operated at or below the applicable heat input level, or receive APCO approval for using utility service meters, purchase or tank fill records, or any other acceptable methods for measuring the cumulative annual usage of each fuel; and

504.2 Have available for inspection by the APCO ~~by July 1, 1994, and each year thereafter,~~ annual fuel use data and the Higher Heating Value of each fuel used, for the prior~~preceeding~~ consecutive 12-month period. Records shall be maintained and made access~~i~~ble to the APCO for a period of 24 months from the date the record is made.

An operator of a boiler, steam generator or process heater who claims eligibility for the limited exemption in Section 9-7-111 or 112, but who fails to maintain records to allow verification of fuel usage shall have the burden of proof to establish eligibility for the limited exemption.

9-7-505 Original Manufacture Date: Any person who operates a boiler, steam generator or process heater that subject to a standard in Sections 9-7-307.1 through 307.6 and that elects to use an effective date for this standard that is based on the original manufacture date of the device shall make available the original manufacture date of the device on the original manufacturer's identification or rating plate permanently fixed to the device, or else on a copy of the manufacturer's invoice.

9-7-506 Periodic Testing: No person shall operate a boiler, steam generator, or process heater subject to an emission limit specified in the table below unless they verify compliance with the limit at the specified intervals. Testing shall be performed in

accordance with Sections 9-7-601 and 602. Alternatively, devices may be tested using a portable analyzer that meets the specification standards and using the testing protocol in Attachment 1. No person shall operate a device that use non-gaseous fuel unless they perform testing using non-gaseous fuel to verify compliance with Section 9-7-307.8 or 307.9, in addition to testing to verify compliance with any other applicable standard in Section 9-7-307. This section does not apply to any device required to perform periodic testing in accordance with a District Permit to Operate or to any device that verifies compliance with an emission limit with a District-approved continuous emission monitor.

Emission Limit	Testing Interval
9-7-307.3	Every two years (no less than 18 months and no more than 24 months), beginning with the effective date in Section 9-7-308.
9-7-307.4, 9-7-307.5, 9-7-307.6, or 9-7-309.1	Every year (no less than 10 months and no more than 12 months), beginning with the effective date in Section 9-7-308.
9-7-307.8 or 9-7-307.9	Within 60 days of the first use of non-gaseous fuel in any calendar year in which non-gaseous fuel is used. Use of non-gaseous fuel for oil-burn readiness testing or state, federal, or local agency-required performance testing, not exceeding a total of 48 hours in a calendar year, will not trigger periodic testing.

9-7-600 MANUAL OF PROCEDURES

9-7-601 Determination of Nitrogen Oxides: The methods by which samples of exhaust gases are collected and analyzed to determine concentrations of nitrogen oxides are set forth in the District Manual of Procedures, Volume IV, ST-13 A or B.

9-7-602 Determination of Carbon Monoxide and Stack-Gas Oxygen: Compliance with the carbon monoxide emission requirements of Sections 9-7-301 and 307 and the stack-gas oxygen concentration requirement of Sections~~subsection~~ 9-7-304.1 and 309.1~~302.1~~ shall be determined as set forth in the District Manual of Procedures, Volume IV, ST-6 (carbon monoxide) and ST-14 (oxygen).

9-7-603 Compliance Determination: All emission determinations shall be made in the as-found operating condition, except that ~~emission determinations shall include at least one source test conducted at the rated heat input of the source, and~~ no compliance determination shall be established during startup or shutdown~~within two hours after a continuous period in which fuel flow to the unit is zero or is shut off for 30 minutes or longer~~.

9-7-604 Tune-Up Procedures: The tune-up procedure required by Section 9-7-304.2, 309.2 and 313.2 shall be performed in accordance with the procedure set forth in the District Manual of Procedures, Volume I, Chapter 5.

(Adopted September 15, 1993)

9-7-605 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.

Attachment 1

Portable Analyzer Protocol

Emission readings using a portable analyzer shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced over the 15-consecutive-minute period. If the results of the portable analyzer show that the NOx or CO emissions from the unit exceed the applicable limits, then the unit shall be source tested no later than 60 days from the date of discovering such exceedance.

Portable Analyzer Specifications

A. **General:** A portable analyzer consists of a sample interface, a gas detector, and a data recorder, and is used to quantitatively analyze stack gas for one or more components. A portable analyzer for CO, O2, or NOx shall be considered approved by the District if it adheres to the standards that are set forth in this section, is used in accordance with the standards of this section, and is used in accordance with the manufacturer's specifications. Other portable analyzers and techniques are approvable on a case by case basis.

B. **Definitions:**

Sample interface: That portion of the portable analyzer used for one or more of the following: sample acquisition, sample transport, sample conditioning, or protection of the portable analyzer from the effects of the stack effluent.
Gas detector: That portion of the portable analyzer that senses the gas to be measured and generates an output proportional to the gas concentration.
Data recorder: A strip chart recorder, digital recorder, or any other device used for recording or displaying measurement data from the gas detector output.
Resolution: The smallest increment of output that the gas detector will provide. This value should be reported by the equipment manufacturer.
Error: The maximum standard measurement error over the measurement range. This value should be reported by the equipment manufacturer.
Detection Limit: The lowest concentration of gas that can be detected by the gas detector. This value should be reported by the equipment manufacturer.
Response Time: The amount of time required for the portable analyzer to display 95% of a step change in gas concentration on the data recorder.

C. **Equipment:** The portable analyzer shall adhere to the standards tabulated below for each of the pollutants that it is intended to measure. All values in the table refer to maximum values. In addition to the parameters contained in the table, the minimum upper limit of the measurement range shall be equal to 1.5 times the emission limit for the species being measured.

Detector	Resolution	Error	Detection Limit	Response Time
CO	20 ppm	± 50 ppm	50 ppm	1 min
O2	0.5%	± 1.0%	0%	1 min
NOx	1 ppm	± 1 ppm	5 ppm	1 min

D. **Calibration:** Each gas detector shall be calibrated a minimum of once every six months and all instrument calibration data shall be kept on file with the monthly analyses. If the manufacturer recommends calibration more than once every six months, then the instrument calibration shall follow the manufacturer's recommended interval. Two calibration gases are required, the upper limit calibration gas shall have a concentration of 60-100% of the upper limit of the measurement range and the lower limit calibration gas shall have a concentration from 0-10% of the upper limit of the measurement range. Ambient air may be used as the upper limit calibration gas for O2 and may be used as the lower limit calibration gas for both

NOx and CO. The system response time shall be determined during the gas detector calibration. The portable analyzer shall first be purged with ambient air. Calibration gas is then provided to the portable analyzer through a tubing length typically used during analysis. The time necessary for the data recorder to display a concentration equal to 95% of the final steady state concentration shall be recorded as the response time.

E. **Measurement:**

1. Concentration measurements shall not be taken until the sample acquisition probe has been exposed to the stack gas for at least 150% of the response time. Measurements shall be taken in triplicate.
2. If water vapor is not removed prior to measurement, the absolute humidity in the gas stream must be determined so that the gas concentrations may be reported on a dry basis. If water vapor creates an interference with the measurement of any component, then the water vapor must be removed from the gas stream prior to concentration measurements.
3. The concentration of NOx is calculated as the sum of the volumetric concentrations of both NO and NO2. The portable analyzer used to detect NOx must either convert NO2 to NO and measure NO, convert NO to NO2 and measure NO2, or measure both NO and NO2. An NO2 to NO converter is not necessary if data are presented to demonstrate that the NO2 portion of the exhaust gas is less than 5 percent of the total NOx concentration.

SCHEDULE R
EQUIPMENT REGISTRATION FEES

1. Persons operating commercial cooking equipment that are required to register equipment as required by District rules are subject to the following fees:
   a. Conveyorized Charbroiler REGISTRATION FEE: $360
   b. Conveyorized Charbroiler ANNUAL RENEWAL FEE: $100
   c. Under-fired Charbroiler REGISTRATION FEE: $360
   d. Under-fired Charbroiler ANNUAL RENEWAL FEE: $100

2. Persons operating non-halogenated dry cleaning equipment that are required to register equipment as required by District rules are subject to the following fees:
   a. Dry Cleaning Machine REGISTRATION FEE: $180
   b. Dry Cleaning Machine ANNUAL RENEWAL FEE: $125

3. Persons operating diesel engines that are required to register equipment as required by District or State rules are subject to the following fees:
   a. Diesel Engine REGISTRATION FEE: $120
   b. Diesel Engine ANNUAL RENEWAL FEE: $80

(Adopted 7/6/07; Amended 12/5/07; 5/21/08)

4. Persons operating boilers, steam generators and process heaters that are required to register equipment by District Regulation 9-7-404 are subject to the following fees:
   a. Each facility operating a boiler, steam generator or process heater subject to Regulation 9-7-404 ONE-TIME REGISTRATION FEE $425 per facility
   b. Each boiler, steam generator or process heater subject to Regulation 9-7-404, after the first ONE-TIME REGISTRATION FEE $50 per device

5. BOILER, STEAM GENERATOR AND PROCESS HEATER TUNING PROCEDURE

5.1 Inspection Procedure for Boilers, Steam Generators and Process Heaters

5.1.1 Using a thermometer and probe with a resolution and accuracy of ±5ºF or better and appropriate range, ensure that the applicable insulation requirements of Section 9-7-311 are satisfied.

5.1.2 Record the stack gas temperature and the saturated steam temperature (for steam boilers) or the hot water temperature (for hot water boilers). Ensure that the applicable stack gas temperature limits of Regulation 9-7-312 are not exceeded. Elevated stack gas temperature may be caused by too much excess air, which forces hot gases through the boiler without adequate heat transfer, or by fouling of heat transfer surfaces, which inhibits heat transfer.

5.1.3 Record the liquid blowdown rate and frequency and ensure that it conforms to manufacturer recommendations. Although some level of blowdown is necessary to maintain low concentrations of dissolved solids in the water and to remove solids that have settled out of the water, excessive blowdown wastes energy.

5.2 Tuning Procedure for Forced-Draft Boilers, Steam Generators and Process Heaters (based on a tune-up procedure developed by KVB, Inc for U.S. EPA)

Nothing in this Tuning Procedure shall be construed to require any act or omission that would result in unsafe conditions or would be in violation of any regulation or requirement established by Factory Mutual, Industrial Risk Insurers, National Fire Prevention Association, the California Department of Industrial Relations (Occupational Safety and Health Division), the Federal Occupational Safety and Health Administration, or other relevant regulations and requirements.

5.2.1 Operate the unit at the firing rate most typical of normal operation. If the unit experiences significant load variations during normal operation, operate it at its average firing rate.

5.2.2 At this firing rate, record stack gas temperature, oxygen concentration, and CO concentration (for gaseous fuels) or smoke-spot number (for liquid fuels), and observe flame conditions after unit operation stabilizes at the firing rate selected. The smoke-spot number can be determined with ASTM test method D-2156-80 or with the Bacharach method described in the tune-up kit available from the Bacharach company.

If the ~~excess~~ oxygen in the stack gas is at the lower end of the range of typical minimum values and if the CO emissions are low and there is no smoke, the unit is probably operating at near optimum efficiency - at this particular firing rate. However, complete the remaining portion of this procedure to determine whether still lower oxygen levels are practical. Typical minimum oxygen levels for boilers are:

Low firing rate	Natural gas	3% to 8%
	Liquid fuel	5% to 8%
High firing rate	Natural gas	0.5% to 3%
	Liquid fuel	2% to 4%

5.2.3 Increase combustion air flow to the furnace until stack gas oxygen levels increase by one to two percent over the level measured in Step 5.2.2. As in Step 5.2.2, record the stack gas temperature, CO concentration (for gaseous fuels) or smoke-spot number (for liquid fuels), and observe flame conditions for these higher oxygen levels after boiler operation stabilizes.

5.2.4 Decrease combustion air flow until the stack gas oxygen concentration is at the level measured in Step 5.2.2. From this level gradually reduce the combustion air flow, in small increments. After each increment, record the stack gas temperature, oxygen concentration, CO concentration (for gaseous fuels) and smoke-spot number (for liquid fuels). Also, observe the flame and record any changes in its condition.

5.2.5 Continue to reduce combustion air flow stepwise, until one of these limits is reached:

a. Unacceptable flame conditions - such as flame impingement on furnace walls or burner parts, excessive flame carryover, or flame instability.

b. Stack gas CO concentrations greater than 400 ppm.

c. Smoking at the stack.

d. Equipment-related limitations - such as low wind box/furnace pressure differential, built in airflow limits, etc.

5.2.6 Develop an O_2/CO curve (for gaseous fuels) or O_2/smoke curve (for liquid fuels) similar to those shown in Figures 1 and 2 using the ~~excess~~stack gas oxygen and CO or smoke-spot number data obtained at each combustion air flow setting.

5.2.7 From the curves prepared in Step 5.2.6, find the stack gas oxygen levels where the CO emissions or smoke-spot number equal the following values:

Fuel	Measurement	Value
Gaseous	CO Emissions	400 ppmv
#1 and #2 oils	smoke-spot number	number 1
#4 oil	smoke-spot number	number 2
#5 oil	smoke-spot number	number 3
Other oils	smoke-spot number	number 4

The above conditions are referred to as the CO or smoke thresholds, or as the minimum ~~excess~~stack gas oxygen levels. Compare this minimum value of ~~excess~~stack gas oxygen to the expected value provided by the combustion unit manufacturer. If the minimum level found is substantially higher than the value provided by the combustion unit manufacturer, burner adjustments can probably be made to improve fuel and air mix, thereby allowing operations with less air.

5.2.8 Add 0.5 to 2.0 percent to the minimum ~~excess~~stack gas oxygen level found in Step 5.2.7 (unless the device is authorized by its operating permit to add a greater percentage) and reset burner controls to operate automatically at this higher stack gas oxygen level. This margin above the minimum oxygen level accounts for fuel variations, variations in atmospheric conditions, load changes, and nonrepeatability or play in automatic controls.

5.2.9 If the load of the combustion unit varies significantly during normal operation, repeat Steps 5.2.1 through 5.2.8 for firing rates that represent the upper and lower limits of the range of the load. Because control adjustments at one firing rate may affect conditions at other firing rates, it may not be possible to establish the optimum ~~excess~~stack gas oxygen level at all firing rates. If this is the case, choose the burner control settings that give best performance over the range of firing rates. If one firing rate predominates, settings should optimize conditions at that rate.

5.2.10 Verify that the new settings can accommodate the sudden load changes that may occur in daily operation without adverse effects. Do this by increasing and decreasing load rapidly while observing the flame and stack. If any of the conditions in Step 5.2.5 result, reset the combustion controls to provide a slightly

higher level of ~~excess~~stack gas oxygen at the affected firing rates. Next, verify these new settings in a similar fashion. Then make sure that the final control settings are recorded at steady-state operating conditions for future reference.

Figure 1 – Oxygen / CO Characteristic Curve

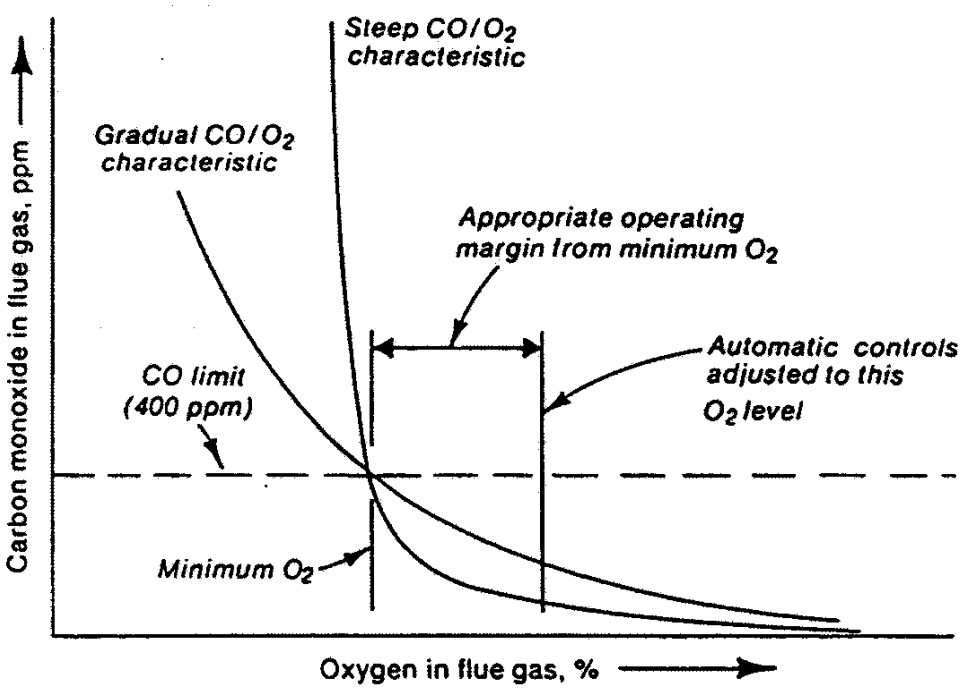
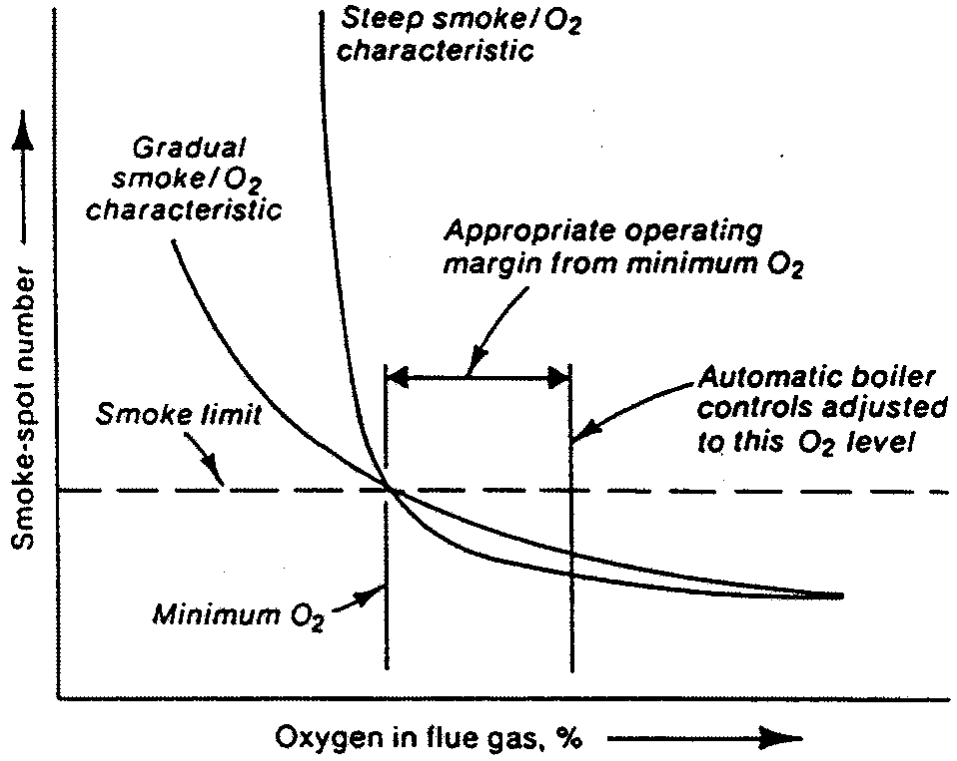


Figure 2 – Oxygen / Smoke Characteristic Curve



5.3 Tuning Procedure for Natural-Draft Boilers, Steam Generators and Process Heaters

Nothing in this Tuning Procedure shall be construed to require any act or omission that would result in unsafe conditions or would be in violation of any regulation or requirement established by Factory Mutual, Industrial Risk Insurers, National Fire Prevention Association, the California Department of Industrial Relations (Occupational Safety and Health Division), the Federal Occupational Safety and Health Administration, or other relevant regulations and requirements.

5.3.1 Preliminary Analysis

a. Check the Operating Pressure or Temperature

Operate the boiler, steam generator, or heater at the lowest acceptable pressure or temperature that will satisfy the load demand. This will minimize heat and radiation losses. Determine the pressure or temperature that will be used as a basis for comparative combustion analysis before and after tuneup.

b. Check Operating Hours

Plan the workload so that the boiler, steam generator, or process heater operates only the minimum hours and days necessary to perform the work required. Fewer operating hours will reduce fuel use and emissions.

c. Check Air Supply

Sufficient fresh air supply is essential to ensure optimum combustion and the area of air supply openings must be in compliance with applicable codes and regulations. Air openings must be kept wide open when the burner is firing and clear from restriction to flow.

d. Check Vent

Proper venting is essential to assure efficient combustion. Insufficient draft or overdraft promotes hazards and inefficient burning. Check to be sure that vent is in good condition, sized properly and with no obstructions.

e. Combustion Analysis

Perform an "as is" combustion analysis (CO, O_2, etc.) with a warmed up unit at high and low fire, if possible. In addition to data obtained from combustion analysis, also record the following:

i. Inlet fuel pressure at burner (at high & low fire)

ii. Draft above draft hood or barometric damper (at high, medium & low fire)

iii. Steam pressure, water temperature, or process fluid pressure or temperature entering and leaving the boiler, steam generator, or process heater.

iv. Unit rate if meter is available.

With the above conditions recorded, make the following checks and corrective actions as necessary:

5.3.2 Checks and Corrections

a. Check Burner Condition

Dirty burners or burner orifices will cause boiler, steam generator, or process heater output rate and thermal efficiency to decrease. Clean burners and burner orifices thoroughly. Also, ensure that fuel filters and moisture traps are in place, clean, and operating properly, to prevent plugging of gas orifices. Confirm proper location and orientation of burner diffuser spuds, gas canes, etc. Look for any burned-off or missing burner parts, and replace as needed.

b. Check for Clean Heat Transfer Tubes and Surfaces

External and internal build-up of sediment and scale on the heating surfaces creates an insulating effect that quickly reduces unit efficiency. Excessive fuel cost will result if the unit is not kept clean. Clean tube surfaces, remove scale and soot, assure proper process fluid flow and flue gas flow.

c. Check Water Treatment and Blowdown Program

Soft water and the proper water or process fluid treatment must be uniformly used to minimize scale and corrosion. Timely flushing and periodic blowdown must be employed to eliminate sediment and scale build-up on a boiler, steam generator or process heater.

d. Check for Steam, Hot Water or Process Fluid Leaks

Repair all leaks immediately since even small high-pressure leaks quickly lead to considerable fuel, water and steam losses. Be sure there are no leaks through the blow-off, drains, safety valve, by-pass lines or at the feed pump, if used.

5.3.3 Safety Checks

a. Test primary and secondary low water level controls.

b. Check operating and limit pressure and temperature controls.

c. Check pilot safety shut-off operation.

d. Check safety valve pressure and condition.

e. Check limit safety control and spill switch.

5.3.4 Adjustments

While taking combustion readings with a warmed up boiler, steam generator, or process heater at high fire perform checks and adjustments as follows:

a. Adjust unit to fire at rate; record fuel manifold pressure.

b. Adjust draft and/or fuel pressure to obtain acceptable, clean combustion at both high, medium and low fire. Carbon Monoxide (CO) value should always be no higher than 400 ppmv at 3% oxygen. If CO is high make necessary adjustments.

Check to ensure boiler, steam generator, or process heater light offs are smooth and safe. A reduced fuel pressure test at both high and low fire should be conducted in accordance with the manufacturer's instructions and maintenance manuals.

c. Check and adjust operation of modulation controller. Ensure proper, efficient and clean combustion through range of firing rates.

When above adjustments and corrections have been made, record all data.

5.3.5 Final Test

Perform a final combustion analysis with a warmed up boiler, steam generator, or process heater at high, medium and low fire, whenever possible. In addition to data from combustion analysis, also check and record:

a. Fuel pressure at burner (at high, medium & low fire)

b. Draft above draft hood or barometric pressure (at high, medium & low fire)

c. Steam pressure or water temperature entering and leaving boiler, steam generator, or process heater.

d. Unit rate if meter is available.

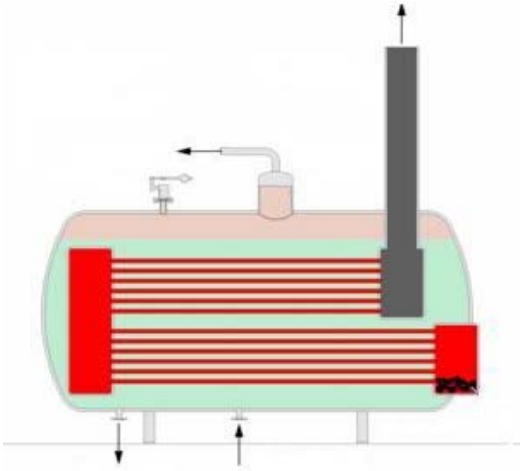
When the above checks and adjustments have been made, record data and attach combustion analysis data to boiler, steam generator, or process heater records indicating name and signature of person, title, company name, company address and date the tune-up was performed.

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

Staff Report

Proposed Amendments to BAAQMD Regulation 9, Rule 7:

NITROGEN OXIDES AND CARBON MONOXIDE FROM INDUSTRIAL, INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS, AND PROCESS HEATERS



June 2008

Prepared by:

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

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I Executive Summary

The proposed amendments to Bay Area Air Quality Management District ("BAAQMD" or the "Air District") Regulation 9, Rule 7: *Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters* ("Regulation 9-7") will implement Control Measure SS 12 in the Bay Area 2005 Ozone Strategy. This control measure proposes to reduce emissions of nitrogen oxides (NOx) by lowering the current NOx emission limits and also by extending applicability of the regulation to smaller devices. NOx compounds are precursors in the formation of ground level ozone and particulate matter. The Air 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 Air District implement all feasible measures to reduce emissions of ozone precursors, including NOx. NOx reductions also reduce the formation of secondary particulate matter in the atmosphere.

Regulation 9-7 is a non-industry specific rule that applies to most combustion devices that are not subject to a more specific combustion rule, including new and existing:

- Small boilers used to provide hot water or steam to office buildings, commercial establishments, schools, hospitals, hotels and industrial facilities;
- Larger boilers used to provide hot water or steam for industrial uses; and
- Process heaters used to heat material streams at industrial facilities.

Regulation 9-7 currently does not apply to space heating, except where hot water or steam is used for heating; to devices that burn only natural gas or liquefied petroleum gas (LPG) fuel and that have an input heat rating less than 10 million BTU/hr (10 MM BTU/hr); to devices that burn non-gaseous fuel and that have an input heat rating less than 1 MM BTU/hr; or to devices classified as ovens, kilns, furnaces or dryers. Similarly, no Air District Permit to Operate is required for natural gas or LPG-fueled devices rated less than 10 MM BTU/hr.

The proposed amendments will:

- Expand the rule applicability for natural gas/LPG devices from an input heat rating of 10 MM BTU/hr or more to a rating of greater than 2 MM BTU/hr and establish NOx and CO emission limits for this size category;
- Reduce the NOx emission limit for devices already subject to this rule – gas-fired devices with an input heat rating of 10 MM BTU/hr or more;
- Establish a manufacturer certification requirement for new devices with a heat rating greater than 2 but less than 10 MM BTU/hr and operator registration requirements for new and existing devices in this size range; and
- Establish insulation requirements, stack gas temperature limits and tune-up requirements to ensure reasonable energy efficiency which will reduce fuel use and the associated NOx and greenhouse gas emissions.

On November 7, 2007, the Air District adopted amendments to Regulation 9, Rule 6: *NOx Emissions from Natural Gas-Fired Boilers and Water Heaters* that extended the applicability of Regulation 9, Rule 6 from a maximum heat rating of 75,000 BTU/hr up to 2 MM BTU/hr.

The proposed amendments to Regulation 9-7 will reduce NOx emissions by at least 3.8 tons per day - a 61% reduction for this source category. Secondary particulate matter will be reduced by

approximately 0.5 tons per day. The proposed amendments have been found to be cost-effective and a socio-economic analysis has determined that these amendments can be implemented without significant economic dislocation or loss of jobs.

A California Environmental Quality Act (CEQA) Initial Study has determined that there are no significant adverse impacts associated with this project.

In conjunction with the proposed amendments to Regulation 9-7, amendments to *Regulation 3: Fees, Schedule R: Equipment Registration Fees* are proposed for devices required to be registered under Regulation 9-7. A one-time fee of $425 is proposed for the first heater at any affected facility, with a $50 fee for each additional device at the facility. This fee will cover the Air District's costs of inspecting boilers and reviewing certifications.

Amendments to the Manual of Procedure, Volume 1, Chapter 5: *Boiler, Steam Generator and Process Heater Tuning Procedure* are proposed. These amendments will add insulation and stack gas temperature monitoring for boilers and steam generators to ensure that these devices operate at reasonable efficiency levels.

II Background

Heaters Subject to Regulation 9, Rule 7

Regulation 9, Rule 7 ("Regulation 9-7") applies to boilers, steam generators, and process heaters that are used in industrial, institutional or commercial applications. As defined in the rule, "boilers" and "steam generators" are devices used to produce steam or to heat water through combustion. "Process heaters" are devices used to heat process streams other than water through combustion, with the exception of kilns, furnaces and ovens used for drying, baking, heat treating, cooking, calcining or vitrifying. Space heaters (which are intended to heat ambient air) are not subject to this rule unless they heat water or create steam. Boilers, steam generators and process heaters used in petroleum refineries are subject to a separate rule – Regulation 9, Rule 10. The term "heater" will be used in this report to collectively refer to boilers, steam generators, and process heaters subject to Regulation 9-7.

Heaters in the Bay Area typically use natural gas fuel exclusively and the amount of natural gas used in heaters subject to Regulation 9-7 is far higher than that of all other fuels combined. The second most commonly used gaseous fuel is digester gas, sometimes called biogas, which is a by-product of sewage treatment, and which is used as a fuel at sewage treatment plants and a few other facilities. Many hospitals and a few large manufacturers primarily use natural gas fuel in their heaters, but maintain the ability to use #2 distillate fuel (diesel) in case natural gas supplies are interrupted, and occasionally burn diesel for reliability testing. U.S. EPA has estimated that between 2000 and 2003, less than 4% of the fuel input to commercial boilers in the western U.S. was provided by fuel oil (including #2 distillate fuel), with the rest provided almost entirely by natural gas.

NOx and CO Emissions and the Formation of Ozone

The purpose of Regulation 9-7 is to achieve emission reductions of nitrogen oxides (NOx) and carbon monoxide (CO) from heaters. NOx and CO react with other atmospheric pollutants to form ground-level ozone, which is the primary component of smog. Because the Air District has non-attainment status for the state 1-hour and 8-hour ozone standards and the federal 8-hour ozone standard, the Air District is required to implement all feasible measures to reduce emissions of ozone precursors, including NOx.

Ozone causes eye irritation and affects the respiratory system by irritating the mucous membranes in the nose and throat and lung tissue. Ozone also impairs normal lung function, thereby reducing the ability to perform physical exercise. These effects are more severe on people with chronic lung disease such as asthma and emphysema and on the very young and the elderly. The ARB has determined that ozone and its precursors are sometimes transported from the Bay Area Air Basin into neighboring air basins.

It is important to reduce the public's exposure to heater emissions to minimize their adverse health effects and to comply with legal requirements to make progress in reducing ambient ozone levels. The proposed amendments to Regulation 9-7 will implement the commitment that the Air District has made in Control Measure SS 12 of the 2005 Ozone Strategy to reduce ozone exposure by reducing emissions of NOx from heaters subject to Regulation 9-7.

CO is produced by the incomplete oxidation of carbon in a fossil fuel to CO rather than to CO_2. This is caused either by a low combustion temperature or insufficient combustion oxygen, or both. The most common NOx-reduction strategies (low-NOx burners, flue gas recirculation, low excess air) create conditions that tend to promote the formation of CO while they reduce the formation of NOx,

and attempts to reduce emissions of both NOx and CO to low levels may be counter-productive. Reduction of NOx emissions is clearly the priority, since the Air District is in attainment status with all state and federal ambient air quality standards for CO, and because CO has less than one-tenth of the ozone-forming potential of NOx. Therefore, the proposed amendments to Regulation 9-7 emphasize NOx emission reductions and limit the concentration of CO in the exhaust stream of heaters to a reasonable level (400 ppmv), rather than attempting to achieve further CO emission reductions.

NOx Emissions and the Formation of Airborne Particulate Matter

NOx reacts with other pollutants to form airborne particles smaller than 2.5 microns in diameter ($PM_{2.5}$). Inhalation of $PM_{2.5}$ deep into the lungs reduces lung function. The Bay Area is currently in attainment of the federal standard for particulate matter smaller than 10 microns in diameter (PM_{10}), but has non-attainment status for the State PM_{10} and $PM_{2.5}$ standards.

In response to the enactment of California Senate Bill 656 (SB 656) in 2003, the Air District has committed to implement a number of particulate matter (PM) control measures to directly and indirectly reduce PM exposure, including an amendment of Regulation 9-7 to reduce emissions of NOx.

NOx Emissions and Global Warming

Emitted NOx is an indirect contributor to global warming because ozone is considered a greenhouse gas (GHG). Ozone is not included in tables that list the global warming potentials (GWP) of GHGs because it is short-lived, and the GWP is usually estimated over a 100 year time span. Nevertheless, a reduction in NOx emissions will reduce GHG emissions.

Heaters also emit GHG - primarily carbon dioxide (CO_2) - that contribute directly to global climate change. A net reduction in fuel and electrical consumption at the heaters subject to Regulation 9-7 will reduce global warming.

Heater Emission Mechanisms

The combustion process in heaters involves the oxidation of carbon and hydrogen in a hydrocarbon-based fuel to produce heat. For example, when methane (CH_4), the primary constituent of natural gas, is burned, the reaction proceeds as follows:

$$CH_4 + 2(O_2) \rightarrow \text{heat} + CO_2 + 2(H_2O) + \text{other pollutants} \qquad (\textit{Equation 1})$$

Thus, the products of any combustion process are CO_2 and water vapor (H_2O), as well as much smaller amounts of other pollutants including NOx, CO, sulfur oxides (SOx), volatile organic compounds (VOCs) and particulate matter (PM). Emissions of SOx, VOCs and PM are negligible compared to those of NOx and CO when natural gas fuel is used.

The true combustion reaction is more complex than shown in Equation 1 because heaters are provided with ambient air as an oxygen source, rather than pure oxygen. Because ambient air contains almost four times as much nitrogen gas (N_2) as oxygen gas (O_2), N_2 gas is also exposed to the high temperatures of the combustion process. Some of this N_2 gas is oxidized into NO and NO_2 (collectively known as NOx) and emitted in the combustion exhaust stream. This emitted NOx is known as "thermal NOx" because its formation is caused by exposure to combustion temperatures – with higher temperatures and longer exposure resulting in a higher NOx formation rate and higher concentrations of NOx in the exhaust stream.

In addition, all common fuels contain elemental nitrogen (N) or nitrogen gas that is also oxidized in the combustion process. Natural gas contains very little nitrogen, while refined fuel oils, such as diesel, can contain significant concentrations of elemental nitrogen which can account for as much as half of the overall NOx emissions when fuel oils are burned. The NOx emissions that result from nitrogen in the fuel are known as "fuel NOx".

The third NOx emission mechanism results in "prompt NOx", which is NOx formed as a result of reactions between N_2 gas and radical molecules derived from hydrocarbon fuels, and which is independent of combustion temperature. The amount of prompt NOx formed is generally small compared to that of thermal NOx, except at very low NOx emission rates (less than 10 ppmv).

NOx Emission Controls

NOx emission controls may be designed to reduce NOx formation ("thermal", "prompt or "fuel NOx"), or to reduce the concentration of previously-formed NOx after it reaches the exhaust stream (post-combustion control).

The nitrogen content of pipeline natural gas is limited by federal Department of Energy standards (4% by volume). The nitrogen content of diesel fuel, which is the only non-gaseous fuel in significant use in the Bay Area, is not explicitly limited by either state or federal standards. However, virtually all diesel fuel marketed in California since 2006 complies with "ultra low-sulfur diesel" (ULSD) standards that limit sulfur content to 15 ppm by weight and the processes used to remove sulfur from diesel also remove nitrogen. This nitrogen removal is so effective that the amount of fuel NOx created in diesel fuel combustion may also be considered to be negligible compared to the amounts of thermal and prompt NOx. Therefore, only thermal and prompt NOx controls and post-combustion controls are considered in this report.

Boilers, steam generators and process heaters that are not designed to achieve any particular NOx emission level ("uncontrolled heaters") will have a NOx emission concentration ranging from 75 ppmv up to as much as 200 ppmv, depending on the burner design and on the fuel/air ratio used in the burner. The first level of NOx control, which can comply with an emission concentration limit of 30 ppmv (requiring that the heater operate at an emission concentration somewhat lower than 30 ppmv at all times), is most typically achieved with "low-NOx burners" (LNBs) that reduce the formation of thermal NOx by reducing the average combustion temperature and by eliminating combustion "hot spots" through a variety of fuel/air mixing techniques. A similar level of NOx control can be achieved with "flue gas recirculation" (FGR), where a portion of the exhaust gas is vented back to the burner and mixed with the combustion air. Although the exhaust gas is hot, it is much cooler than the combustion temperature, so the addition of any amount of FGR to the combustion zone will reduce the combustion temperature, with larger amounts of FGR resulting in lower NOx emissions. FGR however, is typically not used to comply with a 30 ppmv NOx limit because FGR requires the installation of ductwork for the recirculated flue gas, as well as a high-temperature gas blower. Currently, Regulation 9-7 requires this level of NOx control (30 ppmv) for heaters with input heat ratings of 10 MM BTU/hr or more. A slightly higher NOx limit (40 ppmv) is allowed for combustion of liquid fuel because LNBs and FGR are somewhat less effective for liquid-fired heaters.

Further reductions of thermal NOx can achieve compliance with the next level of NOx control – a 15 ppmv NOx limit (with operation somewhat lower than 15 ppmv at all times). Burners capable of this level of NOx control are called "ultra-low-NOx burners" (ULNBs). Compliance with a 15 ppmv limit requires not only the use of ULNBs, but also improved maintenance and operating practices. For example, ULNB burner tips are smaller than standard burner tips and may require more frequent

cleaning to prevent plugging. Heater leaks that allow air leakage into the combustion zone may allow compliance with a 30 ppmv NOx limit, but are less likely to allow compliance with a 15 ppmv or lower limit, so improved heater sealing may be necessary. Finally, upgraded combustion controls may be necessary to maintain proper fuel/air ratios necessary to comply with a 15 ppmv or lower limit. These improved maintenance and operating practices not only allow compliance with a 15 ppmv NOx limit, but also improve the overall efficiency of the heater.

Compliance with the next level of NOx control – a 9 ppmv limit – can be achieved in three ways. The least attractive options are the use of ULNBs with very large amounts of FGR (30% to 40% of the exhaust gas flow) and the use of add-on controls such as selective catalytic reduction (SCR). Very high FGR rates may reduce heater reliability by reducing flame stability, and will reduce net heater efficiency because of the significant amount of electrical power required to drive the gas recirculation blower. Also, at very high FGR rates, CO emissions may approach the 400 ppmv limit in Regulation 9-7. SCR requires a significant capital investment and introduces a completely new chemical process (storage and injection of ammonia into the exhaust stream to reduce NOx to nitrogen gas) to the boiler system. ULNBs with high levels of FGR only reduce thermal NOx, without reducing prompt NOx. SCR is a post-combustion control that does not reduce NOx formation in any way. The third option is the use of advanced ULNBs (AULNB) that reduce the formation of thermal NOx – using internal recirculation of combustion gas rather than FGR - and also reduce the formation of prompt NOx by performing combustion in stages that avoid conditions favorable to prompt NOx formation. Internal recirculation – sometimes called fuel-induced recirculation (FIR) - uses the energy of the incoming fuel to draw combustion gases back into the incoming fuel before they leave the heater. FIR is more effective than FGR because recirculating combustion gases into the incoming fuel rather than into the incoming combustion air (as FGR does) has proven more effective in reducing NOx formation. Although FIR burners have been demonstrated to comply with a 9 ppmv limit with no FGR, many FIR installations require the use of low to moderate levels of FGR to achieve this level of NOx reduction. However, the improved maintenance and operating practices required to meet a 15 ppmv limit would also be necessary for a 9 ppmv limit, such that no overall reduction in efficiency is considered necessary to comply with a 9 ppmv limit using a FIR burner.

The highest level of NOx control – a 5 or 6 ppmv limit – has been demonstrated in limited cases using AULNBs. However, compliance with a 5 ppmv limit will only be possible in most cases using SCR. SCR technology is well-developed and available for most heater applications, although the capital costs, operating costs and space requirements are typically greater than for any other NOx control technology. It should be noted that packaged SCR systems are available on a rental basis within the Air District. A rental system could be used to temporarily comply with any of the proposed NOx emission limits with minimal heater modification.

Greenhouse Gas Emissions and Controls

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 (H_2O) and the greenhouse gas carbon dioxide (CO_2), as previously shown in Equation 1. Thus, CO_2 is not a pollutant that occurs in relatively low concentrations as a by-product of the combustion process; it is a necessary combustion product of any fuel containing carbon. Therefore, attempts to reduce emissions of greenhouse gases from combustion typically focus on increasing energy efficiency – consuming less fuel to provide the same useful energy output.

Boilers and steam generators generally operate at no more than 85% overall efficiency. In other words, only 85% of the fuel heat value is transferred to the material that is being heated and the other 15% is released to the atmosphere as waste heat, primarily in 3 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,
- as heat in the liquid "blowdown" stream that is drained from the boiler to prevent solids from concentrating inside the boiler and fouling the heat exchange surfaces.

Some NOx control measures may reduce overall energy efficiency. For example, any measure that requires additional fans or gas blowers (such as FGR and SCR) will reduce the overall energy efficiency of the system. Retrofitted burners that provide lower NOx emissions by reducing the average combustion temperature will also reduce heat transfer to the heated medium and therefore reduce overall energy efficiency. These efficiency reductions may be mitigated, in some cases completely, through improved maintenance and operating practices.

Heaters with Air District Permits

The Air District requires permits for all heaters currently subject to Regulation 9-7:

- natural gas or LPG fired, input heat rating of 10 million BTU/hr (10 MM BTU/hr) or more
- liquid fuel-fired, input heat rating of 1 MM BTU/hr or more

Table 1 shows these heaters, divided into various size categories.

Table 1 – Permitted Heaters Currently Subject to Regulation 9-7

Rated Input (MM BTU/hr)	Number of Heaters
200 and greater	2
75 to <200	20
20 to <75	125
10 to <20	164
<10 (liquid fuel-equipped)	410
Totals	**721**

Heaters Exempt from Air District Permits

Natural gas and LPG-fired heaters with heat ratings greater than 2 but less than 10 MM BTU/hr are currently exempt from Regulation 9-7 and from Air District permit requirements. For this reason, the Air District does not have precise heater population data for these devices. Based on discussions with local boiler service companies and an evaluation of commercial and industrial natural gas consumption data within the Air District, the population of devices smaller than 10 MM BTU/hr is estimated to be about 8,000, with about two-thirds of these devices smaller than 2 MM BTU/hr, and the rest, approximately 2,634, rated more than 2 but less than 10 MM BTU/hr. Thus, the expansion of Regulation 9-7 to apply to devices rated more than 2 MM BTU/hr will add about 2,634 devices to the 721 already subject to this regulation.

III Proposed Rule Amendments

Current Provisions – Regulation 9, Rule 7

Regulation 9-7 currently includes the provisions shown in Table 2:

Table 2 –Current Provisions of Regulation 9-7

Provision	Standard
1. NOx exhaust concentration limit (natural gas and LPG-fired devices with input heat rating of 10 MM BTU/hr or more)	gaseous fuel: **30 ppm** @ 3% oxygen non-gaseous fuel: **40 ppm** @ 3% oxygen
2. CO exhaust concentration limit (natural gas and LPG-fired devices with input heat rating of 10 MM BTU/hr or more)	all fuels: **400** ppm @ 3% oxygen
3. Options for heaters burning less than 90,000 therm/yr of fuel OR heaters rated less than 10 MM BTU/hr heat rating and using non-natural gas, non-LPG fuel	a. comply with provisions 1 and 2, **or** b. operate with no more than 3% oxygen in exhaust, **or** c. tune the heater every year
4. Monitoring	initial source test

Extend Regulation 9-7 to Heaters Rated Less Than 10 MM BTU/hr

The proposed amendments establish a 30 ppmv NOx emission limit and a 400 ppmv CO limit for heaters burning natural gas or LPG fuel that are rated more than 2 and no more than 5 MM BTU/hr, effective January 1, 2011, and a 15 ppmv NOx emission limit and a 400 ppmv CO limit for heaters rated greater than 5 to less than 10 MM BTU/hr, effective January 1, 2012. Currently, these devices have no NOx or CO emission limits. For facilities with multiple affected heaters, up to 3 years is allowed for complete compliance, with 1/3 of the facility heaters required to be in compliance each year beginning January 1, 2011.

Retrofit burner assemblies and completed packaged boilers that will comply with a 30 or 15 ppmv NOx limit are commercially available. A 30 ppmv NOx limit has already been adopted for heaters rated from 2 to 5 MM BTU/hr by the South Coast AQMD, Sacramento Metropolitan AQMD and the San Joaquin Valley APCD, and a 15 ppmv limit has already been adopted for heaters rated from 5 to 10 MM BTU/hr by the Sacramento Metropolitan AQMD and the San Joaquin Valley APCD.

On November 7, 2007, the Air District adopted amendments to Regulation 9, Rule 6: *NOx Emissions from Natural Gas-Fired Boilers and Water Heaters* that extended the applicability of Regulation 9, Rule 6 from a maximum heat rating of 75,000 BTU/hr up to 2 MM BTU/hr and extended the regulation to boilers as well as water heaters. Extending the applicability of Regulation 9-7 to heaters rated more than 2 MM BTU/hr will provide regulation of NOx emissions from all natural gas-fired water heaters, all natural gas-fired steam boilers with heat ratings greater than 75,000 BTU/hr, and all boilers using non-gaseous fuel with heat ratings of 1 MM BTU/hr or more.

New heaters installed on or after January 1, 2011 will be subject to the new standard upon installation. Heaters that were in service prior to January 1, 2011, will become subject to this standard upon reaching a service life of 10 years. This 10-year service life allowance will improve the cost-

effectiveness of the proposal by allowing operators to utilize much of the typical service life of an existing device before a modification or replacement is necessary to comply with the proposed standard.

A low-fuel usage exemption is proposed for heaters with annual fuel use less than 10% of their maximum capacity. Heaters eligible for this low-fuel-use exemption will have the option of meeting the new NOx limits, of maintaining a low stack-gas oxygen concentration to demonstrate good heater operation, or of performing a detailed annual inspection and tune-up. These are the same options provided in the current rule for low-fuel-use heaters with heat ratings of 10 MM BTU/hr or more.

Certification and Registration for Heaters Rated Less Than 10 MM BTU/hr

Currently, natural gas-fired heaters are subject to Regulation 9-7 and to the permitting requirements in Regulation 2 at the same heat input rating of 10 MM BTU/hr or more. Generally, sources that are subject to a prohibitory rule like Regulation 9-7 are also required to obtain permits because the permitting process and inspections triggered by this process enhance the enforceability of the prohibitory rule.

The proposal to expand Regulation 9-7 to apply to natural gas-fired heaters rated higher than 2 MM BTU/hr will more than quadruple the number of heaters subject to Regulation 9-7. To most efficiently administer enforcement of the proposed regulations for the approximately 2,600 heaters that will become subject to Regulation 9-7, registration of these heaters, rather than permitting, is proposed. Registration will be a largely automated, online process that will identify heater operators and heater locations so that they may be inspected. A one-time registration fee of $425 per facility will be assessed, with each heater after the first at the same facility subject to an additional one-time $50 fee. These fees have been set to allow the Air District to recover the costs associated with enforcement of the amended regulation.

Reduce NOx Emission Limits for Heaters Rated 10 MM BTU/hr or More

The proposed amendments reduce the current NOx emission limit for heaters with input heat ratings of 10 MM BTU/hr or more, but retains the current 400 ppmv CO limit. Since higher levels of NOx control are more cost-effective for larger devices, three different levels of control are proposed. A low-fuel usage exemption is proposed for heaters with annual fuel use less than 10% of their maximum capacity. Exempt heaters would still be subject to the existing 30 ppmv NOx emission limit, but would have the option of meeting the new NOx limits, maintaining a low stack-gas oxygen concentration to demonstrate good heater operation, or performing a detailed annual inspection and tune-up.

Devices Rated from 10 to less than 20 MM BTU/hr

For devices rated from 10 to less than 20 MM BTU/hr, a 15 ppmv NOx limit is proposed, effective January 1, 2012. For facilities with multiple affected heaters, up to 3 years is allowed for complete compliance, with 1/3 of the facility heaters required to be in compliance each year beginning January 1, 2012. 15 ppmv standards for devices in this size range have already been adopted by the Sacramento Metropolitan AQMD and the San Joaquin Valley APCD.

Compliance with this limit can be achieved with ultra-low NOx burners, with or without FGR, or with SCR. Of the 164 devices in this size category in the Air District, only 14 operate at NOx emission levels significantly lower than 30 ppmv, and none operate at an emission rate lower than 20 ppmv. Thus, every existing device in this size category will have to be modified or replaced if it continues to operate after January 1, 2012.

New heaters installed on or after January 1, 2012 will be subject to the new standard upon installation. Heaters that were in service prior to January 1, 2012, will become subject to this standard upon reaching a service life of 10 years. This 10-year service life allowance will improve the cost-effectiveness of the proposal by allowing operators to utilize much of the typical service life of an existing device before a modification or replacement is necessary to comply with the proposed standard.

Heaters firing digester or landfill gases, which may have low or inconsistent heat values, may not be able to reliably comply with a 15 ppmv NOx limit. Therefore, heaters rated 10 MM BTU/hr and higher that fire or co-fire digester or landfill gas at least 90% of the time are allowed a 30 ppmv NOx limit. Combustion of these fuels is very limited in the Bay Area.

Devices Rated from 20 to less than 75 MM BTU/hr

For devices rated from 20 to less than 75 MM BTU/hr, a 9 ppmv NOx limit is proposed, effective January 1, 2012. Compliance with this limit can be achieved with AULNBs with moderate levels of FGR. Some operators may elect to use SCR to comply with this standard. "Load-following" heaters that must respond to large and rapid fluctuations in load demand may not be able to reliably comply with a 9 ppmv NOx limit at all times. Therefore, load-following heaters rated 20 MM BTU/hr and higher are allowed a 15 ppmv NOx limit. 9 ppmv standards for devices in this size range, with load-following exemptions, have already been adopted by the Sacramento Metropolitan AQMD and the San Joaquin Valley APCD.

Of the 125 devices in this size category, only 19 operate at NOx emission levels significantly lower than 30 ppmv, and only one operates at an emission rate as low as 9 ppmv. Thus, potentially all but one of the devices in this size category will have to be modified or replaced if they continue to operate after January 1, 2012. However, an unknown number will qualify for the load-following standard of 15 ppmv.

New heaters installed on or after January 1, 2012 will be subject to the new standard upon installation. Heaters that were in service prior to January 1, 2012, will become subject to this standard upon reaching a service life of 5 years. This 5-year service life allowance will improve the cost-effectiveness of the proposal by allowing operators to use at least part of the typical service life of an existing device before a modification or replacement is necessary to comply with the proposed standard.

Devices Rated 75 MM BTU/hr and higher

For heaters with input heat ratings of at least 75 MM BTU/hr, a 5 ppmv NOx limit is proposed, effective January 1, 2012. Compliance with this limit can be achieved with SCR technology. Of the 22 devices in this size category, 12 are expected to be eligible for the 10% low fuel usage exemption, and 3 are expected to be eligible for the digester gas standard of 30 ppmv. Of the remaining 7 devices, those that are designated to be load-following devices would be subject to a 15 ppmv standard. A 5 ppmv standard for devices in the size range has been proposed by the South Coast AQMD.

New heaters installed on or after January 1, 2012 will be subject to the new standard upon installation. Heaters that were in service prior to January 1, 2012, will become subject to this standard upon reaching a service life of 5 years.

Devices Firing Non-Gaseous Fuel

No reduction is proposed to the 40 ppmv NOx emission limit for heaters firing non-gaseous fuel because NOx control technology for liquid fuels has not progressed as much as for gaseous fuels.

Also, there are relatively few devices that use liquid fuel in the Bay Area, in large part because most devices that use liquid fuel require a District permit and are subject to "toxic best available control technology" (TBACT) requirements, which limit the use of liquid fuel.

New Insulation Requirements

Heat loss from inadequately insulated surfaces may be a significant contributor to energy inefficiency in a heater. Energy inefficiency results in increased fuel consumption with related emissions of NOx and greenhouse gases. The proposed amendments require insulation of all heaters subject to Regulation 9-7, such that exposed surfaces on boilers and steam generators do not exceed 120°F, effective January 1, 2010. A low-fuel usage exemption is proposed for heaters with annual fuel use less than 10% of their maximum capacity.

New Stack Gas Temperature Limits

Avoidable heat loss from boiler and steam generator stacks is typically the largest contributor to energy inefficiency in a heater. Elevated stack gas temperature is an indicator of poor combustion control (high excess air) or of poor heat transfer to the heated water or steam (because of fouled heat transfer surfaces or insufficient heat transfer surface). The proposed amendments impose maximum stack gas temperature limits on boilers and steam generators, effective January 1, 2010. A low-fuel usage exemption is proposed for heaters with annual fuel use less than 10% of their maximum capacity.

Modern heaters in good operating condition are expected to be able to meet these temperature limits without modification. Low-efficiency heaters may require replacement or the installation of an economizer retrofit to comply with these limits. An economizer is a heat exchanger that recovers waste heat from the exhaust stack and uses it to pre-heat combustion air or feedwater.

New Inspection and Tune-Up Requirements

Currently, Regulation 9-7 requires periodic tune-ups only for heaters that qualify for a low fuel-usage exemption, in lieu of compliance with the 30 ppmv NOx emission limit. However, even if a heater meets the applicable NOx emission limit, it is possible that it is not operating at optimal energy efficiency, and therefore that it is consuming more fuel and generating more NOx, CO and greenhouse gases than necessary. The proposed amendments apply an annual tune-up requirement to most heaters subject to Regulation 9-7, effective January 1, 2009. The tune-up procedure in the Manual of Procedures is also proposed to be amended to include additional inspection items. These include temperature measurements of the heater surface, stack gas, and water or steam; and evaluation of the blowdown rate to ensure it complies with manufacturer specifications; and the iteration of specific steps in the tune-up procedure.

Exemptions from New Requirements

District Regulation 9, Rule 9: *Nitrogen Oxides from Stationary Gas Turbines* ("Regulation 9-9") was amended in 2006 and requires turbine retrofits or replacements to comply with reduced NOx emission limits. Fourteen facilities in the Bay Area that operate turbines subject to Regulation 9-9 are also subject to Regulation 9-7 and may be required to make significant capital expenditures to comply with both rules. In response to a comment from one of the affected facilities, an extension of up to 24 months is proposed for compliance with new NOx standards in Regulation 9-7 for heaters at facilities that must also modify or replace a turbine to comply with the new requirements of Regulation 9-9.

There is one heater in the Bay Area in the 75 MM BTU/hr and higher size range that is already required to meet a 9 ppmv NOx emission limit by its Air District Permit to Operate and that will not be exempt from the proposed 5 ppmv limit because it will not have low fuel use. The cost of compliance with a 5 ppmv standard is high for this heater because the operator will have to install an SCR system to comply with the 5 ppmv limit, but will only realize a relatively small emission reduction. In consideration of the fact that this heater has operated for several years at a relatively low emission rate of 9 ppmv, an exemption is proposed from compliance with the 5 ppmv limit. This exemption will only apply to one heater at one facility.

Table 3 summarizes the proposed amendments:

Table 3 – Summary of Proposed Amendments

Size Range (MM BTU/hr)	Current NOx Limit (ppmv)	New NOx Limit (ppmv)	Current Inspection, Tune-Up, Monitoring	New Inspection, Tune-Up, Monitoring & Other	Effective Date
>2 to 5	None	30	None	• manufacturer certification • annual inspection & tune-up • insulation requirements and stack gas temperature limits	NOx limit: 1/1/2011 OR 10 years after manufacture date for existing devices inspection & tune-up: 1/1/2009 insulation: 1/1/2010 stack gas temperature: 1/1/2011
>5 to <10	None	15	None		
10 to <20	30	15	• no annual inspection • annual tune-up only for low-fuel devices • no periodic monitoring of emissions	• annual inspection & tune-up • semi-annual source test for 10 to <20 MM BTU/hr devices; annual test for larger devices • insulation requirements and stack gas temperature limits	NOx limit: 1/1/2012 OR 10 years after manufacture date for existing devices inspection & tune-up: 1/1/2009 insulation: 1/1/2010 stack gas temperature: 1/1/2011
20 or more, load-following unit	30	15			NOx limit: 1/1/2012 OR 5 years after manufacture date for existing devices inspection & tune-up: 1/1/2009 insulation: 1/1/2010 stack gas temperature: 1/1/2011
20 to <75	30	9			
75 or more	30	5			

IV Emissions and Emission Reductions

NOx emissions for heaters with a heat rating greater than 2 but less than 10 MM BTU/hr have been estimated to be about 4.28 ton/day based on natural gas consumption data provided by Pacific Gas and Electric Company and an emission factor from U.S. EPA's AP-42 document (75 ppmv). The number of devices in this size range has been estimated using assumptions derived from the sample (285 devices) of heaters in the Air District permit database within this size range, including average size and average utilization, and has been estimated to be about 2,634. The population size and current emissions for devices 10 MM BTU/hr and larger has been taken from the Air District permit database, since all of these devices are required to have permits.

The emissions and potential emission reductions for each heater size category are shown in Table 4.

Table 4 – Summary of Emissions and Emission Reductions

Heater Size Range (MM BTU/hr)	Devices	Current NOx (ton/day)	Current NOx (ppmv)	Proposed NOx (ppmv)	NOx Reduction (ton/day)
>2 to 5	1238	2.01	75	30	1.15
>5 to <10	1396	2.27	75	15	1.72
>2 to <10 TOTALS	2634	4.28			2.87
10 to <20	164	0.26	30	15	0.06
20 to <75	125	0.56	30	9	0.19
75 to <410	21	0.09	27	5	0.07
410	1	0.02	12	5	0.01
10 and larger TOTALS	311	0.93			0.33
TOTALS	**2945**	**5.21**			**3.2**

Therefore, it appears that the proposal has the potential to reduce emissions about 61% from the heaters that are proposed to be subject to Regulation 9-7. Some devices in the 20 to less than 75 MM BTU/hr category may be able to qualify for a 15 ppmv NOx limit rather than a 9 ppmv limit if they are determined to be load-following units that cannot meet a 9 ppmv limit. However, even if all units in

this size category only comply with a 15 ppmv limit, the potential emission reduction will be about 60%.

Also, because NOx contributes to the formation of secondary particulate matter (PM), the NOx reduction will also result in a reduction of PM. Secondary PM is formed from the conversion of NOx to ammonium nitrate (NH_4NO_3). District staff has estimated the ratio between NH_4NO_3 formation to NOx emissions to range between 1:6 and 1:10. At a conversion rate of 1:8, secondary particulate matter will be reduced by as much as 0.4 tons/day by the proposed amendments.

Greenhouse Gas Emissions

It is widely accepted that the accumulation of increasing amounts of greenhouse gases (GHG) in the Earth's atmosphere is a cause of global climate change. Due to the complexity of conditions and interactions affecting global climate change, it is not possible to predict the specific impact, if any, attributable to GHG emissions associated with a single project. The proposed amendments to Regulation 9, Rule 7 would extend the rule to apply to certain classes of heaters currently not regulated in the District and would generally make the emission limits in the rule more stringent. The proposed amendments also include requirements to maximize energy efficiency among heaters that would be subject the rule. The net effect the proposed amendments would have on GHG emissions will depend upon the technologies applied to meet the new emissions limits and on the effect of the energy efficiency measures proposed in the rule.

The proposed amendments include measures to maximize the energy efficiency of heaters that would be subject the rule. They include:

- A requirement to install insulation on most heaters subject to the rule, with some safety related exceptions, such that exposed surfaces do not exceed 120°F.
- An annual tune-up requirement for most heaters subject to the rule, effective in 2009.
- Maximum limits on stack gas temperatures, from 100 to 150 degrees Fahrenheit over the saturated steam or hot water temperature, to ensure good heat transfer.

Insulation can increase energy efficiency in a heater by up to 5%. Over time, insulation degrades, or is removed for heater repairs and servicing and not replaced. Some heaters have inadequate insulation and older heaters may never have been insulated. If all heaters were to be able to increase energy efficiency by 5%, CO_2 emissions would be decreased by 2781 tons per day. Elevated stack gas temperature is an indication of poor heat transfer within a heater, because of insufficient residence time for heat transfer to occur (possibly because of excessive excess air), or because of fouled or corroded heat transfer surfaces. In the first case, heater design or operation is at fault; a replacement heater, better burner controls or the addition of an economizer will improve heat transfer. In the second, cleaning the heat transfer surfaces and maintaining an optimal liquid blowdown rate to keep the transfer surfaces clean will improve heat transfer and lower stack gas temperatures. As a rule of thumb, overall heater efficiency can be improved 1% every 40^oF reduction in flue gas temperature. Tune-up requirements can increase heater efficiency by up to 10% by optimizing air-fuel ratios. This also ensures that NOx emissions are not increasing beyond the proposed limits. A tune-up will also check blowdown rates, so that heat is not lost from excessive blowdown. If all heaters in the smallest size range, (greater than 2 but less than 10 MM BTU/hr), could increase their efficiency by 10%, CO_2 emissions would be decreased by 4809 tons per day.

Apart from the energy efficiency measures described above, the proposed amendments would affect GHG emissions depending on the means used by heater operators to comply with the proposed

emission standards. For the proposed NOx emission limits for heaters rated from greater than 2 up to 20 MM BTU/hr, and for units rated 75 MM BTU/hr and above, a significant overall loss in efficiency is not expected. In fact, better air-fuel controls on heaters that are required to maintain low NOx levels will increase efficiency in most heaters affected by the proposed amendments.

For some heaters, installation of ultra-low-NOx burners (ULNBs) in conjunction with fuel-gas recirculation (FGR) may require that the maximum firing capacity of the heater be reduced or may result in an overall loss of efficiency. The heaters most likely to require both these technologies are in the 20 to less than 75 MM BTU/hr range. The proposed amendments would subject each heater in this range to a NOx emission limit of 9 ppmv, unless the heater is a load-following unit, as defined in the amendments. Heaters subject to the proposed 9 ppmv NOx limit may install ULNBs in conjunction with FGR. The 20 to less than 75 MM BTU/hr heaters with ULNBs and FGR may require up to 40% of the flue gas to be re-circulated. However, one burner manufacturer states that, with state-of-the-art controls, no more than 15% of flue gas would need to be re-circulated to achieve NOx emissions lower than 9 ppmv.[1] Other boiler and burner manufacturers state that 9 ppmv can be achieved in new heater designs without loss of efficiency.[2,3] Finally, applications are being developed for combined heat and power units, wherein a micro-turbine provides combustion air and power to run elements of the NOx control system, resulting in an overall net energy decrease. One such system is slated for installation at Hitachi Systems in the Bay Area.[4] Re-circulation of 40% of the flue gas would result in about a 10% loss in overall heater efficiency. If all heaters in this size range were to suffer a 10% loss in efficiency, there would be an increase in CO_2, the primary GHG, of 565 tons per day. Re-circulation of 15% of the flue gas would result in less than 5% loss in efficiency.

It is difficult to assess the overall greenhouse gas impacts of the energy efficiency measures, which reduce CO_2, and the proposed NOx limit for the 20 to 75 MM BTU/hr size category, which may increase CO_2. The reason for this difficulty is that the number of heaters that will opt for the ultra-low NOx burners in conjunction with high flue gas recirculation is unknown because a considerable number are expected to be load-following units which will be subject to a 15 ppmv limit, which is unlikely to result in a loss of overall efficiency, rather than a 9 ppmv limit. Some may opt for SCR, which does not significantly reduce energy efficiency, and some may install advanced controls that may limit the amount of flue gas recirculation needed. Also, the number of heaters that will need insulation is unknown. Most heaters are installed with insulation, but, over time, insulation degrades, and repair or replacement of old insulation could be of considerable value. Finally, the number of heaters that do not now receive annual tune-ups, and thus would benefit from the tune-up requirement, is unknown.

It is likely that the reduction in greenhouse gases from energy efficiency measures, overall, far outweighs a possible increase in greenhouse gases from NOx control equipment in the 20 to 75 MM BTU/hr size category. Staff developed a spreadsheet to calculate overall increases or reductions in

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[3] Delta-NOx Ultra Low NOx Burner Achieves 9 PPM, Coen Company, Inc. July 2005

[4] Castaldini, Carlo, CMC Engineering, telephone conversation and Industrial Technologies Program/Energy Efficiency and Renewable Energy, www1.eere.energy.gov/industry/bestpractices/pdfs/steam3_recovery.pdf

CO_2 from the proposed amendments based on numbers of heaters that would require insulation and tune-ups, and numbers in the 20 to 75 MM BTU/hr range that would suffer an energy efficiency loss. Staff used a 10% reduction in efficiency for the 20 to 75 MM BTU/hr heaters, a 5% benefit from insulating heaters, and a 10% benefit from tune-ups to heaters. For purposes of the calculations, staff only assumed benefit from tune-ups to the smallest size heaters (greater than 2 but less than 10 MM BTU/hr). These are the heaters most likely to be in institutional or commercial use, or in places like apartment buildings, office buildings and hotels. The large heaters tend to be in industrial use and staff assumed that, because their fuel usage is relatively high, they would be more likely to be tuned up at least annually. PG&E estimates a 10% to 20% energy efficiency increase from tune-ups, so the 10% benefit used for the calculation is conservative. Also, a variety of sources estimates that insulation can improve a heater's efficiency by 5% to 10%. Five percent has been used for these calculations.

The most conservative calculations show that, if 90% of the heaters are already insulated with insulation that has not degraded due to age, and if 90% of the heaters in the smallest size range already have annual tune-ups (as noted above, the calculations assume all larger heaters are tuned up annually), and all the 20 to 75 MM BTU/hr heaters suffer a 10% energy efficiency loss, then there would still be a net CO_2 reduction of 194 tons per day. It is likely that the net reduction of greenhouse gases is much greater, for the reasons described below.

First, based on information gathered from boiler service companies in the District, it is unlikely that 90% of heaters in the District are adequately insulated. According to at least one boiler service company, most heaters have had insulation degradation, as described above, so that the majority of heaters could benefit from upgrading insulation.

Second, it is also unlikely that 90% of all heaters have annual inspection and maintenance (tune-ups). Although heaters are inspected periodically for safety, and insurance companies require these inspections, air-fuel optimization is not necessarily a part of these inspections. Many operators in the commercial service sector will not tune-up to maximize efficiency routinely, although larger operators are more likely to do so.

It is probable that the assumption of a 10% energy efficiency reduction from all heaters in the 20 to less than 75 MM BTU/hr size range is an over-estimate because it is unlikely that all these heaters will suffer a 10% loss in efficiency. As discussed above, technology is available to reduce the energy efficiency loss in this size range. At current high energy costs, it is reasonable to assume that this technology would become more economically attractive. The proposed NOx limit could also be met with other technology, such as SCR. SCR, while generally more expensive than ultra-low NOx burners and FGR, does not significantly degrade efficiency. Finally, a number of heaters are likely load-following units, so would be subject to a less stringent standard.

Finally, researchers are developing what are known as Super Boilers[5] that incorporate several efficiency-improving technologies. These devices, currently in the testing stage, have shown energy efficiencies of 94% and NOx emissions of less than 5 ppmv. The individual technologies that contribute to these high efficiency levels may be commercialized as the proposed amendments become

[5] US Department of Energy, Energy Efficiency and Renewable Energy, Super Boiler, First Generation, Ultra-High Efficiency Firetube Boiler, June, 2007, http://www1.eere.energy.gov/industry/combustion/pdfs/superboiler.pdf

mandatory. Operators who choose to retrofit one or more of these technology could ultimately realize cost savings and further reduce greenhouse gas emissions.

Table 5 shows a range of expected CO_2 reductions from various percentages of heaters that are able to gain energy efficiency if all the 20 to 70 MM BTU/hr heaters were to suffer a 10% energy efficiency loss.

Table 5

CO2 Reductions from Insulation and Small Boiler Tune-Ups Including Efficiency Loss, 20 to less than 75 MM BTU/hr Heaters (ton/day)

	Percentage of heaters that already get annual tune-ups		
Percentage of heaters that are already insulated	50% already get annual tune-ups	75% already get annual tune-ups	90% already get annual tune-ups
10% insulated	4342	3140	2418
25% insulated	3925	2723	2001
50% insulated	3230	2027	1306
75% insulated	2534	1332	611
90% insulated	2117	915	194

V Economic Impacts

Implementation Costs and Cost Effectiveness

Table 6 summarizes the capital costs and related cost effectiveness for NOx control measures for those devices that will be subject to a new NOx standard. Population numbers are lower than in Table 5 because some devices are expected to qualify for a low-fuel use exemption (less than 10% of maximum annual fuel use), and therefore will not be subject to a new NOx limit and will have no capital implementation costs. The number of exempt devices rated less than 10 MM BTU/hr has been estimated based on an assumption that they occur in the same proportion as they do in the sample (285 devices) of heaters in the Air District permit database within this size range. This assumption may overestimate the number of heaters that will be subject to the amended rule, based on a comparison with heater populations reported in Sacramento Metropolitan AQMD's (SMAQMD) 2005 staff report for an amendment of that district's heater rule (Rule 411). Similarly, the number of affected devices rated 10 MM BTU/hr and higher (for which the Air District has annual fuel use data from permit submittals) has been determined by excluding from the total permitted population (shown in Table 5) those devices that have reported current fuel use that would make them eligible for a low-fuel use exemption.

Devices rated less than 10 MM BTU/hr are assumed to be replaced in order to comply with the new NOx limits, since they tend to be "packaged units" that may be problematic to retrofit. This is a conservative assumption since some newer packaged units may be able to be retrofitted at a lower cost than the cost for replacement. Devices rated 10 MM BTU/hr and higher are assumed to be retrofitted rather than replaced. Installed capital costs for devices less than 75 MM BTU/hr are taken from SMAQMD's Staff Report for the amendment of Rule 411, Attachment D-1 in October 2005. The values in SMAQMD's Attachment D-1 are interpolated to correspond to the average device size for each size category. These costs are applicable because Sacramento Metropolitan AQMD adopted in 2005 the same NOx limits that are proposed for Regulation 9-7. However, because of comments to the Air District from several affected heater operators that actual costs for 15 ppmv heaters in the greater than 5 but less than 10 size category had previously been grossly underestimated, costs for heaters in this size range were doubled. Retrofit costs for heaters in the 75 to less than 410 MM BTU/hr size range are based on the costs for the device with the average size in this size range taken from CARB's 2002 report *"Report to the Legislature: Implications of Future Oxides of Nitrogen Controls From Seasonal Sources in the San Joaquin Valley"*. Retrofit costs for the single 410 MM BTU/hr heater were taken from the heater operator. However, since the estimate provided was to comply with a 9 ppmv limit, the costs were increased by 25%. CARB's 2002 report noted that costs for an SCR retrofit to comply with a sub-9 ppmv limit were reported to be 25% greater than for an ULNB retrofit to comply with a 9 ppmv limit.

Cost effectiveness is calculated in accordance with the "levelized cash flow method" described in the Air District BACT/TBACT guidelines, with a capital recovery factor of 0.09 and other costs equivalent to 0.09. Because heaters in each size category are allowed a "service life allowance", before which they are not required to retrofit or replace a heater, the cost is reduced to reflect the fact that some fraction of the cost of the existing equipment allowed to be recovered. The service life for all devices is assumed to be 20 years based on CARB's 2002 report.

Table 6 – Capital Costs and Cost-Effectiveness					
Heat Rating (MM BTU/hr)	**Affected Devices**	**Installed Cost Per Device**	**Annualized Cost Effectiveness ($/ton NOx)**	**Service Life Allowance (years)**	**Cost Effectiveness, including Service Life Allowance ($/ton NOx)**
>2 to 5	879	$91,000	$34,400	10	$17,200
>5 to <10	670	$182,000	$34,900	10	$17,400
10 to <20	79	$87,600	$55,400	10	$27,700
20 to <75	61	$117,600	$18,400	5	$13,800
75 to <410	6	$429,000	$32,000	5	$24,000
410	1	$1.5 MM	$63,400	5	$47,600

Additional Costs to Operators

Operators of heaters rated less than 10 MM BTU/hr will be charged a one-time registration fee of $425 per facility, with each heater after the first subject to an additional one-time $50 fee. There are 410 permitted heaters in the Air District rated less than 10 MM BTU/hr located at 169 facilities (2.4 heaters per facility). The 2,634 heaters that are rated greater than 2 but less than 10 MM BTU/hr that will become subject to Regulation 9-7 will also be assumed to be distributed in this way, and therefore will be assumed to be located at 1,098 facilities. Based on these assumptions, the total registration cost will be approximately:

(1,098) ($425) + (1,098) ($50) + (1,098)(0.4)($50) = $543,510, or $495 per facility

Cost-Benefit of Energy Efficiency Measures

Some of the proposed requirements are expected to have costs that will provide a payback to heater operators within a relatively short period of time. These include insulation requirements, stack gas temperature limits, and annual inspection and tune-up requirements.

The proposed insulation requirement requires boilers and steam generators to be insulated so that surface temperature do not exceed 120°F. The requirement includes a number of exemptions to ensure that new insulation is only required where it is most cost-effective and does not conflict with safety requirements. Also, an engineering firm contracted by the Pacific Gas & Electric Company to implement efficiency incentive programs for heater operators, has indicated that insulation is one of the most cost-effective efficiency improvements that is available to heater operators in the Bay Area. The estimated cost for insulating a small boiler rated less than 10 MM BTU/hr (assume 5 MM BTU/hr) and associated ducting is roughly 8% of the capital cost ($90,000) for a boiler of this size. Assuming 30% utilization, $1.10/therm for natural gas (PG&E summer commercial rate) and a modest 1% improvement in efficiency resulting from the insulation, simple payback would occur in about 4 years. Larger boilers would be expected to have a faster payback because the area to be insulated (and

therefore the cost) will not increase as quickly as the energy consumption and the potential energy and cost savings.

The proposed stack gas temperature limits are intended to ensure that heaters operate with normal heat transfer efficiency. Inadequate heat transfer, most commonly caused by fouled or corroded heat transfer surfaces, causes combustion heat to be wasted through the stack rather than being transferred to the heated water or steam. Cleaning of fouled or corroded heat transfer surfaces is expected to cost less than $5,000 for a small boiler rated 5 MM BTU/hr, while the potential increase in efficiency is substantial, from 3 to 5%. Again, assuming 30% utilization, $1.10/therm for natural gas and a 3% improvement in efficiency resulting from an improvement in heat transfer, simple payback would occur in less than 6 months. Although cleaning costs are higher for larger devices, the payback is expected to be just as good for a larger device.

Stack gas temperatures may be reduced by a greater amount, and overall efficiency improved beyond that of the original heater design, by installing an economizer. An economizer is a heat exchanger that recovers waste heat from exhaust gas and transfers it to heater feedwater or combustion air, thereby reducing the amount of fuel used to bring the feedwater or combustion air up to operating temperature. Economizers typically improve efficiency from 3 to 10%. Installed cost for an economizer for a 5 MM BTU/hr heater is roughly $15,000 to $20,000. Assuming a $20,000 installed economizer cost on a boiler rated 5 MM BTU/hr and operated at 30% utilization, $1.10/therm for natural gas and a 7% improvement in efficiency resulting from a reduction in waste heat, simple payback would occur in less than 2 years. Although capital and installation costs would be higher for larger devices, economizers typically have fast payback periods of less than five years.

The proposed annual inspection and tune-up includes a number of elements, including minimization of excess air. Too much excess air provides excess nitrogen gas in the combustion zone that can form into NOx and also reduces the residence time of combustion gases, decreasing heat transfer efficiency. An annual inspection for a small boiler rated less that 10 MM BTU/hr (assume 5 MM BTU/hr) is expected to cost less than $1,500. Modern boilers can typically be operated at 10% excess air, although it would not be unusual for an out-of-tune boiler to operate at 25% excess air or more. Each 15% reduction in excess air is generally considered to result in a 1% improvement in efficiency. Again, assuming 30% utilization, $1.10/therm for natural gas (PG&E summer commercial rate) and a 1% improvement in efficiency resulting from a reduction of excess air from 25% to 10%, simple payback would occur in less than one year, paying for the cost of the annual tune-up. Because the cost of a tune-up is not expected to be significantly higher for a larger boiler, while the potential energy savings do increase with boiler size, payback is expected to be better for larger devices.

Cost to Manufacturers – Gas-fired heaters rated greater than 2 but less than 10 MM BTU/hr

Manufacturers of heaters rated less than 10 MM BTU/hr will incur new costs to certify that these devices meet the proposed NOx emission standards. These administrative costs will include a certification test for each model to be offered for sale. This test is the same as a source test for NOx and CO and typically would cost no more than $2,000 for each model tested.

Cost to the Air District

In addition to the one-time cost of implementing the proposed amendments to Regulation 9-7, the Air District will incur new, ongoing costs to administer the certification of new heaters in the greater than 2 but less than 10 MM BTU/hr size category, to administer the registration of new and existing heaters in this size range, and to enforce new standards for heaters in this size range. The proposed

registration fee is expected to cover these costs. No new, ongoing enforcement costs will be incurred for heaters rated 10 MM BTU/hr or more, since these are already inspected on a periodic basis.

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 9-7. The analysis concludes that the cost of the proposed amendments will not have a significant socio-economic impact on affected businesses.

Incremental Costs

Background

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."

Staff identified six control technologies (including the option of having no emission controls) that could be used by heaters subject to Regulation 9-7 to comply with any required level of NOx control. In every case, more effective NOx controls have higher overall costs. Staff then divided the heaters subject to Regulation 9-7 into five size categories, identified the control technology currently used in each size category, and then proposed a new NOx emission limit for each size category (which implies, but does not require, a specific NOx control technology). The proposed emission limit (and probable control technology) was based on an incremental cost analysis between the probable control technology and the next-most-effective control technology. Table 7 summarizes the current and probable control technologies for each size range.

Table 7 – Current and Probable NOx Control Technology				
Size Range (MM BTU/hr)	**Current NOx Limit (ppmv)**	**Current Control Technology**	**Proposed NOx Limit (ppmv)**	**Probable Control Technology**
>2 to 5	None	None (Conventional burners producing at least 75 ppmv NOx)	30	LNB, no FGR
>5 to <10	None	None (Conventional burners producing at least 75 ppmv NOx)	15	Ultra-Low-NOx Burners (ULNB), possibly FGR
10 to <20	30	Low-NOx Burners (LNB), possibly Flue Gas Recirculation (FGR)	15	ULNB, possibly FGR
20 to <75	30	LNB, possibly FGR	9	ULNB and FGR
75 or more	30	LNB, possibly FGR	5	Selective Catalytic Reduction

Greater than 2 up to 5 MM BTU/hr heaters:

For the smallest size category, the most basic and inexpensive level of NOx control has been proposed: standard, 30 ppmv, low-NOx burners (LNB). These heaters are currently not subject to a NOx standard. The next-most-effective level of control would be to have no emission limit and to use "uncontrolled" burners emitting at least 75 ppmv NOx. Although the heaters in this size category are small, they are numerous, comprising about 42% of the total number of heaters rated greater than 2 MM BTU/hr and accounting for about 36% of the total proposed emission reduction. Since 30 ppmv-compliant heaters are in such widespread use compared to any other level of NOx control, there is no significant cost difference between a 30 ppmv-compliant heater and a heater with a slightly reduced level of NOx control (40 or 50 ppmv). Therefore, a NOx standard that was relaxed from 30 ppmv to the point that would provide significant cost reductions to heater operators would also significantly reduce the effectiveness of the proposed rule. Therefore, the next-least-costly control option for these heaters will not provide the required emission reductions.

Greater than 5 but less than 10 MM BTU/hr heaters:

For the next-largest size category, a higher level of control has been proposed: 15 ppmv achieved with ultra-low-NOx burners (ULNB). These heaters are currently not subject to a NOx standard. The next-most-effective level of control would be a 30 ppmv LNB. The heaters in this size category comprise about 47% of the total number of heaters rated greater than 2 MM BTU/hr and account for about 54% of the total proposed emission reduction. If these heaters were allowed to operate at 30 ppmv rather than 15 ppmv, the resulting emission reduction from this size category would be reduced by 25%. The installed cost of complying with a 15 ppmv limit was conservatively estimated to be twice that of complying with a 30 ppmv limit based on comments from the public that compliance with a 15 ppmv limit in this size category was substantially more costly than for a 30 ppmv limit, with the most extreme example of this increased cost being quoted by a supplier at a 100% increase ($182,000 installed cost for the average size device in this size category).

Based on these costs and emission reductions, and using the "levelized cash flow" method of

calculating cost effectiveness as described in the Air district's BACT/TBACT Guidelines, the incremental cost-effectiveness for a 15 ppmv limit, compared to a 30 ppmv limit, with 670 affected devices, is:

• $69,900 per ton of NOx, if installed costs double for a 15 ppmv device;

• $35,000 per ton of NOx, if installed costs are 50% higher for a 15 ppmv device.

10 to less than 20 MM BTU/hr heaters:

For this size category a 15 ppmv NOx limit has been proposed. These heaters are currently subject to a 30 ppmv NOx limit. If these heaters were allowed to continue to operate at 30 ppmv rather than 15 ppmv, the resulting emission reduction from this size category would be entirely eliminated.

The installed cost of complying with a 15 ppmv limit for heaters in this size range was estimated to be $87,600. Then, the incremental cost-effectiveness for a 15 ppmv limit, compared to a 30 ppmv limit, with 79 affected devices, is $56,900 per ton of NOx.

20 to less than 75 MM BTU/hr heaters:

For this size category, a 9 ppmv limit has been proposed, which may be achieved with ultra-low-NOx burners (ULNB) and flue gas recirculation (FGR). The next-most-effective level of control would be a 15 ppmv ULNB system. The heaters in this size category comprise about 4% of the total number of heaters rated greater than 2 MM BTU/hr and account for about 6% of the total proposed emission reduction. If these heaters were allowed to operate at 15 ppmv rather than 9 ppmv, the resulting emission reduction from this size category would be reduced by about 26%.

For 50 MM BTU/hr devices (the average size of heaters is this size category is 32 MM BTU/hr), CARB in its 2002 report found a reported total cost difference between a 15 ppmv ULNB system and a 9 ppmv ULNB/FGR system of $47,500. Then, the incremental cost-effectiveness for a 9 ppmv limit, compared to a 15 ppmv limit, with 61 affected devices, is $28,600 per ton of NOx.

75 MM BTU/hr and higher heaters:

For this size category, a 5 ppmv limit has been proposed, which may be achieved with selective catalytic reduction (SCR). The next-most-effective level of control would be a 9 ppmv ULNB/FGR system. The heaters in this size category comprise less than 1% of the total number of heaters rated greater than 2 MM BTU/hr and account for about 2.5% of the total proposed emission reduction. If these heaters were allowed to operate at 9 ppmv rather than 5 ppmv, the resulting emission reduction from this size category would be reduced by about 16%.

For 150 MM BTU/hr devices (the average size of heaters is this size category is less than 150 MM BTU/hr), CARB in its 2002 report found a reported total cost difference between a 9 ppmv ULNB/FGR system and a 9 ppmv ULNB/FGR of $96,000. Then, the incremental cost-effectiveness for a 5 ppmv limit, compared to a 9 ppmv limit, with 7 affected devices, is $25,500 per ton of NOx.

VI Environmental Impacts

Pursuant to the California Environmental Quality Act, the Air 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 June 30, 2008 to July 21, 2008. No comments were received.

VII Regulatory Impacts

Section 40727.2 of the 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.

Air District Regulation 9 for NOx 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 7 and those that are proposed to be made subject to Regulation 9, Rule 7 are not subject to any other Air District regulation that establishes specific emission limits or monitoring requirements, although they may be subject to other Air District regulations that establish permitting requirements or fees.

U.S. EPA has established New Source Performance Standards (NSPS) for several categories of heaters in Part 60 of the Code of Federal Regulations (CFR) as listed in Table 8:

Table 8 – New Source Performance Standards (NSPS)

NSPS	Affected Heaters	Requirements
60 CFR Subpart D	Steam Generator; input rating >250 MM BTU/hr; constructed after 1971	• 0.20 lb NOx/MM BTU gaseous fuel • 0.30 lb NOx/MM BTU liquid fuel
60 CFR Subpart Db	Steam Generator; input rating >100 MM BTU/hr; constructed after 1984	• 0.20 lb NOx/MM BTU gaseous fuel • 0.30 lb NOx/MM BTU liquid fuel
60 CFR Subpart Dc	Steam Generator; input rating 10-100 MM BTU/hr; constructed after 1989	• No NOx emission limit

These regulations include particulate and SO2 emission limits as well as NOx limits. The least restrictive proposed NOx emission limit in Regulation 9-7 (40 ppmv) is equivalent to 0.052 lb NOx per million BTU of heat input. Therefore, Regulation 9-7 already has, and will continue to have, much more restrictive NOx emission limits than the NSPS. The other proposed elements of Regulation 9-7, including insulation, stack gas temperature, inspection and tune-up requirements, do not appear in the NSPS.

VIII Rule Development Process

The Air District reviewed heater rules at all California air districts and considered all known NOx control technologies to establish the appropriate NOx and CO emission limits for heaters subject to Regulation 9, Rule 7 ("Regulation 9-7"). The Air District also considered energy efficiency measures that could be adopted in Regulation 9-7 to reduce fuel consumption, with associated reductions of emissions of NOx, CO and greenhouse gases. A draft regulation was completed in May 2007.

On June 29, 2007, the Air District conducted a public workshop to solicit comments on the draft regulation. A notice for this workshop was posted on the Air District website and individual notices were mailed to all operators of heaters that are currently subject to Regulation 9-7 as well as to heater service companies and manufacturer representatives. Based on comments provided by the public and the California Air Resources Board, and further staff evaluation of potential control measures, an amended draft regulation was prepared.

On April 14, 2008, the Air District conducted a workshop to solicit comments on the amended draft regulation. The notice for this workshop was posted on the Air District website. Notices were mailed to all previously notified parties and notice was also provided to all parties who attended or provided comments following the first workshop. In addition, e-mail notification was provided to commercial property management associations, lodging industry associations, and several dozen school districts, from elementary to community college level. At this workshop, and during the public comment period that followed, the Air District received comments from several different parties. Several parties made similar comments and these are summarized below.

1. Load-Following Devices

Staff recognizes that achieving compliance with a 9 ppmv NOx limit is difficult for boilers, steam generators and process heaters equipped with ultra-low-NOx burner technology, if these devices must respond to rapid and significant load changes. Therefore, the draft rule imposed a 15 ppmv NOx limit on load-following devices, as long as the Air District verified that the device could not comply with a 9 ppmv limit because of load changes. Several parties indicated that this arrangement did not provide sufficient certainty because an operator would only know after-the-fact whether a particular device was subject to a 15 ppmv, 9 ppmv or 5 ppmv limit, depending on the Air District's determination. These parties requested that a clear criterion be included in the rule so that operators could easily determine the standard that would apply to their devices. To address these comments, more guidance has been added to the administrative section of the rule to clarify the criteria the District will use to determine whether a heater will be designated a load-following device.

2. Implementation Schedule

Several parties requested that an extended effectiveness period be provided so that operators with multiple affected devices could implement the new NOx standards over a period of time. To accommodate this request, an implementation period of up to three years has been incorporated into the proposed rule. Also, several parties requested that the effectiveness dates for the new insulation requirements, and for the new NOx limits for devices rated 20 MM BTU/hr and higher be extended by one year. These requests have been incorporated into the proposed rule.

3. Costs and Negative Impacts Associated with 9 ppmv and 5 ppmv NOx limits

Several parties requested that the Air District carefully consider the costs and potential negative

impacts associated with compliance with 9 ppmv and 5 ppmv NOx limits. In particular, the cost-effectiveness of 9 ppmv and 5 ppmv NOx limits was questioned, in the context of cost-effectiveness levels for past NOx rules. Also, the Air District was asked to consider the impacts associated with SCR systems (required to comply with 5 ppmv NOx limits), including emissions of ammonia, secondary emissions resulting from transportation of ammonia and construction activities associated with SCR construction. To address this concern, staff has reviewed capital and operating costs for SCR systems as reported jointly by the Manufacturer's Council of the Central Valley and the California League of Food Processors in the San Joaquin Valley air district in response to a 2008 proposal to further reduce NOx limits. The costs provided by the industrial associations indicated that the proposed 9 ppmv and 5 ppmv NOx standards would be cost-effective. Other impacts are evaluated in the CEQA document and have been found to be less than significant.

4. Efficiency Measures

Several parties submitted comments noting the high cost of compliance for the proposed insulation requirement in some specific cases, as well as several instances where the insulation requirement and stack gas temperature limits were not appropriate. To address these comments, several exemptions to the insulation requirements and clarifications to the stack gas temperature limits have been incorporated into the proposed rule amendments.

Twenty parties submitted written comments following the April 2008 workshop. Most of these parties were contacted in order to discuss their comments, and meetings were held with two parties that requested to meet with Air District staff. Comments were provided by:

- NRG Energy Center, San Francisco (heater operator)
- Enovity, Inc (energy engineering consulting firm)
- Cleaver-Brooks, CB-Nebraska Boiler (heater manufacturer)
- R.F. MacDonald Company (heater distributor)
- Georgia-Pacific (heater operator)
- Calpine Corporation (heater operator)
- Genentech, Inc (heater operator)
- Western States Petroleum Association (WSPA) – (heater operator trade association)
- CRI / Criterion (heater operator)
- Interstate Brands (heater operator)
- NASA Ames Research Center (heater operator)
- Frank M Booth, Inc (heater distributor)
- Central Contra Costa Sanitary District (heater operator)
- United Airlines (heater operator)
- AHM Associates (heater distributor)
- Controltech (heater distributor)
- Anheuser-Busch, Inc (heater operator)
- Northrop Grumman Marine Systems (heater operator)
- University of California, Berkeley (heater operator)
- United Airlines (heater operator)

Subsequent to the April 2008 workshop, staff individually contacted the 10 largest school districts in the Bay Area to ensure that they were aware of the proposed new requirements and to determine the impact the rule would have on their equipment. Most school districts have recently undertaken

modernization projects to replace boilers with more efficient hot water heaters, which will reduce the number of boilers that will need to be retrofitted or replaced at schools to comply with the proposed amendments. However, some of the older school districts continue to operate large numbers of relatively inefficient boilers. For example, the San Francisco Unified School District operates about 300 boilers at 120 schools. Although many of these boilers are rated no greater than 2 MM BTU/hr, and therefore will not be affected by the proposed amendments, many others will need retrofit or replacement.

Staff contacted each of the facilities that operate heaters rated 75 MM BTU/hr or higher, and that were potentially subject to the strictest NOx emission limit (5 ppmv) in order to ensure that they were aware of the proposed new requirements and to obtain information about these large heaters in order to be able to estimate as accurately as possible the costs of compliance with the proposed amendments.

Several discussions were held with Enovity, a firm contracted by the Pacific Gas & Electric Company to implement efficiency incentive programs for heater operators, as well as with several boiler service companies in order to establish the typical operating condition, level of insulation and general efficiency of the boiler stock in the Bay Area.

Several discussions were held with staff of the San Joaquin Valley APCD and the South Coast AQMD to discuss their experience in implementing NOx control measures included in the proposed amendments to Regulation 9-7.

Additional discussions were held with a burner manufacturer, an SCR distributor and boiler distributors to address technical comments made subsequent to the April 2008 workshop.

In addition, staff responded to numerous inquiries from potentially affected heater operators about the provisions of the proposed amendments to Regulation 9-7.

IX 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, Rule 7 are:

- Necessary to limit emissions of NOx, a primary precursor to ground-level ozone formation, and to meet the requirements of the Bay Area 2005 Ozone Strategy;
- 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 it reflects the input and comments of many affected and interested parties. BAAQMD staff recommends adoption of proposed amendments to Regulation 9-7.

X References

Baukal, Charles E, Jr: *"Industrial Combustion Pollution and Control"*, CRC Press, 2003

Baukal, Charles E, Jr: *"Industrial Burners Handbook"*, CRC Press, 2003

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San Diego County Air Pollution Control District: Rule 69.2, "*Industrial and Commercial Boilers, Steam Generators and Process Heaters*", September 1994

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San Luis Obispo County Air Pollution Control District: Rule 430, "*Control of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters*", July 1995

Santa Barbara County Air Pollution Control District: Rule 342, "*Control of Oxides of Nitrogen (NOx) from Boilers, Steam Generators and Process Heaters"*, April 1997

Santa Barbara County Air Pollution Control District: Rule 360, "*Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers"*, October 2002

South Coast Air Quality Management District: Rule 1146, "*Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters*", July 1995

South Coast Air Quality Management District: Rule 1146-1, "*Emissions of Oxides of Nitrogen from Small Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters*", May 1994

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Ventura County Air Pollution Control District: Rule 74-15, "*Boilers, Steam Generators and Process Heaters*", November 1994

Ventura County Air Pollution Control District: Rule 74-15-1, "*Boilers, Steam Generators and Process Heaters*", June 2000

Yolo-Solano Air Quality Management District: Rule 2-27, "*Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters*", August 1996

Appendix A – Responses to Comments

Written comments were received from the California Air Resources Board, the University of California at Berkeley and from Calpine Corporation.

A. California Air Resources Board, letter dated July 15, 2008

Comment 1: "The Air Resources Board staff has reviewed these rules and, based on the information available to us at this time, we have no comments. The rules were examined by the Stationary Source Division and the Monitoring and Laboratory Division."

Response: Noted.

B. University of California, Berkeley (UCB), e-mail dated July 21, 2008

UCB operates three boilers, each rated above 75 MM BTU/hr, which are used in a standby capacity to the campus cogeneration gas turbine that is the primary source of campus steam.

Comment 1: Amend the proposed regulation by adding language similar to the following (shown in underline format with existing language in the draft rule):

9-7-112 Limited Exemption, Low Fuel Usage: The requirements of Sections 9-7-307 (except as specified below), 311 and 312 shall not apply to the use of any boiler, steam generator, or process heater provided that all of the following conditions are met:

112.1 For devices with a rated heat input less than 10 million BTU/hr, the device uses less than 10% of its annual maximum heat capacity in each consecutive 12-month period beginning January 1, 2011 and the requirements of Section 9-7-309 are satisfied;

112.2 For devices with a rated heat input of 10 million BTU/hr or more, the device uses less than 10% of its annual maximum heat capacity in each consecutive 12-month period beginning January 1, 2012 and the requirements of Section 9-7-307.10 are satisfied.

112.3 In events of catastrophic turbine failure, boilers, steam generators or process heaters utilized in a standby capacity located at the same facility as a turbine that is subject to Regulation 9, Rule 9 and that is modified or replaced to comply with Section 9-9-301.2 of that regulation shall be allowed up to 15% of its annual maximum heat capacity for emergency use during the catastrophic failure, for a period limited to the 12-month period following the start of the event.

An operator of a boiler, steam generator, or process heater that loses eligibility for this exemption by using more than the specified amount of fuel in any consecutive 12-month period shall comply with the applicable standards of Section 9-7-307 within 24 months.

Response: Air District staff does not disagree with UCB that the backup boilers should have a limited exemption from the proposed NOx regulations. If the boilers continue to operate as planned, the limited exemption already provided in the draft rule (fuel use less than 10% of the maximum annual amount) will apply to these boilers.

UCB has proposed a further exemption that would apply under an unplanned scenario - a catastrophic failure of the primary campus steam source leading to increased use of these backup boilers such that the boilers exceeded the 10% exemption amount and therefore were subjected to the new NOx limits. This scenario is best addressed by the District variance process, rather than by a limited exemption, for a number of reasons. First, the proposed exemption would be appropriate only if the catastrophic turbine failure was not

caused by operator negligence. The variance application process requires that the applicant demonstrate several facts, including that the triggering event was beyond their reasonable control. Also, the expanded exemption UCB is requesting would provide an exemption only for the narrow window between 10% and 15% of maximum fuel use, while a variance could provide a greater level of relief, if justified by the specific circumstances of the triggering event.

Because the variance process would provide a case-specific evaluation of the circumstances surrounding a catastrophic turbine failure, and because a variance could provide broader relief than the proposed amendment of the draft regulation, the proposed amendment will not be incorporated.

Comment 2: Amend the proposed regulation as follows (shown in underline format with existing language in the draft rule):

9-7-504 Low Fuel Usage - Monitoring and Records: Any person who operates a boiler, steam generator, or process heater under the limited exemption of Section 9-7-111 or 112 shall comply with the following requirements:

504.1 Operate a non-resettable totalizing meter for each fuel that demonstrates that the source or sources operated at or below the applicable heat input level, or receive APCO approval for using utility service meters, purchase or tank fill records, or any other acceptable methods for measuring the cumulative annual usage of each fuel;

Response: The change to the draft rule that UCB is requesting is intended to make explicit that a single common fuel meter is adequate to verify that several devices are eligible for the low fuel usage exemption. The draft rule already allows the use of a single common fuel meter as currently written, however, where appropriate. There is nothing in the draft rule as currently written that would prohibit an operator from using a single meter on multiple sources, as long as it was adequate to demonstrate that each source operated at or below the applicable heat input level. (Of course, in cases where a single meter would not be adequate, it would not satisfy the draft rule.) Moreover, the proposed regulation already allows the APCO to consider site-specific circumstances to determine "acceptable methods" for establishing eligibility for the low fuel usage exemption. Staff recommends that UCB use a single-meter system that satisfies the language of this section; or if it has concerns that its system may not satisfy the language of this section directly, that it request that the APCO approve their specific monitoring arrangement.

C. Calpine Corporation, e-mail dated July 21, 2008

Calpine operates a cogeneration facility in Gilroy that includes a gas turbine that is subject to a future NOx limit in Regulation 9, Rule 9 as well as two boilers that provide steam to an adjoining food processing facility (Gilroy Foods). The two boilers are each rated above 75 MM BTU/hr and are subject to a future 5 ppmv NOx emission limit in the draft regulation. Following the April 2008 workshop, Calpine requested a compliance date extension for Regulation 9-7 because its facility was also required to make significant capital expenditures to comply with the requirements of Regulation 9-9 (NOx from Gas Turbines). Calpine also stated that the cost of compliance with a 5 ppmv NOx limit was unreasonably high for the two facility boilers. District staff met with Calpine representatives to discuss their comments. In response to Calpine's compliance extension request, Air District staff added a 2-year compliance date extension for facilities required to make modifications to satisfy new NOx limits in both Regulation 9-9 and

Regulation 9-7. Air District staff also considered Calpine's cost estimates and concluded that the lower cost estimates in the staff report were valid.

In the e-mail dated July 21, 2008, Calpine again states that the cost of compliance with the proposed NOx limits is unreasonably high. Calpine notes in its comments that the costs it has quoted for burner retrofits (to comply with a 9 ppmv limit) and SCR installation (to comply with a 5 ppmv limit), are cursory estimates that are substantially higher than the costs used in the staff report for Regulation 9-7 and concludes that the NOx reductions are not cost-effective for their facility. Staff report costs for devices in this size range were taken from the 2002 CARB Report: "Implications of Future Oxides of Nitrogen Controls from Seasonal Sources in the San Joaquin Valley." Specifically, the installed equipment cost of $429,000 for devices from 75 to <410 MM BTU/hr was based on the combined capital cost and installation cost for a 150 MM BTU/hr device to comply with a 3 ppmv NOx limit with SCR (Table 12 of the CARB report). These costs are considered to be valid and conservative because the boilers at Calpine are smaller than 150 MM BTU/hr and would be required to comply with a less-stringent NOx limit than 3 ppmv.

Calpine has also assumed that its two boilers will continue to operate as they have in the past. Air District staff believes that Calpine should explore operational changes that might reduce the cost of compliance. For example, de-rating one boiler to less than 75 MM BTU/hr would make that boiler subject to a 9 ppmv rather than a 5 ppmv NOx limit. Increasing the utilization of one boiler enough to reduce the utilization of the other to less than 10% would exempt the less-used boiler entirely from the new NOx limits. The proposed regulation provides over 5 years for Calpine to thoroughly evaluate its compliance options and implement the most cost-effective.

It is important to note that emission reductions at Calpine's facility would be especially beneficial in the Air District's efforts to comply with ambient ozone standards because Calpine's boilers operate at their highest utilization during the late summer and early fall, which coincides with the peak ozone season.

Proposed Amendments to BAAQMD Regulation 9, Rule 7

APPENDIX B

Socioeconomic Analysis

SOCIOECONOMIC ANALYSIS PROPOSED RULE

PROPOSED AMENDMENTS TO REGULATION 9, RULE 7: NITROGEN OXIDES AND CARBON MONOXIDE FROM INDUSTRIAL, INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS, AND PROCESS HEATERS

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Prepared for

Bay Area Air Quality Management District

Prepared by

Applied Development Economics
100 Pringle Avenue, Suite 560 • Walnut Creek, California 94596 • (925) 934-8712
2151 River Plaza Drive, Suite 150 • Sacramento, California 95833 • (916) 923-1562
www.adeusa.com

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1. DESCRIPTION OF THE PROPOSED RULE

In proposing amendments to Regulation 9, Rule 7, the Bay Area Air Quality Management District ("District") seeks to reduce emissions of nitrogen oxides (NOx) by lowering the current NOx emission limits, as well as by extending applicability of the regulation to particular boilers, steam generators and process heaters operating in various industrial, commercial and institutional settings. As it is, the existing regulation is a non-industry specific rule that applies to almost any combustion device that is not subject to a more specific combustion rule, including new and existing:

- Small boilers used to provide hot water or steam to office buildings, commercial establishments, schools, hospitals, hotels and industrial facilities;
- Larger boilers used to provide hot water or steam for industrial uses; and
- Process heaters used to heat material streams at industrial facilities.

Regulation 9, Rule 7 currently does not apply to space heating, except where hot water or steam is used for heating; to devices that burn only natural gas or liquefied petroleum gas (LPG) fuel and that have an input heat rating less than 10 million BTU/hr (10 MM BTU/hr); to devices that burn non-gaseous fuel and that have an input heat rating less than 1 MM BTU/hr; or to devices classified as ovens, kilns, furnaces or dryers. Similarly, no Air District Permit to Operate is required for natural gas or LPG-fueled devices rated less than 10 MM BTU/hr. The proposed amendments will:

- Expand the rule applicability for natural gas/LPG devices from an input heat rating of 10 MM BTU/hr or more to a rating of greater than 2 MM BTU/hr and establish NOx and CO emission limits for this size category;
- Reduce the NOx emission limit for devices already subject to this rule – gas-fired devices

with an input heat rating of 10 MM BTU/hr or more;

- Establish a manufacturer certification requirement for new devices with a heat rating greater than 2 and less than 10 MM BTU/hr and operator registration requirements for new and existing devices in this size range; and
- Establish insulation requirements, stack gas temperature limits and tune-up requirements to ensure reasonable energy efficiency which will reduce fuel used, the resultant NOx emissions and greenhouse gas emissions.

In conjunction with the proposed amendments to Regulation 9, Rule 7, the District also proposes to amend *Regulation 3: Fees, Schedule R: Equipment Registration Fees*. A fee of $425 is proposed for devices required to be registered under Regulation 9, Rule 7. This fee will cover the Air District's costs of inspecting boilers and reviewing certifications.

2. IMPACT OF PROPOSED RULE AMENDMENTS

This section of the socioeconomic analysis describes demographic and economic trends in the San Francisco Bay Area (Bay Area) region. Following an overview of the methodology for the socioeconomic analysis, the first part of this section compares the Bay Area against California and provides a context for understanding demographic and economic changes that have occurred within the Bay Area between 1996 and 2006. After an overview of Bay Area industries, we focus on industries impacted by the proposed Regulation 9, Rule 7.

For the purposes of this report, the Bay Area region is defined as Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties.

METHODOLOGY

The socioeconomic analysis of the proposed amendments involves the use of information provided directly by BAAQMD, as well as secondary data used to describe the industries affected by the proposed rule amendments.

Based on information provided by BAAQMD staff, ADE determined that the impacts could affect a number of businesses in a wide range of industries in the private and public sectors, with a certain amount of these devices used especially by hospitals and larger manufacturers. Based on information sources including Pacific Gas and Electric (PG&E), the District believes that there are approximately 8,000 gas-fired heaters in the Bay Area rated less than 10 MM BTU/hr, and that about 1/3 of these, approximately 2,634 are rated greater than 2 and less than 10 MM BTU/hr, and therefore will become subject to the amended Regulation 9, Rule 7. These 2,634 heaters are estimated to be distributed in about 1,100 business establishments. In addition to these heaters rated less than 10 MM BTU/hr, the BAAQMD also estimates that there are 311 heaters rated 10 MM BTU/hr or more operating at 151 business establishments.

In addition to identifying industries affected by the proposed amendments, understanding the broader economic context within which District staff and leaders are contemplating certain proposed rules is important part of the socioeconomic analysis. To this end, ADE analyzed industry trends with respect to a number of indicators such as business formation, job creation, revenue and profit generation, among others. Because the District organized cost data by land use categories of "commercial", "industrial", and "institutional," ADE translated economic data from the California Employment Development Department (EDD) into land use categories consistent with those of the District. As a result, analyses with respect to number of establishments by industry, employment, revenues and net profits are tracked by the commercial, institutional and industrial land use categories, not by industry. As part of its analysis, ADE excluded the five petroleum refineries operating in the Bay Area, as these facilities are subject to a separate rule, Regulation 9, Rule 10.

With data from the US Economic Census and other sources such as US IRS, ADE was able to estimate revenues and profit ratios for many of the industries and land use categories impacted by the proposed rule amendments. In calculating aggregate revenues generated by Bay Area businesses in affected industries, ADE first estimated annual revenue based upon available data. Using annual reports, publicly available data and data from Dun and Bradstreet, ADE calculated ratios of profit per dollar of sales for the businesses on which the analysis focused. In addition, ADE compared annual costs associated with proposed amendments to Regulation 9, Rule 7 to net profits generated by the average or typical establishment within a given land use category, adjusting for size of business in terms of number of workers.

In many of its previous socioeconomic analyses, ADE typically compared aggregate annual costs against aggregate annual industry revenues and estimated net profits, especially in analyses involving new rules or proposed amendments that affected all businesses in specific industries. While District staff knows for the most part what industries are affected by the existing rule and proposed amendments - namely large

manufacturers, regional medical centers, and certain commercial buildings - any number of businesses in a variety of industries are also potentially affected by this rule, in so far as these entities operate in facilities utilizing devices controlled by Regulation 9, Rule 7 as amended. For example, a large commercial building with an industrial boiler could contain any number of businesses in a variety of different industries. The analysis controls for multi-tenant settings, such as such as a shopping center, a large office complex, or industrial projects where many tenants operate within a common building.

The result of the socioeconomic analysis shows what proportion of profit the compliance costs represent. Based on a given threshold of significance, ADE discusses in the report whether the affected sites are likely to reduce jobs as a means of recouping the cost of compliance or as a result of reducing business operations. ADE also examines whether affected industries can pass costs to consumers. To the extent that such job losses appear likely, the indirect multiplier effects of the job losses area estimated using a regional IMPLAN input-output model.

REGIONAL DEMOGRAPHIC TRENDS

The Bay Area experienced moderate population growth from 1996 to 2006. Between 1996 and 2001, the nine-county region increased by 1.3 percent annually, from 6.5 million in 1996 to almost 6.8 million in 2001. From 1996 to 2006, the population increase was from 6.5 million to close to 7.1 million for an increase of approximately one percent annually. Over the same period, California grew at a faster rate of 1.4 percent per year.

Within the Bay Area, the greatest percentage increase occurred in Contra Costa County. From 1996 to 2006 Contra Costa increased its population by nearly 1.7 percent annually. All other Bay Area counties had population increases slower than Contra Costa County and the State. The smallest percentage increase occurred in Marin County where population grew annually by 0.5 percent from 1996 to 2006.

TABLE 1
Population Growth: San Francisco Bay Area

	Population			Annual Percent Change		
	1996	2001	2006	96-01	01-06	96-06
California	32,222,873	34,441,561	37,195,240	1.3%	1.6%	1.4%
Bay Area	6,454,434	6,872,313	7,135,505	1.3%	0.8%	1.0%
Alameda County	1,356,339	1,465,753	1,509,981	1.6%	0.6%	1.1%
Contra Costa County	872,631	966,845	1,030,732	2.1%	1.3%	1.7%
Marin County	239,251	248,994	253,818	0.8%	0.4%	0.6%
Napa County	118,381	126,093	134,326	1.3%	1.3%	1.3%
San Francisco County	759,833	784,031	800,099	0.6%	0.4%	0.5%
San Mateo County	693,815	712,527	726,336	0.5%	0.4%	0.5%
Santa Clara County	1,620,744	1,701,665	1,780,449	1.0%	0.9%	0.9%
Solano County	371,453	401,662	421,542	1.6%	1.0%	1.3%
Sonoma County	421,987	464,743	478,222	1.9%	0.6%	1.3%

Source: Applied Development Economics, based on household population estimates from The California Department of Finance

REGIONAL ECONOMIC TRENDS

The Bay Area is one of the world's greatest regional economies. It benefits from pre-eminent knowledge-based industries, with competitive strength flowing from an unmatched culture of entrepreneurship, world-leading research institutions, and some of the nation's best educated and most highly skilled workforce. However, in the five year period between 2001 and 2006, the Bay Area economy has not grown significantly with respect to employment, which contrasts with robust employment growth in the Bay Area between 1996 and 2001.

As Table 2 shows, as of 2006, the professional and business services sector was the largest employer in the region, at 554,576 jobs or 17 percent of all private and public sector jobs. This is a slight change from 1996 when professional and business services accounted for 16 percent of all Bay Area employment. While professional and business services increased annually by a rapid rate of four percent between 1996 and 2001, between 2001 and 2006 employment actually declined in this sector by an annual clip of two percent. The broad category of Trade, Transportation and Utilities also boasts large workforce at 17 percent of total public and private employment; but a large part of this category consists of workers in Retail, a sub-sector within Trade,

Transportation and Utilities. Another large industry in the Bay Area is public service, or government, with 442,000 jobs, or almost 14 percent of the total. Within the public sector, employment has risen fastest since 2001 in state government, whereas local government employment barely grew at a 0.2 percent annual pace between 2001 and 2006, and employment in federal agencies declined over the five year period. Employment in manufacturing accounted for slightly over 10 percent of total employment, but this sector declined significantly between 2001 and 2006, dropping annually by over five percent. Overall, since 2001, total public and private employment dropped slightly by over one percent a year, going from 3,484,800 workers in 2001 to 3,275,600 workers in 2006.

TABLE 2
Employment Profile of the San Francisco Bay Area, 1996-2006

Industry	1996	2001	2006	% of Total Employment in 2006	Annual Percent Change 1996 - 2001	Annual Percent Change 2001 - 2006
Total, all private industries	2,654,847	3,047,015	2,833,513		2.8%	-1.4%
Goods-Producing	612,549	682,135	567,697		2.2%	-3.6%
Natural Resources and Mining	26,861	29,517	22,760	0.7%	1.9%	-5.1%
Construction	128,937	192,338	192,897	5.9%	8.3%	0.1%
Manufacturing	456,754	460,281	352,040	10.7%	0.2%	-5.2%
Service-Providing	2,042,295	2,364,884	2,265,815		3.0%	-0.9%
Trade, Transportation, and Utilities	563,672	608,241	561,357	17.1%	1.5%	-1.6%
Information	96,876	147,581	112,820	3.4%	8.8%	-5.2%
Financial Activities	194,069	208,854	213,378	6.5%	1.5%	0.4%
Professional and Business Services	509,591	619,989	554,576	16.9%	4.0%	-2.2%
Education and Health Services	285,917	337,874	360,678	11.0%	3.4%	1.3%
Leisure and Hospitality	273,778	304,944	320,772	9.8%	2.2%	1.0%
Other Services	117,887	131,398	142,238	4.3%	2.2%	1.6%
Government Ownership:						
Federal Government	83,162	57,652	53,001	1.6%	-7.1%	-1.7%
State Government	108,771	81,895	87,874	2.7%	-5.5%	1.4%
Local Government	231,635	298,251	301,173	9.2%	5.2%	0.2%
Total, all public and private industries	3,078,415	3,484,813	3,275,561	100.00%	2.5%	-1.2%

Source: Applied Development Economics, Inc., based on Labor Market Information Division of the California Employment Development Department (California EDD-LMID)

Table 3 is similar to Table 2 except data is organized by general land use and building types. In addition, data is segregated by private and public sectors. Data is for 2006.

TABLE 3: Economic Profile By Land Use Categories and By Public-Private Ownership: San Francisco Bav Area. 2006

Ownership	NAICS	Industry Description	Type	Establishment	Employment
Private	11	Agriculture, Forestry, Fishing & Hunting	Other	1,836	21,213
Private	21	Mining	Industrial	76	2,076
Private	22	Utilities	Industrial	120	5,688
Private	23	Construction	Other Industrial	16,834	192,897
Private	31-33	Manufacturing	Industrial	9,134	352,040
Private	42	Wholesale Trade	Other	10,277	129,113
Private	44-45	Retail Trade	Commercial	20,846	336,232
Private	48-49	Transportation and Warehousing	Other Industrial	3,157	92,610
Private	51	Information	Office	3,834	112,820
Private	52	Finance and Insurance	Office	11,019	151,360
Private	53	Real Estate and Rental and Leasing	Office	9,991	62,020
Private	54	Professional and Technical Services	Office	29,299	312,042
Private	55	Management of Companies and Enterprises	Office	1,015	56,807
Private	56	Administrative and Waste Services (office)	Office	9,113	89,315
Private	56	Administrative and Waste Services (other industrial)	Other Industrial	395	96,408
Private	61	Educational Services	Institutional	2,681	69,327
Private	62	Health Care and Social Assistance (office)	Office	17,862	140,113
Private	62	Health Care and Social Assistance (institutional)	Institutional	775	151,240
Private	71	Arts, Entertainment, and Recreation	other	2,651	50,976
Private	72	Accommodation and Food Services	Commercial	15,430	269,797
Private	81	Other Services	Commercial	72,201	142,107
Private	99	Unclassified	other	53	131
Federal	44-45	Retail Trade	Commercial	7	761
Federal	48-49	Transportation and Warehousing	Other Industrial	272	22,856
Federal	51	Information	Office	1	10
Federal	52	Finance and Insurance	Office	6	272
Federal	54	Professional and Technical Services	Office	16	491
Federal	62	Health Care and Social Assistance	Institutional	4	6,650
Federal	71	Arts, Entertainment, and Recreation	other	11	717
Federal	72	Accommodation and Food Services	Commercial	5	84
Federal	81	Other Services	Commercial	1	41
Federal	92	State Government	Office	292	21,118
State	54	Professional and Technical Services	Office	2	201
State	61	Educational Services	Institutional	666	37,579
State	62	Health Care and Social Assistance (office)	Office	241	2,756
State	62	Health Care and Social Assistance (institutional)	Institutional	14	3,632
State	92	State Government	Office	697	23,270
Local	11	Agriculture, Forestry, Fishing & Hunting	Other	1	12
Local	22	Utilities	Industrial	80	7,790
Local	23	Construction	Other Industrial	24	3,258
Local	48-49	Transportation and Warehousing	Other Industrial	53	11,829
Local	51	Information	Office	45	4,320
Local	52	Finance and Insurance	Office	6	603
Local	53	Real Estate and Rental and Leasing	Office	5	502
Local	54	Professional and Technical Services	Office	5	502
Local	56	Administrative and Waste Services	Other Industrial	13	1,306
Local	61	Educational Services	Institutional	2,229	161,039
Local	62	Health Care and Social Assistance (office)	Office	27	9,780
Local	62	Health Care and Social Assistance (institutional)	Institutional	2	12,888
Local	71	Arts, Entertainment, and Recreation	other	58	9,787
Local	72	Accommodation and Food Services	Commercial	4	74
Local	81	Other Services	Commercial	20	574
Local	92	State Government	Office	384	94,526
				243,790	3,275,561

Source: ADE, Inc., based on California EDD-LMID

In Tables 4 and 5, we re-organize Table 3 data in terms of size of businesses by employment. These tables focus on the private and public sectors respectively. Of the 235,594 private establishments in the region, an estimated 136,631 employ between one and four workers (see Table 4). Of the 5,191 public establishments in the region, 2,496 employ between one and four workers (see Table 4).

TABLE 4
Establishments By Land Use Types and By Size of Business (Estimate): SF Bay Area, 2006: Private Sector (Excluding Refineries)

Type of Use	Establishments	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial\Office	190,609	114,984	30,750	21,860	14,691	5,062	2,449	518	157	139
Industrial	9,325	3,812	1,834	1,467	1,214	553	294	99	29	24
Other industrial	20,386	10,931	3,821	2,449	1,489	1,000	544	113	25	15
Institutional	3,456	1,693	410	278	189	555	240	56	21	14
Other	14,817	8,211	2,848	1,885	1,315	366	158	23	10	2
	238,594	139,631	39,663	27,938	18,898	7,536	3,685	809	241	194

Source: Applied Development Economics, based on California EDD LMID

TABLE 5
Establishments By Land Use Types and By Size of Business (Estimate): SF Bay Area, 2006: Public Sector

Type of Use	Establishments	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial\Office	1,765	857	323	264	177	83	49	8	3	1
Industrial	80	0	0	0	0	80	0	0	0	0
Other industrial	362	141	53	42	22	8	95	2	1	0
Institutional	2,914	1,498	564	443	234	88	55	20	7	6
Other	70	0	0	1	0	11	58	0	0	0
	5,191	2,496	940	749	433	270	257	30	10	6

Source: Applied Development Economics, based on California EDD LMID

Tables 6 and 7 are similar to the tables directly above; these tables distribute number of workers by land use and business size categories.

TABLE 6
Estimated Employment By Land Use Types and By Size of Business (Estimate): SF Bay Area, 2006: Private Sector (Excluding Refineries)

Type of Use	Employment	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial\Office	1,672,613	155,055	147,341	218,137	344,409	220,442	257,878	120,655	71,751	136,944
Industrial	359,804	10,395	16,734	27,830	55,209	52,428	64,697	47,274	27,881	57,355
Other industrial	381,915	19,000	23,199	30,817	44,596	76,529	94,537	42,753	20,603	29,883
Institutional	220,567	6,717	5,696	7,988	12,939	53,688	54,340	27,420	20,459	31,321
Other	201,433	18,593	21,953	29,888	49,106	29,734	30,094	9,724	7,902	4,438
	2,836,332	209,759	214,924	314,659	506,259	432,822	501,545	247,827	148,595	259,941

Source: Applied Development Economics, based on California EDD LMID

TABLE 7
Estimated Employment By Land Use Types and By Size of Business (Estimate): SF Bay Area, 2006: Public Sector

Type of Use	Employment	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial\Office	159,887	10,119	13,340	21,875	28,685	21,068	27,039	18,607	12,592	6,562
Industrial	7,790	0	0	0	0	7,790	0	0	0	0
Other industrial	39,249	1,377	1,815	2,954	3,716	2,756	20,419	3,061	2,072	1,080
Institutional	221,788	11,966	15,774	25,667	32,289	27,449	40,105	30,496	20,637	17,406
Other	10,516	0	0	12	0	717	9,787	0	0	0
	439,230	23,462	30,929	50,507	64,690	59,779	97,350	52,164	35,300	25,048

Source: Applied Development Economics, based on California EDD LMID

Tables 8 and 9 estimate revenues generated by the private and public sectors. With respect to the private sector, revenues are based on a revenue per workers formula, data for which comes from the Economic Census 2002. To estimate public sector allocations, the analysis employed a per capita rate based on typical average wages, benefits, and capital outlays at the local, state and federal levels. On average, the public sector per capita rate ranged from $120,000 to $160,000. Averages were then multiplied against aggregate number of workers organized by Table 7 above. Table 10 includes estimates on net profits generated by establishments within the various land use categories and employment size ranges. Estimated net profits are based on industry-specific rates gathered over a ten year period so as to control for period when rates might have been unusually high and periods when rates might have been unusually low, if not negative. Net profit data comes from the US IRS.

TABLE 8
Aggregate Revenue By Land Use Types and By Size of Business (Estimate): SF Bay Area, 2006: Private Sector (Excluding Refineries)

Type of Use	Aggregate Rev ('000)	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial\Office	277,519,904	21,993,227	22,700,715	34,743,145	53,609,189	38,293,169	47,541,414	22,347,614	12,297,291	23,994,141
Industrial	109,514,116	3,657,014	5,643,911	9,425,583	18,904,615	17,195,881	21,168,366	14,870,594	7,136,502	11,511,652
Other industrial	58,729,314	3,137,277	3,917,655	5,170,945	7,433,494	11,621,966	14,342,392	6,319,459	2,765,265	4,020,862
Institutional	20,100,851	464,941	394,324	552,961	895,653	5,102,169	5,164,108	2,605,835	1,944,316	2,976,544
Other	112,723,414	9,434,453	12,334,792	17,207,554	29,280,463	17,263,290	17,386,451	5,106,798	4,339,490	370,122
	578,587,598	38,686,911	44,991,397	67,100,188	110,123,412	89,476,474	105,602,730	51,250,300	28,482,864	42,873,322

Source: Applied Development Economics, based on California EDD LMID and US Economic Census

TABLE 9
Aggregate Revenue By Land Use Types and By Size of Business (Estimate): SF Bay Area, 2006: Public Sector

Type of Use	Aggregate Rev ('000)	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial\Office	22,357,486	1,416,703	1,867,618	3,062,451	4,015,886	2,949,475	3,758,851	2,604,941	1,762,812	918,750
Industrial	1,090,636	0	0	0	0	1,090,636	0	0	0	0
Other industrial	4,694,870	144,579	190,596	310,129	390,149	289,332	2,717,733	321,449	217,530	113,373
Institutional	30,541,816	1,675,187	2,208,373	3,593,348	4,520,518	3,734,986	5,457,189	4,149,580	2,808,098	2,394,537
Other	1,471,854	0	0	1,284	0	100,380	1,370,190	0	0	0
	60,156,661	3,236,470	4,266,587	6,967,212	8,926,553	8,164,808	13,303,962	7,075,969	4,788,440	3,426,660

Source: Applied Development Economics, based on California EDD LMID and California State Controller

TABLE 10
Aggregate Net Profits By Land Use Types and By Size of Business (Estimate): SF Bay Area, 2006: Private Sector (Excluding Refineries)

Type of Use	Est. Net Profits ('000)	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial\Office	$10,573,293	$892,499	$896,485	$1,352,752	$2,046,465	$1,397,561	$1,703,543	$909,191	$567,544	$807,252
Industrial	$3,425,909	$146,761	$203,400	$343,782	$713,012	$568,591	$701,731	$470,955	$163,394	$114,282
Other industrial	$1,893,355	$98,607	$125,828	$165,079	$235,801	$385,953	$464,251	$202,312	$87,046	$128,477
Institutional	$693,224	$17,745	$15,050	$21,105	$34,184	$173,525	$175,632	$88,625	$66,126	$101,232
Other	$2,331,625	$198,344	$256,097	$355,644	$601,773	$354,851	$357,669	$105,632	$89,310	$12,306
	$18,917,405	$1,353,957	$1,496,860	$2,238,361	$3,631,235	$2,880,481	$3,402,826	$1,776,714	$973,420	$1,163,549

Source: Applied Development Economics, based on California EDD LMID and US Economic Census

Table 11 translates aggregate net profit estimates in Table 10 into average net profit figures. For purposes of the socioeconomic analysis, public sector costs will compared against estimated gross revenues.

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TABLE 11
Average Net Profits By Land Use Types and By Size of Business: SF Bay Area, 2006 (Estimate): Private Sector (Excluding Refineries)

Type of Use	Est. Avg. Net Profits	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial\Office	$55,471	$7,762	$29,154	$61,882	$139,304	$276,099	$695,701	$1,756,163	$3,613,898	$5,801,305
Industrial	$367,390	$38,503	$110,914	$234,390	$587,121	$1,028,783	$2,385,321	$4,749,300	$5,729,735	$4,807,688
Other industrial	$92,873	$9,021	$32,931	$67,409	$158,403	$385,912	$853,446	$1,797,860	$3,546,674	$8,308,011
Institutional	$200,578	$10,484	$36,693	$76,007	$180,845	$312,581	$732,153	$1,571,297	$3,144,693	$7,132,725
Other	$157,361	$24,155	$89,923	$188,688	$457,667	$969,995	$2,265,913	$4,564,473	$9,389,540	$6,835,736
	$79,287	$9,697	$37,739	$80,118	$192,153	$382,252	$923,536	$2,196,318	$4,045,059	$5,986,018

Source: Applied Development Economics, based on California EDD LMID and US Economic Census

Socioeconomic Impact Analysis: Commercial, Industrial and Industrial Boilers, Steam Generators and Process Heaters

This section of the report compares annual costs stemming from the rule against industry revenues and net profits. In making that comparison, this section of the report shows what proportion of profit the compliance costs represent. Based on a given threshold of significance, ADE discusses in the report whether the affected sites are likely to reduce jobs as a means of recouping the cost of compliance or as a result of reducing business operations. ADE also examines whether affected industries can pass costs to consumers. To the extent that such job losses appear likely, the indirect multiplier effects of the job losses area estimated using a regional IMPLAN input-output model.

When analyzing the socioeconomic impacts of proposed new rules and amendments, ADE works 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 that 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. Berck reviewed CARB's significance 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." Because industry equity data is not easily readily available, particularly data that is relevant to the nine-county Bay Area, ADE compares annual costs against estimated annual net profits as defined as after-tax return on revenue or sales.

Table 12 below identifies the total cost of new devices that comply with Regulation 9, Rule 7 as amended. For purposes of a conservative analysis, we analyze the socioeconomic

impacts of the *total annual* cost of compliant devices, not the incremental portion of the total cost, even though the proposed amendments do not require businesses to replace or retrofit their respective heaters, steam generators and or process heaters until they have used at least part of the heater service life (5 or 10 years, depending on heater size). As Table 12 shows, on a weighted average basis, the total cost of compliant devices below and above 10 MM BTU\hr is $139,230 and $110,886 respectively.

TABLE 12
Total Cost of Devices Within Specified Ratings

Size Range (MM BTU/hr)	Avg Size (MM BTU/hr)	Number	Installed Cost Per Device
>2 to 5	4.2	1,238	$91,000
>5 to <10	4.2	1,396	$182,000
10 to <20	12.8	164	$87,600
20 to <75	32	125	$117,600
75 to < 410	120	5	$429,000
410	410	1	$1,500,000
Subtotals >2 to <10: Average	*4.2*		*$139,230*
Subtotals 10 and up: Average	*180.8*		*$110,886*

Source: ADE, Inc., based on BAAQMD (Note: Sub-Total averages based on all data set)

Table 13 below annualizes total costs presented in Table 12. As Table 13 shows, sources directly affected by the proposed amendment will incur $13,658 a year per device, for devices less than 10 MM BTU/hr. For devices greater than 10 MM BTU/hr, annual cost amounts to $10,878. As indicated earlier, these are *total* costs, which, for purposes of a conservative socioeconomic analysis, overstate actual impacts since the proposed amendments do not require businesses to replace or retrofit their respective heaters, steam generators and or process heaters until they have used at least part of the heater service life (5 or 10 years, depending on heater size). In other words, even if the proposed amendment is *not*

adopted, affected sources will still need to purchase a new device in the event their existing non-compliant boiler exhaust its useful life. Thus, in actuality, the impact stemming from the proposed amendments is the cost of the service life of the existing device that is not used, plus the difference between the new, code-compliant model and the older, non-compliant model, *not* the total cost of the new model. In any event, the analysis examines impacts stemming from the total cost of the new model.

TABLE 13
Annual Cost: Proposed Amendments Regulation 9, Rule 7

	< 10 MM BTU/hr	> 10 MM BTU/hr
Total Cost	$139,230	$110,886
Other Cost Factor	0.09	0.09
Capital Recovery Factor	0.09	0.09
TOTAL COST (Annualized)	$13,658	$10,878

Source: ADE, Inc., based on BAAQMD

It is important to note that, of the business impacted by the proposed amendments, a number will bear *a share* of total costs described in Table 13 above. Suppose a two-story commercial office complex with ten separate businesses uses a boiler less than 10 MM BTU/hr. While the average annual cost for this device is $13,658, the *share* of the Regulation 9, Rule 7 cost to affected businesses would be distributed among the different businesses within the affected building. In order to control for these instances, ADE examined the District's database to understand what kinds of facilities employ which devices, the MM BTUs of which are included in the District's database. Using a variety of sources and standard analytic factors with respect to square feet per workers, ADE then determined how many workers worked at these companies' facilities. Table 14 below is based on ADE's analysis, and it depicts an amount of MM BTU per worker. Table 14 divides information by land use types and number of employees. Thus, for the typical industrial establishment in the BAAQMD database that employs less

than 1000 workers, the input heat rating (MM BTU\Hr) per workers is 0.07488.

TABLE 14
MM BTU\hr per Bay Area Worker

	Commercial	Industrial	Institutional
< 1000 workers	0.01341	0.07488	0.01145
> 1000 workers	0.00216	0.02366	0.01145

Source: ADE, Inc., based on BAAQMD

Since the *average* input heat rating for the device less than 10 MM BTU\hr annually costing $13,658 is 4.2 MM BTU\hr, we can estimate minimum amount of MM BTU's needed for the *typical* establishment in the Bay Area. Table 15 below shows that, on average, a small business employing less than 50 workers in the commercial-office land use category employs five workers. If as Table 14 above shows, commercial operations employing less than 1000 workers exhibit input heat rating (MM BTU\Hr) per worker ratios of 0.01341, then the *typical* very small commercial-office establishment's MM BTU\Hr requirement is 0.0637.[1] This factor is then multiplied against $13,658 at 4.2 MM BTU\Hr to calculate the *annual share* of the total cost that a small business would absorb in the event it was located at a multi-tenant site that was purchasing a new compliant device (4.2 MM BTU\Hr @ $13,658 a year). Across the board, Tables 15 through 18 show that annual costs stemming from the proposed amendments are less than significant from the vantage point of the average Bay Area business within various land use categories and sizes.

[1] 0.0637 = 0.01341 x 5

TABLE 15
Socioeconomic Impact Analysis: Estimated Net Profits By Average Commercial Establishment By Size of Establishment Versus Share of Cost Attributable To Average Commercial Establishment

Private Commercial\Office	AVG EMP	AVG REV	NET PROFITS	AVG Device Size-Share	Share of Annual Cost Per Device: < 10 BTU\Hr Scenario	Annual Cost As Percent of Net Profits: < 10 BTU\Hr Scenario	Sshare of Annual Cost Per Device: > 10 BTU\Hr Scenario	Annual Cost As Percent of Net Profits: > 10 BTU\Hr Scenario
1 - 49	5	729,880	28,462	0.0637	$207	0.73%	$4	0.013%
50-99	44	7,565,112	276,099	0.5842	$1,900	0.69%	$35	0.013%
100-249	105	19,415,182	695,701	1.4127	$4,594	0.66%	$85	0.012%
250-499	233	43,165,897	1,756,163	3.1263	$10,167	0.58%	$188	0.011%
500-999	457	78,304,292	3,613,898	6.1289	$19,931	0.55%	$369	0.010%
1000+	984	172,433,598	5,801,305	2.1256	$6,913	0.12%	$128	0.002%

Source: ADE, Inc., based on California EDD and BAAQMD

TABLE 16
Socioeconomic Impact Analysis: Estimated Net Profits By Average Industrial Establishment By Size of Establishment Versus Share of Cost Attributable To Average Industrial Establishment

Industrial	AVG EMP	AVG REV	NET PROFITS	AVG Device Size-Share	Share of Annual Cost Per Device: < 10 BTU\Hr Scenario	Annual Cost As Percent of Net Profits: < 10 BTU\Hr Scenario	Sshare of Annual Cost Per Device: > 10 BTU\Hr Scenario	Annual Cost As Percent of Net Profits: > 10 BTU\Hr Scenario
1 - 49	13	4,519,343	168,970	0.9908	$3,222	1.91%	$60	0.035%
50-99	95	31,113,463	1,028,783	7.1036	$23,101	2.25%	$427	0.042%
100-249	220	71,955,396	2,385,321	16.4684	$53,556	2.25%	$991	0.042%
250-499	477	149,961,076	4,749,300	35.6999	$116,097	2.44%	$2,148	0.045%
500-999	978	250,255,448	5,729,735	73.2145	$238,095	4.16%	$4,405	0.077%
1000+	2,413	484,279,960	4,807,688	57.0906	$185,660	3.86%	$3,435	0.071%

Source: ADE, Inc., based on California EDD and BAAQMD

TABLE 17
Socioeconomic Impact Analysis: Estimated Net Profits By Average Institutional Establishment By Size of Establishment Versus Share of Cost Attributable To Average Institutional Establishment

Institutional	AVG EMP	AVG REV	NET PROFITS	AVG Device Size-Share	Share of Annual Cost Per Device: < 10 BTU\Hr Scenario	Annual Cost As Percent of Net Profits: < 10 BTU\Hr Scenario	Sshare of Annual Cost Per Device: > 10 BTU\Hr Scenario	Annual Cost As Percent of Net Profits: > 10 BTU\Hr Scenario
1 - 49	13	898,184	34,281	0.1486	$483	1.41%	$9	0.026%
50-99	97	9,190,851	312,581	1.1078	$3,603	1.15%	$67	0.021%
100-249	227	21,527,563	732,153	2.5948	$8,438	1.15%	$156	0.021%
250-499	486	46,200,988	1,571,297	5.5689	$18,110	1.15%	$335	0.021%
500-999	973	92,463,659	3,144,693	11.1452	$36,244	1.15%	$671	0.021%
1000+	2,207	209,724,109	7,132,725	25.2792	$82,208	1.15%	$1,521	0.021%

Source: ADE, Inc., based on California EDD and BAAQMD

TABLE 18
Socioeconomic Impact Analysis: Estimated Net Profits By Average Public Sector Establishments By Type of Use Versus Share of Cost Attributable To Average Public Sector Establishment

Public Sector	AVG EMP	AVG REV	AVG Device Size-Share	Share of Annual Cost Per Device: < 10 BTU\Hr Scenario	Annual Cost As Percent of Net Profits: < 10 BTU\Hr Scenario	Sshare of Annual Cost Per Device: > 10 BTU\Hr Scenario	Annual Cost As Percent of Net Profits: > 10 BTU\Hr Scenario
Services\Office	91	$12,669,189	1.2154	$3,952	0.03%	$73	0.001%
Industrial	97	$13,632,945	7.2921	$23,714	0.17%	$439	0.003%
Institutional	76	$1,610,984	0.8718	$2,835	0.18%	$52	0.003%

Source: ADE, Inc., based on California EDD and BAAQMD

IMPACT ON SMALL BUSINESS

DEFINITION OF SMALL BUSINESS PER CALIFORNIA STATUTE

For purposes of qualifying small businesses for bid preferences on state contracts and other benefits, the State of California defines small businesses in the following manner:

- Must be independently owned and operated;
- Cannot be dominant in its field of operation;
- Must have its principal office located in California
- Must have its owners (or officers in the case of a corporation) domiciled in California; and,
- Together with its affiliates, be either:
  - A business with 100 or fewer employees, and an average gross receipts of $10 million or less over the previous tax years, or
  - A manufacturer with 100 or fewer employees

SMALL BUSINESS IMPACT ANALYSIS

The discussion above demonstrated that, across the board, impacts are below the significance threshold employed for purposes of socioeconomic analysis. In addition, the discussion above organized data by businesses in terms number of workers. Again, the analysis demonstrated no significant impacts. Thus, small businesses are not disproportionately impacted by the proposed amendments.

Proposed Amendments to
BAAQMD Regulation 9, Rule 7

APPENDIX C

CEQA Initial Study and Negative Declaration

Initial Study/Negative Declaration for the Amendments to Bay Area Air Quality Management District Regulation 9, Rule 7: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators and Process Heaters

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

June 2008

Chapter 1

Chapter 2

Chapter 3

FIGURES:

TABLES:

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Chapter 1

Introduction

Purpose of this Document

This Negative Declaration (Neg Dec) assesses the environmental impacts of the proposed adoption of amendments to Regulation 9, Rule 7 – Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters - 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 Neg Dec 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 Neg Dec 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,
- agricultural resources,
- air quality,
- biological resources,
- cultural resources,
- geology and soils,
- hazards and hazardous materials,
- hydrology and water quality,
- land use planning,
- mineral resources,

- noise,
- population and housing,
- public services,
- recreation,
- transportation and traffic, and
- utilities and service systems.

Impact Terminology

The following terminology is used in this IS/ND 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 7, 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 NO_x emissions from boilers, steam generators, and process heaters that are used in industrial, institutional or commercial applications under Regulation 9, Rule 7, ("Regulation 9-7"). Regulation 9-7 currently imposes a 30 ppmv NO_x limit on industrial, institutional, and commercial boilers with a rated heat input of 10 million British thermal units per hour (MMBtu/hr) or more; devices that use non-gaseous fuel that have a heat rating of 1 MMBtu/hr or more have a 40 ppmv NO_x limit. Regulation 9-7 was adopted September 15, 1993. Bay Area 2005 Ozone Strategy Control Measure SS-12 (Nitrogen Oxides and Carbon Monoxides from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters) proposed amendments to Bay Area Air Quality Management District Regulation 9-7. The proposed amendments to Regulation 9-7 would implement Control Measure SS-12 by supplementing existing requirements in Regulation 9-7.

Regulation 9-7 is a non-industry specific rule that applies to almost any combustion device that is not subject to a more specific combustion rule, including new and existing small boilers used to provide hot water or steam to office buildings, commercial establishments, hospitals, hotels and industrial facilities; larger boilers used to provide hot water or steam for industrial uses; and process heaters used to heat material streams at industrial facilities. For simplicity, all these devices are referred to as heaters in this document. Regulation 9-7 does not apply to residential central furnaces, residential water heaters, combustion devices used in petroleum refineries, or electric utility steam boilers. Also, Regulation 9-7 does not apply to space heating; to devices that burn only natural gas or liquefied petroleum gas (LPG) fuel and that have a heat rating less than 10 MMBtu/hr); to devices that burn non-gaseous fuel and that have a heat rating less than 1 MMBtu/hr; or to devices classified as ovens, kilns, furnaces or dryers.

OBJECTIVES

In Control Measure SS-12, the District suggested review of NOx emission requirements for industrial, institutional, and commercial boilers, steam generators, and process heaters. The objective of the amendments for Regulation 9-7 is to further reduce NOx emissions from natural gas or LPG-fired devices 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, NOx and reactive organic gases (ROG), are needed. Additional NOx reductions can be achieved by a technique involving the premixing of fuel and air before combustion takes place in water heaters, boilers and

process heaters. This results in a lower and more uniform flame temperature, which reduces formation of NOx.

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 2005 Ozone Strategy 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 eight-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) or for particulate matter of 2.5 microns or less (PM2.5).

RULE AMENDMENTS BEING CONSIDERED

A summary of the amendments to Regulation 9-7 are included in Table 2-1.

Extend Regulation 9-7 to Heaters Rated Less Than 10 MM BTU/hr

Control Measure SS-12 proposes extending the applicability of Regulation 9-7 to heaters with a maximum firing capacity below 10 MMBtu/hr. Several California air districts have adopted rules that apply a 30 ppmv NOx concentration standard to heaters with heat ratings as low as two MMBtu/hr. Compliance with a 30 ppmv NOx standard is achievable for heaters burning natural gas or LPG fuel by retrofitting existing burners with low-NOx burners. However, for some heaters a low-NOx burner retrofit may not be available or may not be practical to install and these devices would have to be replaced. If a retrofit is available, it may require that the maximum firing capacity of the heater be reduced or may result in an overall loss of efficiency that would require the device to be replaced. The proposed amendments establish a 30 ppmv exhaust concentration limit for heaters rated up to 5 MMBtu/hr. In addition, the proposed amendments establish a 15 ppmv exhaust concentration limit for heaters rated greater than 5 but less than 10 MMBtu/hr. A low-fuel usage exemption is proposed for heaters with annual fuel use less than 10% of capacity utilization. This is equivalent to 90,000 therms per year for a 10 MMBtu/hr boiler.

The Air District has proposed an effective date for the standards affecting heaters rated less than 5 MMBtu/hr of 1/1/2011, although a heater manufactured prior to 1/1/2011 would not be subject to the proposed NOx standards until 10 years after its original manufacture date. Heaters manufactured on or after 1/1/2011 would be subject to the proposed standards on 1/1/2011.

TABLE 2-1

Reg. 9-7 Proposed Amendment Summary

Heater Size Range (MMBtu/hr)	Devices[(1)]	Current NOx (ton/day)[(2)]	Current NOx (ppmvv)[(3)]	Proposed NOx (ppmvv)	NOx Reduc-tion (ton/day)
>2 to 5	1238	2.01	78	30	1.15
>5 to <10	1396	2.27	78	15	1.72
>2 to <10 TOTALS	2634	4.28			2.87
10 to <20	164	0.26	30	15	0.06
20 to <75	125	0.56	30	9	0.19
75 to <410	21	0.09	27	5	0.07
410	1	0.02	12	5	0.01
10 and larger TOTALS	311	0.93			0.33
TOTALS	**2945**	**5.21**			**3.20**

Notes:

(1) The number of devices in the >2 to 5 and >5 to <10 categories is estimated to be 2634.

(2) BAAQMD Staff Report for Regulation 9, Rule 7.

(3) The current NOx emission rate for each subcategory is 30 ppmvv for sub-categories subject to the current rule and 78 ppmvv for the sub-categories of devices <10 MM BTU/hr that are not currently subject to the rule. For the categories "75 to <410", the emission rate is lower than 30 ppmvv because devices that have a permit condition limit of 9 ppmvv have been incorporated on a weighted basis. For the sole 410 MM BTU/hr unit, the emission rate is the permit condition requirement for the one device in the sub-category (Permit Condition 14049.50).

The proposed amendments to Regulation 9-7 would establish a manufacturer certification requirement for new gas-fired devices rated more than 2 but less than 10 MMBtu/hr, and establish a registration program for operators of new and existing devices in this size range.

Reduce Regulation 9-7 NOx Exhaust Concentration Limits

Some California air districts have adopted rules that apply NOx concentration limits less than 30 ppmv to heaters with heat ratings of 10 MMBtu/hr or more. For heaters with heat ratings higher than 20 MMBtu/hr, compliance with a 9 ppmv NOx limit has been achieved with natural gas or LPG fuel by retrofitting ultra low-NOx burners with or without flue gas recirculation (FGR) to control NOx formation, or by installing selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) to reduce the NOx concentration in the heater exhaust. However, for some heaters an ultra low-NOx burner retrofit may not be available or may not be practical to install and these devices would have to be replaced. For some heaters FGR or SCR/SNCR may not be practical to install because of space limitations. For load-following heaters, SCR/SNCR may not achieve a 9 ppmv concentration, so a limit of 15 ppmv is proposed for these devices of 20

MMBtu/hr or more. For some heaters, installation of ultra low-NOx burners or FGR may require that the maximum firing capacity of the heater be reduced or may result in an overall loss of efficiency that would require the heater to be replaced.

Heaters Rated Between 5 MMBtu/hr and 20 MMBtu/hr: For heaters with heat ratings between 10 and 20 MMBtu/hr, compliance with a 15 ppmv NOx standard has been proposed since it has been achieved with natural gas or LPG fuel by retrofitting ultra low-NOx burners with or without flue gas recirculation (FGR). However, as for larger heaters, an ultra low-NOx burner retrofit or FGR may not be available or may not be practical to install and these devices would have to be replaced or have their maximum firing capacity reduced. The Air District has proposed an effective date for the standards affecting heaters rated from 10 MMBtu/hr up to 20 MMBtu/hr of 1/1/2012, although a heater manufactured prior to 1/1/2012 would not be subject to the proposed NOx standard until 10 years after its original manufacture date. Heaters manufactured on or after 1/1/2012 would be subject to the proposed standards on 1/1/2012. Facilities with multiple units would be allowed to comply over several years. An initial source test for heaters of at least 10 MMBtu/hr and periodic compliance monitoring for all heaters will be required.

Heaters Rated Between 20 MMBtu/hr and less than 75 MMBtu/hr: For heaters rated from 20 to less than 75 MMBtu/hr, a 9 ppmv NOx limit is proposed, effective January 1, 2011. Compliance with this limit can be achieved with ultra-low NOx burners with FGR. Some operators may elect to use SCR to comply with this standard. All of the devices in this size category are required to have air permits and only 19 currently operate at NOx emissions lower than 30 ppmv (only one operates at 9 ppmv). Therefore, all but one of the heaters in this size category will have to be modified or replaced if they continue to operate after January 1, 2011. New heaters installed on or after January 1, 2012 will be subject to the new standard upon installation. Heaters in service prior to January 1, 2012 will become subject to this standard upon reaching a service life of five years. Facilities with multiple heaters would be allowed to comply over several years.

Heaters Rated More than 75 MMBtu/hr: For heaters rated 75 MMBtu/hr and higher, Regulation 9-7 would require a NOx standard of 5 ppmvv, effective January 1, 2012. the five-year Service Life Allowance granted to heaters over 20 MMBtu/hr would apply to these heaters as well. Heaters in this size range would be expected to use SCR or SNCR to comply with these standards. An initial source test and periodic compliance monitoring will be required.

Other Proposed Amendments: Landfill gas and wastewater digester gas fuels have greater variability in heat value and other specifications than natural gas. This variability makes it more difficult to optimize a heater that uses these fuels for low NOx emissions. For this reason, and because combustion of these fuels is quite limited in the Bay Area, the proposed amendments establish a 30 ppmv NOx limit for these fuels in every regulated size category.

Regulation 9-7 currently allows a 40 ppmv NOx limit for combustion of non-gaseous fuels in heaters with heat ratings of 10 MMBtu/hr or more, compared to 30 ppmv for gaseous fuels. Because non-gaseous fuels cannot be mixed with combustion air as completely as gaseous fuels, reduction of combustion hot-spots and associated NOx formation is more difficult for non-gaseous fuels. For this reason, and because combustion of non-gaseous fuel is quite limited in the Bay Area, the proposed amendments retain a 40 ppmv NOx limit for nongaseous fuel in heaters in every regulated size category. Heaters firing a combination of non-gaseous and gaseous fuels would have to meet a heat-input weighted average of the applicable NOx limit for the heater size category and the 40 ppmv non-gaseous fuel limit.

Heaters with input heat ratings up to 10 MMBtu/hr would be exempt from the new standards if they use less than 10% of their maximum heat capacity per year. These heaters would require annual tune-ups and would be required to operate at less than 3% stack gas oxygen content. Low-usage heaters larger than 10 MMBtu/hr would also be required to meet a 30 ppmv NOx standard.

Insulation Requirements

Heat loss from inadequately insulated surfaces is typically one of the largest contributors to energy inefficiency in a heater. Energy inefficiency results in increased fuel consumption with related emissions of NOx and greenhouse gases. The proposed amendments to Regulation 9-7 require insulation of all heaters subject to the rule, such that exposed surfaces do not exceed 120 degrees Fahrenheit, effective January 1, 2010. Some exemptions are provided for safety reasons, to high-temperature water boilers as defined in the California Code of Regulations, to surfaces that must remain un-insulated for safety or operational reasons, to boilers with at least one inch of insulation, and to exhaust stacks. This requirement applies to boilers and steam generators, but not to process heaters.

Inspection and Tune-Up Requirements

Currently, Regulation 9-7 requires tune-ups only for heaters that qualify for a low fuel-usage exemption, in lieu of compliance with the 30 ppmv NOx limit. The proposed amendments to Regulation 9-7 includes an annual tune-up requirement for most heaters subject to the rule, effective in 2009. A tune-up consists of re-optimizing the air to fuel ratio. Tune-ups can reduce energy inefficiency by as much as 10%, reducing fuel usage, CO_2 and NOx emissions. Inspections will check for blowdown rates, and heater and stack gas temperatures. Blowdown rates can be adjusted to manufacturers specifications, reducing energy loss from heat in the liquid blowdown stream.

Stack Gas Temperature Limits

Regulation 9-7 proposes stack gas temperature limits that would become effective on January 1, 2011. The rule would limit stack gas temperatures in firetube boilers or steam generators to no more than 100^{o}F over the steam or water temperature for gaseous or

non-gaseous fuel or 250°F over the ambient temperature for gaseous fuel or 300°F over the ambient temperature for non-gaseous fuel. The stack gas temperature in watertube boilers and steam generators would be limited to no more than 150°F in over the steam or water temperature for gaseous and non-gaseous fuel, or to the same temperature increments over the ambient temperature as firetube boilers. This requirement applies to boilers and steam generators, but not to process heaters.

Periodic Monitoring

To ensure that heaters rated at 10 MMBtu/hr or more operate in compliance with Regulation 9-7, periodic monitoring of these devices will be required.

PROPOSED METHOD OF CONTROL

Emission Mechanisms and Controls

The primary products of any combustion process are water vapor (H_2O) and the greenhouse gas carbon dioxide (CO_2). Because CO_2 is a necessary product of combustion, the only way to reduce CO_2 emissions from a combustion process without reducing the output of useful energy is to increase the thermal efficiency of the process, thereby reducing the fuel consumption rate.

In addition, all combustion processes produce all of the specific pollutants regulated by the Air District: carbon monoxide (CO), nitrogen oxides (NOx), sulfur oxides (SOx), volatile organic compounds (VOCs) and particulate matter. CO and NOx emissions are the focus of Regulation 9-7 and Control Measure SS 12. Emissions of SOx, VOCs and particulate matter are negligible compared to those of NOx, CO and CO_2 when natural gas fuel is used.

NOx Emissions

In addition to fuel, combustion requires oxygen, so that carbon in the fuel can be oxidized to CO_2 and hydrogen in the fuel to H_2O. Because ambient air is used as an oxygen source, and because ambient air contains almost four times as much nitrogen gas (N_2) as oxygen gas (O_2), N_2 gas is exposed to the high temperatures of the combustion process. Some of this N_2 gas is oxidized into NO and NO_2 (collectively known as NOx) and emitted in the combustion exhaust stream. This emitted NOx is known as “thermal NOx” because its formation depends on exposure to combustion temperatures – higher combustion temperatures and longer exposure result in a greater NOx formation rate and higher concentrations of NOx in the exhaust stream.

In addition, all common fuels contain elemental nitrogen (N) or N_2 that is also oxidized in the combustion process. Natural gas contains very little nitrogen, while refined fuel oils, such as diesel, can contain significant concentrations of elemental nitrogen which can account for as much as half of the overall NOx emissions when standard fuel oils are burned. The emitted NOx that results from nitrogen in the fuel is known as “fuel NOx”.

NOx Controls

Because "thermal NOx" and "fuel NOx" are created through independent mechanisms, NOx emission controls may be designed to reduce thermal NOx formation, to reduce fuel NOx formation, or to reduce the concentration of previously-formed fuel and thermal NOx after it reaches the exhaust stream (post-combustion control).

The nitrogen content of pipeline natural gas is limited by federal Department of Energy standards (four percent by volume). The nitrogen content of diesel fuel, which is the only non-gaseous fuel in significant use in the Bay Area, is not explicitly limited by either state or federal standards. However, virtually all diesel fuel marketed in California since 2006 complies with "ultra low-sulfur diesel" (ULSD) standards that limit sulfur content to 15 ppmv by weight and the processes used to remove sulfur from diesel also remove nitrogen. This nitrogen removal is so effective that the amount of fuel NOx created in diesel fuel combustion may also be considered to be negligible compared to the amount of thermal NOx. Therefore, only thermal NOx controls are considered in the proposed amendments to Regulation 9-7.

Thermal NOx emissions can be reduced by lowering the average combustion temperature and by eliminating combustion "hot spots". "Low-NOx burners" achieve a lower average combustion temperature by creating a larger flame which dilutes the flame energy over a larger volume, or by performing combustion in more than one stage. In staged combustion, only partial combustion occurs in the first stage because either the oxygen or fuel concentration is restricted. The exhaust gases from the first stage proceed to subsequent stages where combustion is allowed to proceed by increasing the concentration of the restricted component (oxygen or fuel). The combustion temperature of the second and subsequent stages is reduced because some of the exhaust gases from the first stage are inert and will not burn. Low-NOx burners may also limit the amount of "excess air" used. Heaters normally operate with some degree of "excess air" beyond that which is theoretically required for complete fuel combustion in order to ensure that fuel is not wasted and to prevent uncontrolled detonation of unburned fuel outside of the combustion zone. However, the greater the amount of excess air, the more nitrogen and oxygen is available to form NOx. Limiting the level of excess air reduces the potential amount of NOx that can form, while improving combustion efficiency. Hot spots in the combustion zone may be minimized by thoroughly mixing fuel and combustion air upstream of the burner. Low-NOx burners, by themselves, will reduce NOx emissions by at least 10 percent and as much as 50 percent compared to basic burners, and typically will not reduce overall combustion efficiency. However, low-NOx burners usually create a longer flame, so some existing heaters may not have sufficient space to allow such a burner to be retro-fitted. If a retrofit is possible, the maximum firing capacity of the device may have to be reduced, possibly to an unacceptable level, to accommodate the longer flame. Burners that are capable of NOx concentrations of 15 ppmv or less are referred to as "ultra low-NOx 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. The exhaust gas, while hot, is cooler than the combustion temperature, so the use of FGR reduces the average flame temperature. Also, the diverted flue gas will have a depleted oxygen content compared to ambient air, so will also lower the level of excess oxygen available to form NOx. FGR, by itself, will reduce NOx emissions by as much as 80 percent, but is most commonly used in conjunction with low-NOx burners. It is less likely that a given burner can be successfully retrofitted with FGR than with a low-NOx burner because an FGR system must not only be compatible with the burner assembly, but may also have significant space requirements for ductwork to return a portion of the exhaust to the combustion chamber and a blower. State-of-the-art ultra low-NOx burner systems have been able to incorporate an "induced FGR" technique, that draws firebox air directly into the nozzle and mixes it with the fuel, rather than draw from the stack. There is no need for external fans or ductwork with these systems.

A technique similar to FGR is the injection of water or steam into the combustion zone to lower combustion temperature. This technique can cause a significant loss of efficiency and is typically used only on the largest heaters in conjunction with low NOx burners. This was the first type of NOx control, now replaced by ultra low-NOx burners, that reach low NOx levels with dry air.

NOx emissions can also be reduced with add-on controls that convert previously-formed NOx to N_2 by reacting NOx with ammonia (NH_3), with or without the use of a catalyst. These post-combustion controls are SCR and SNCR systems. NOx catalysts operate well only in a narrow temperature band, so SCR systems are not used in "load-following" 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. As previously shown in Table 1, only five of these systems have been installed on heaters subject to Regulation 9-7, and in each case these devices were subject to stringent best available control technology (BACT) requirements of Regulation 2. SCR and SNCR systems are used on a number of other combustion devices in the District, primarily gas turbines and large stationary internal combustion engines. They are also in use in petroleum refineries to control NOx from boilers and process heaters which are subject to a separate District rule, Regulation 9-10.

In general, compliance with the current NOx standards in Regulation 9-7 has been achieved with low-NOx burners or FGR, or both, for all categories of boilers except the largest, those over 75 MMBtu/hr.

CO Emissions and Controls

CO is produced by the incomplete oxidation of carbon in a fossil fuel to CO rather than to CO_2. Because the Air District is in attainment status with all state and federal ambient air quality standards for CO, Regulation 9-7 attempts to limit the concentration of CO in the exhaust stream of combustion processes to a reasonable level (400 ppmvv), 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 standard. In fact, new low-NOx burner designs minimize CO to far lower levels than 400 ppmvv.

The most common NOx control strategies, which limit NOx formation by limiting combustion temperature, tend to also limit complete oxidation of carbon to CO_2, thereby increasing the CO formation rate. In order to maintain CO emission levels below 400 ppmv, no control technology is required. Instead, the NOx control technology must be implemented in a way that does not result in an excessive CO formation rate.

Greenhouse Gas Emissions and Controls

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 (H_2O) and the greenhouse gas carbon dioxide (CO_2). For example, when methane (CH_4), the primary constituent of natural gas, is burned, the reaction proceeds as follows:

$CH_4 + 2(O_2) \rightarrow CO_2 + 2(H_2O)$

Thus, CO_2 is not a pollutant that occurs in relatively low concentrations as a by-product of the combustion process; CO_2 is a necessary combustion product of any fuel containing carbon. Therefore, attempts to reduce emissions of greenhouse gases from combustion focus on increasing energy efficiency – consuming less fuel to provide the same useful energy output. The most efficient boilers generally operate at no more than 85 percent overall efficiency. In other words, 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,
- 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. As previously discussed under "NOx Controls", above, reducing excess air to the minimum level necessary for complete fuel combustion, with a reasonable safety margin, is a very effective way to control NOx 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.

The proposed amendments reduce CO2 emissions.

POTENTIAL EMISSION REDUCTIONS

For heaters rated between 2 and 10 MMBtu/hr, an emission limit of 30 ppmv will be established. There are 311 of these devices permitted in the Air District, but the total number is unknown since most are not subject to permit requirements. District staff used various sources to estimate the total number of these small boilers, including commercial gas usage data, estimates from boiler service companies and a review of San Francisco's boiler database. Although there is no existing standard for the smallest size category in Regulation 9-7, an emission concentration of 78 ppmv would be typical for a heater of this size with no emission controls, based on U.S. EPA's AP-42 document.

For heaters rated between 5 and 20 MMBtu/hr, the NOx emission limit will be reduced from 30 ppmv to 15 ppmv. All heaters of 10 MMBtu/hr and greater require permits in the Air District if fired on gaseous fuel. Heaters fired on non-gaseous fuel or with dual-fuel capability require permits if they are at least 1 MMBtu/hr. There are 164 of these devices currently permitted.

The proposed amendments to Regulation 9-7 will reduce the NOx emission limit that is applicable to heaters rated from 20 MMBtu/hr up to 75 MMBtu/hr from 30 ppmv to 9 ppmv. There are currently 125 of these devices permitted.

Finally, Regulation 9-7 proposes to reduce the allowable NOx emission limit on the largest heaters, those over 75 MMBtu/hr, to 5 ppmv. There are seven of these devices.

Most heaters that will be subject to Regulation 9-7 (those rated between two and 20 MMBtu/hr) will have their existing emission concentration limit or existing average emission level reduced by about 50 percent, although some of the heaters in each size range will probably be exempt from the proposed concentration limits because of low annual fuel use. The largest heaters (rated over 20 MMBtu/hr) will have their existing emission concentration limit reduced by 70 percent, although the emission reductions may be less to the extent that these devices already operate at emission concentrations less than 30 ppmv. Load following devices will be limited to a NOx concentration of 15 ppmv, for units of 20 MMBtu/hr or larger.

Therefore, as a preliminary estimate, it appears that the proposal will reduce emissions by about 50 percent from the new heaters that will become subject to Regulation 9-7, and also reduce emissions from already-controlled heaters by an additional 50 percent. The emissions from newly regulated heaters would be reduced by about 1.36 ton/day, and the emissions from currently controlled heaters by about 1.75 ton/day, for a total of approximately 3.1 ton/day of NOx reduced.

Other Impacts – Greenhouse Gases

Carbon dioxide, the greenhouse gas emitted by heaters, will be reduced by the proposed amendments to Regulation 9-7. The requirements for heater insulation, inspections and tune-ups, and stack gas temperature limits will be reduced because these measures reduce fuel usage. Consequently, NOx emissions, proportional to the amount of fuel burned, will also be reduced.

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.

The facilities affected by the proposed rule amendments are located within the jurisdiction of the Bay Area Air Quality Management District (see Figure 1).

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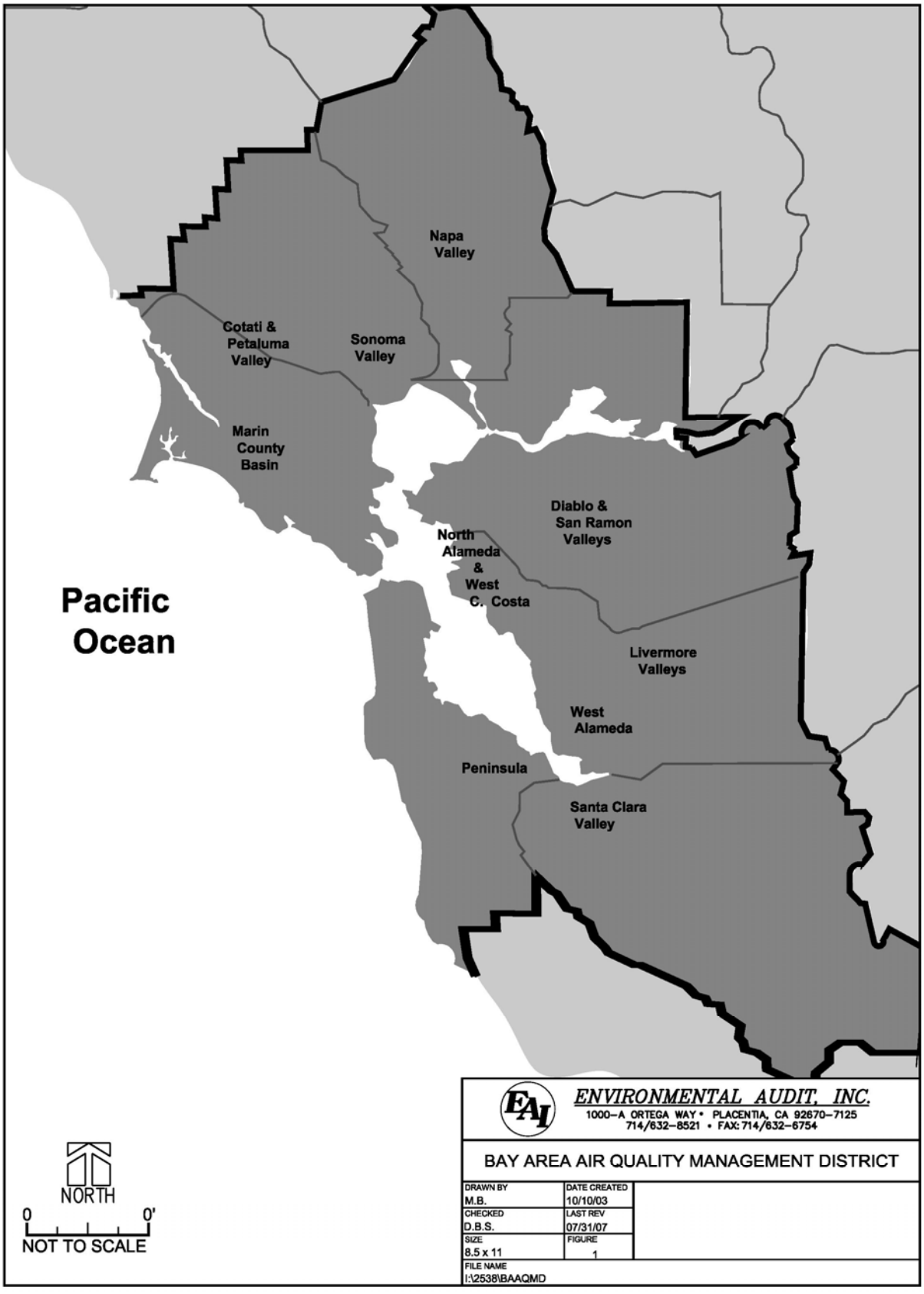
Napa Valley
Cotati & Petaluma Valley
Sonoma Valley
Marin County Basin
Diablo & San Ramon Valleys
North Alameda & West C. Costa
Pacific Ocean
Livermore Valleys
West Alameda
Peninsula
Santa Clara Valley
NORTH
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NOT TO SCALE
ENVIRONMENTAL AUDIT, INC.
1000-A ORTEGA WAY • PLACENTIA, CA 92670-7125
714/632-8521 • FAX: 714/632-6754
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
DRAWN BY M.B.
DATE CREATED 10/10/03
CHECKED D.B.S.
LAST REV 07/31/07
SIZE 8.5 x 11
FIGURE 1
FILE NAME I:\2538\BAAQMD

Chapter 3

Environmental Checklist

ENVIRONMENTAL CHECKLIST FORM

1. Project Title:	Bay Area Air Quality Management District (BAAQMD) Proposed Amendments to Regulation 9, Rule7.
2. Lead Agency Name and Address:	Bay Area Air Quality Management District 939 Ellis Street San Francisco, California 94109
3. Contact Person and Phone Number:	Julian Elliot, Planning and Research Division 415/749-4705 or jelliot@baaqmd.gov
4. 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.
5. Project Sponsor's Name and Address:	Bay Area Air Quality Management District 939 Ellis Street San Francisco, California 94109
6. General Plan Designation:	The rule amendments apply to boilers, steam generators, and process heaters that are used in industrial, institutional or commercial applications.
7. Zoning	The rule amendments apply to boilers, steam generators, and process heaters with a rated heat input greater than 2 mmBtu/hr excluding units used in petroleum refineries, by public electric utilities or qualifying small power production facilities, some waste heat recovery boilers, kilns, ovens, and furnaces for drying, baking, heat treating, cooking, calcining, or vitrifying which are generally found in industrial and commercial zones.
8. Description of Project	See "Background" in Chapter 2.
9. Surrounding Land Uses and Setting	See "Affected Area" in Chapter 2.
10. Other Public Agencies Whose Approval Is Required	None

Environmental Factors Potentially Affected:

The environmental factors checked below would potentially be affected by this Project (i.e., the project would involve one impact that is a "Potentially Significant Impact"), as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☐ Utilities/Service Systems	☐ Mandatory Findings of Significance	

Determination:

On the basis of this initial evaluation:

☑ I find the proposed project COULD NOT have a significant effect on the environment, and that a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be significant effects in this case because revisions to 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 an impact on the environment that is "potentially significant" or "potentially significant unless mitigated" 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 ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

_____ _____

Printed Name For

		Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less-than-Significant Impact	No Impact
I.	**AESTHETICS.**				
	Would the project:				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	☐	☐	☐	☑
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☑
d)	Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles), so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses.

The proposed rule amendments affect heaters with a heat input of 2 mmBtu/hr or more. These types of heaters are most often found in industrial, institutional and commercial applications. Rule amendments for heaters are expected to be located in commercial or industrial areas throughout the Bay Area. Scenic highways or corridors are generally not located in the vicinity of commercial or industrial areas.

Regulatory Background

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

Discussion of Impacts

I a-d. The proposed amendments to Regulation 9-7 would further reduce NOx emissions from natural gas-fired heaters 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 the affected facilities, 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 and or FGR which would not be visible to surrounding areas. Most of the heaters affected by the proposed rule amendments are expected to be located with industrial or commercial areas, which are not typically located in areas with scenic vistas. The proposed amendments to Regulation 9-7 are not expected to require substantial construction of any major new structures that would be visible to areas outside of the facilities, and are not expected to result in adverse aesthetic impacts. A few facilities (an estimated seven) may require new air pollution control equipment such as SCR or SNCR which could be visible to surrounding areas. Once completed, most of the modifications are not expected to be visible. Therefore, the installation of new equipment is not expected to generate significant adverse impacts on aesthetics. The proposed amendments to Regulation 9-7 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 9-7.

		Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE 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. Would the project:					
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☑
b)	Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?	☐	☐	☐	☑
c)	Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. Some of these agricultural lands are under Williamson Act contracts.

The areas with heaters affected by the proposed rule amendments are primarily located in industrial, institutional, or commercial areas throughout the Bay Area. Agricultural resources are generally not located in the vicinity of industrial, institutional or commercial areas.

Regulatory Background

Agricultural 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-c. The proposed amendments to Regulation 9-7 would further reduce NOx emissions from natural gas-fired heaters in order to reduce ozone levels in the Bay Area and reduce transport of air pollutants to neighboring air basins. Most facilities are expected to comply with Regulation 9-7 by using either low NOx burners, flue gas recirculation, or both, thus reducing combustion temperatures which reduces the production of NOx. Some of the largest heaters would require SCR. The proposed amendment will require installation of new units which use these technologies and replacement of or retrofitting old units. These changes would be made within existing structures, or in new structures which are being built within approved parcels controlled by a General Plan. No development outside of existing facilities would be required by the proposed amendments to Regulation 9-7.

Based upon these considerations, no significant adverse impacts to agricultural 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
III. AIR QUALITY				
When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☐	☑
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☑
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☑
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☑
f) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	☐	☐	☐	☑

Setting

Meteorological Conditions

The summer climate of the West Coast is dominated by a semi-permanent high centered over the northeastern Pacific Ocean. Because this high pressure cell is quite persistent, storms rarely affect the California coast during the summer. Thus the conditions that persist along the coast of California during summer are a northwest air flow and negligible precipitation. A thermal low pressure area from the Sonoran-Mojave Desert also causes air to flow onshore over the San Francisco Bay Area much of the summer.

In winter, the Pacific High weakens and shifts southward, upwelling ceases, and winter storms become frequent. Almost all of the Bay Area's annual precipitation takes place in the November through April period. During the winter rainy periods, inversions are weak or nonexistent, winds

are often moderate and air pollution potential is very low. During winter periods when the Pacific high becomes dominant, inversions become strong and often are surface based; winds are light and pollution potential is high. These periods are characterized by winds that flow out of the Central Valley into the Bay Area and often include tule fog.

Topography

The San Francisco Bay Area is characterized by complex terrain consisting of coastal mountain ranges, inland valleys, and bays. Elevations of 1,500 feet are common in the higher terrain of this area. Normal wind flow over the area becomes distorted in the lower elevations, especially when the wind velocity is not strong. This distortion is reduced when stronger winds and unstable air masses move over the areas. The distortion is greatest when low level inversions are present with the surface air, beneath the inversion, flowing independently of the air above the inversion.

Winds

In summer, the northwest winds to the west of the Pacific coastline are drawn into the interior through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately to the south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more nearly from the west as they stream through the Golden Gate. This channeling of the flow through the Golden Gate produces a jet that sweeps eastward but widens downstream producing southwest winds at Berkeley and northwest winds at San Jose; a branch curves eastward through the Carquinez Straits and into the Central Valley. Wind speeds may be locally strong in regions where air is channeled through a narrow opening such as the Carquinez Strait, the Golden Gate, or San Bruno Gap.

In winter, the Bay Area experiences periods of storminess and moderate-to-strong winds and periods of stagnation with very light winds. Winter stagnation episodes are characterized by outflow from the Central Valley, nighttime drainage flows in coastal valleys, weak onshore flows in the afternoon and otherwise light and variable winds.

Temperature

In summer, the distribution of temperature near the surface over the Bay Area is determined in large part by the effect of the differential heating between land and water surfaces. This process produces a large-scale gradient between the coast and the Central Valley as well as small-scale local gradients along the shorelines of the ocean and bays. The winter mean temperature high and lows reverse the summer relationship; daytime variations are small while mean minimum nighttime temperatures show large differences and strong gradients. The moderating effect of the ocean influences warmer minimums along the coast and penetrating the Bay. The coldest temperatures are in the sheltered valleys, implying strong radiation inversions and very limited vertical diffusion.

Inversions

A primary factor in air quality is the mixing depth, i.e., the vertical dimension available for dilution of contaminant sources near the ground. Over the Bay Area, the frequent occurrence of temperature inversions limits this mixing depth and consequently limits the availability of air for dilution. A temperature inversion may be described as a layer or layers of warmer air over cooler air.

Precipitation

The San Francisco Bay Area climate is characterized by moderately wet winters and dry summers. Winter rains (December through March) account for about 75 percent of the average annual rainfall; about 90 percent of the annual total rainfall is received in November to April period; and between June and September, normal rainfall is typically less than 0.10 inches. Annual precipitation amounts show greater differences in short distances. Annual totals exceed 40 inches in the mountains and are less than 15 inches in the sheltered valleys.

Pollution Potential

The Bay Area is subject to a combination of physiographic and climatic factors which result in a low potential for pollutant buildups near the coast and a high potential in sheltered inland valleys. In summer, areas with high average maximum temperatures tend to be sheltered inland valleys with abundant sunshine and light winds. Areas with low average maximum temperatures are exposed to the prevailing ocean breeze and experience frequent fog or stratus. Locations with warm summer days have a higher pollution potential than the cooler locations along the coast and bays.

In winter, pollution potential is related to the nighttime minimum temperature. Low minimum temperatures are associated with strong radiation inversions in inland valleys that are protected from the moderating influences of the ocean and bays. Conversely, coastal locations experience higher average nighttime temperatures, weaker inversions, stronger breezes and consequently less air pollution potential.

Air Quality

Criteria Pollutants

It is the responsibility of the BAAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter less than 10 microns in diameter (PM10), particulate matter less than 2.5 microns in diameter (PM2.5), sulfur dioxide (SO_2) and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride.

The state and national ambient air quality standards for each of these pollutants and their effects on health are summarized in Table 3-1. The BAAQMD monitors levels of various criteria pollutants at 24 monitoring stations. The 2006 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 Air District was created in 1955. Ambient concentrations of air pollutants and the number of days on which the region exceeds air quality standards have fallen dramatically (see Table 3-3). The Air District is in attainment of the State and federal ambient air quality standards for CO, nitrogen oxides (NOx), and sulfur dioxides (SO_2). The Air District is not considered to be in attainment with the State PM10 and PM2.5 standards.

The 2006 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, NO_2, and SO_2. The federal 8-hour ozone standard was exceeded 12 days in the District in 2006, while the state standard was exceeded on 22 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 18 days in 2006 in the District, most frequently in the Eastern District (Livermore) (see Table 3-2).

All monitoring stations were in compliance with the federal PM10 standards. The California PM10 standards were exceeded on 15 days in 2006, most frequently in San Jose. The Air District exceeded the federal PM2.5 standard on ten days, most frequently in San Jose, in 2006 (see Table 3-2).

TABLE 3-1

Federal and State Ambient Air Quality Standards

	STATE STANDARD	FEDERAL PRIMARY STANDARD	MOST RELEVANT EFFECTS
AIR POLLUTANT	CONCENTRATION/ AVERAGING TIME	CONCENTRATION/ AVERAGING TIME	
Ozone	0.09 ppm, 1-hr. avg. > 0.070 ppm, 8-hr	0.075 ppm, 8-hr avg. >	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr avg. > 20 ppm, 1-hr avg. >	9 ppm, 8-hr avg.> 35 ppm, 1-hr avg.>	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.25 ppm, 1-hr avg. >	0.053 ppm, ann. 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-hr avg.>	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM10)	20 $\mu g/m^3$, annarithmetic mean > 50 $\mu g/m^3$, 24-hr average>	50 $\mu g/m^3$, annual arithmetic mean > 150 $\mu g/m^3$, 24-hr avg.>	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Suspended Particulate Matter (PM2.5)	12 $\mu g/m^3$, annual arithmetic mean>	15 $\mu g/m^3$, annual arithmetic mean> 35 $\mu g/m^3$, 24-hour average>	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.
Sulfates	25 $\mu g/m^3$, 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 $\mu g/m^3$, 30-day avg. >=	1.5 $\mu g/m^3$, calendar quarter>	(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 Polution Summary - 2006

MONITORING STATIONS	OZONE						CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM_{10}				$PM_{2.5}$				
	Max 1-hr	Cal Days	Max 8-hr	Nat Days	Cal Days	3-Yr Avg	Max 1-hr	Max 8-hr	Nat/ Cal Days	Max 24-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)			(ppb)			(μm^3)				(μm^3)				
Napa	96	1	72	0	2	60	3.5	2.8	0	3.5	11	0	-	-	-	21.9	52	0	1	-	-	-	-	-
San Rafael	89	0	58	0	0	50	2.6	1.5	0	2.6	14	0	-	-	-	18.1	68	0	1	-	-	-	-	-
Santa Rosa	77	0	58	0	0	47	2.4	1.7	0	2.4	11	0	-	-	-	18.8	90	0	2	59.0	1	28.7	9.2	8.3
Vallejo	80	0	69	0	0	57	3.7	2.9	0	3.7	12	0	4	1.0	0	19.8	50	0	0	42.2	1	35.6	9.8	10.2
Coast/Central Bay																								
Richmond	-	-	-	-	-	-	-	-	-	-	-	-	6	1.6	0	-	-	-	-	-	-	-	-	-
San Francisco	53	0	46	0	0	45	2.7	2.1	0	107	16	0	6	1.3	0	22.9	61	0	3	54.3	3	30.9	9.7	9.7
San Pablo	61	0	50	0	0	48	2.5	1.4	0	55	13	0	5	1.6	0	21.3	62	0	2	-	-	-	-	-
Eastern District																								
Bethel Island	116	9	90	1	14	73	1.3	1.0	0	44	8	0	7	2.1	0	19.4	84	0	1	-	-	-	-	-
Concord	117	8	92	4	14	74	1.7	1.3	0	47	11	0	7	0.8	0	18.5	81	0	3	62.1	5	35.0	9.3	9.7
Crockett	-	-	-	-	-	-	-	-	-	-	-	-	8	1.8	0	-	-	-	-	-	-	-	-	-
Fairfield	106	3	87	1	8	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Livermore	127	13	101	5	15	80	3.3	1.8	0	64	14	0	-	-	-	21.8	69	0	3	50.8	3	33.5	9.8	9.7
Martinez	-	-	-	-	-	-	-	-	-	-	-	-	7	1.9	0	-	-	-	-	-	-	-	-	-
Pittsburg	105	3	93	1	10	70	3.3	1.9	0	52	11	0	9	2.4	0	19.9	59	0	2	-	-	-	-	-
South Central Bay																								
Fremont	102	4	74	0	3	60	2.9	1.8	0	63	15	0	-	-	-	20.0	57	0	1	43.9	2	30.3	10.3	9.6
Hayward	101	2	71	0	1	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redwood City	85	0	63	0	0	53	5.5	2.4	0	69	14	0	-	-	-	19.8	70	0	2	75.3	1	29.4	9.6	9.2
San Leandro	88	0	66	0	0	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara Valley																								
Gilroy	120	4	101	2	8	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Gatos	116	7	87	4	11	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose Central	118	5	87	1	5	63	4.1	2.9	0	74	18	0	-	-	-	21.0	73	0	2	64.4	6	38.5	10.8	11.4
San Jose, Tully Rd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35.0	106	0	13	30.6	0	-	-	-
San Martin	123	7	105	5	11	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunnyvale	106	3	78	0	1	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Days over Standard		**18**		**12**	**22**				**0**			**0**			**0**			**0**	**15**		**10**			

(ppm) = parts per million, (pphm) = parts per hundred million, (ppb) = parts per billion

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	1-Hr		8-Hr		1-Hr	24-Hr		24-Hr*		24-Hr**
	Nat	Cal	Nat	Nat	Cal	Nat	Cal	Cal	Nat	Cal	Nat	Cal	Nat
1995	11	28	-	0	0	0	0	0	0	0	0	7	-
1996	8	34	-	0	0	0	0	0	0	0	0	3	-
1997	0	8	-	0	0	0	0	0	0	0	0	4	-
1998	8	29	16	0	0	0	0	0	0	0	0	5	-
1999	3	2	9	0	0	0	0	0	0	0	0	12	-
2000	3	12	4	0	0	0	0	0	0	0	0	7	1
2001	1	15	7	0	0	0	0	0	0	0	0	10	5
2002	2	16	7	0	0	0	0	0	0	0	0	6	5
2003	1	19	7	0	0	0	0	0	0	0	0	6	0
2004	0	7	0	0	0	0	0	0	0	0	0	7	1
2005	0	9	1	0	0	0	0	0	0	0	0	6	0
2006	0	18	12	0	0	0	0	0	0	0	0	15	10

* PM10 is sampled every sixth day – actual days over standard can be estimated to be six times the numbers listed.
** 2000 is the first full year for which the Air District measured PM2.5 levels.

Toxic Air Pollutants

Table 3-4 (BAAQMD, 2007) contains a summary of ambient air toxics monitoring data of TACs measured at monitoring stations in the Bay Area by the District in 2003.

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.

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.

The BAAQMD is governed by a Board of Directors composed of publicly-elected officials apportioned according to the population of the represented counties in accordance with California Health and Safety Code section 40221. 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 must 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 9-7 was adopted pursuant to the region's first plan prepared under the CCAA's ozone planning requirements, the Bay Area 1991 Clean Air Plan (CAP). The objectives of the proposed rule amendments are to implement Control Measure SS-12 from the Bay Area 2005 Ozone Strategy in order to help reduce NOx emissions from industrial, institutional, and commercial boilers, steam generators and process heaters and make Regulation 9-7 more stringent. Because the proposed amendments directly implement the control measure, the proposed amendments are in compliance with the local air quality plan and are expected to provide beneficial impacts associated with implementation of the local air quality plan

III b, c, d, and f. Regulation 9-7 was adopted pursuant to the regions's first plan prepared under the CCAA's ozone planning requirements, the Bay Area 1991 Clean Air Plan (CAP). Regulation 9-7 was adopted on September 16, 1992. Control Measure SS-12 in the Bay Area 2005 Ozone Strategy required the BAAQMD to determine if further reductions in NOx emissions from natural gas-fired heaters was feasible. Emissions from industrial, institutional, and commercial boilers, steam generators and process heaters include all the products of combustion. The primary concern with emissions from these boilers, steam generators and process heaters in the Bay Area is NOx. Industrial, institutional, and commercial boilers, steam generators and process heaters also produce CO, SOx, ROG, and PM10 emissions, but the contribution from boilers, steam generators and process heaters for each is relatively insignificant in the total emission inventory for the Bay Area, so no changes are being considered for pollutants other than NOx.

Combustion in industrial, institutional, and commercial boilers, steam generators and process heaters also produces CO2, a growing concern with respect to climate change. NOx is formed from combustion of nitrogen in the fuel (fuel NOx), but the primary source of NOx is from the oxidation of nitrogen in the air (thermal NOx).

NOx: The Bay Area is not yet in attainment of state ozone standards, so the region must implement all feasible measures to reduce the pollutants that form ozone (NOx and ROG). Control Measure SS-12 of the Air District's 2005 Ozone Strategy included consideration of amendments to Regulation 9, Rule 7: *Nitrogen Oxides and Carbon Monoxides from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters.* If adopted as proposed, Regulation 9-7 would regulate NOx emissions from all heaters boilers with heat ratings greater than 2 mmBtu/hr. The emissions from newly regulated heaters would be reduced by approximately 1.36 tons/day, and the emissions from currently controlled heaters by about 1.75 tons/day, for a total of approximately 3.1 tons/day of NOx reduced, providing an environmental benefit.

CO Emissions: CO is produced by the incomplete oxidation of carbon in a fossil fuel to CO rather than to carbon dioxide. Because the Air District is in attainment status with all state and federal ambient air quality standards for CO, Regulation 9-7 attempts to limit the concentration of CO in the exhaust stream of combustion processes 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 standard. The most common NOx control strategies, which limit NOx formation by limiting combustion temperature, tend to also limit complete oxidation of carbon to carbon dioxide, thereby increasing the CO formation rate. In order to maintain CO emission levels below 400 ppm, no control

technology is required. Instead, the NOx control technology must be implemented in a way that does not result in an excessive CO formation rate.

Greenhouse Gas Emissions: It is widely accepted that the accumulation of increasing amounts of greenhouse gases (GHG) in the Earth's atmosphere is a cause of global warming and may result in global climate change. Due to the complexity of conditions and interactions affecting global climate change, it is not possible to predict the specific impact, if any, attributable to GHG emissions associated with a single project. The proposed amendments to Regulation 9, Rule 7 would extend the rule to apply to certain classes of heaters currently not regulated in the District and would generally make the emission limits in the rule more stringent. The proposed amendments also include requirements to maximize energy efficiency among heaters that would be subject the rule. The net effect the proposed amendments would have on GHG emissions will depend upon the technologies applied to meet the new emissions limits and on the effect of the energy efficiency measures proposed in the rule. As explained below, the proposed amendments to Regulation 9, Rule 7 are not anticipated to result in an increase in emissions of GHG.

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 CO_2. CO_2 is not a pollutant that occurs in relatively low concentrations as a by-product of the combustion process; CO_2 is a necessary combustion product of any fuel containing carbon. Therefore, attempts to reduce emissions of greenhouse gases from combustion focus on increasing energy efficiency – consuming less fuel to provide the same useful energy output. 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 NOx 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.

The proposed amendments include measures to maximize the energy efficiency of heaters that would be subject the rule. First, the proposed amendments include a requirement to install insulation on most heaters subject to the rule, with some safety related exceptions, such that exposed surfaces do not exceed 140 degrees Fahrenheit. In addition, the proposed amendments to Regulation 9-7 include an annual tune-up requirement for most heaters subject to the rule, effective in 2009. Finally, the proposed amendments require good heat transfer by setting maximum limits on stack gas temperatures, from 100 to 150 degrees Fahrenheit over the saturated steam or hot water temperature.

Apart from the energy efficiency measures described above, the proposed amendments would affect GHG emissions depending on the means used by heater operators to comply with the proposed emission

limitations. For the proposed NOx emission limits affecting heaters rated from 2 up to 20 MM BTU/hr, and for units rated 75 MM BTU/hr and above, a significant overall loss in efficiency is not expected. In fact, better air-fuel controls on heaters that are required to maintain low NOx levels will increase efficiency in most heaters affected by the proposed amendments.

For some heaters, installation of ultra low-NOx burners in conjunction with fuel-gas recirculation (FGR) may require that the maximum firing capacity of the heater be reduced or may result in an overall loss of efficiency. The heaters most likely to require both these technologies are in the 20 to 75 MM BTU/hr range. The proposed amendments would subject each heater in this range to a NOx emission limit of 9 ppmv, unless the heater is a load-following unit, as defined in the amendments. Under the proposed amendments, load-following units would be subject to a 15 ppmv NOx emission limit. Heaters subject to the proposed 9 ppmv NOx limit may install ultra low-NOx burners in conjunction with FGR, whereas heaters subject to a 15 ppmv limit would be unlikely to utilize FGR. In the District, there are 125 heaters rated between 20 to 75 MM BTU/hr, though many may be subject to the proposed 15 ppmv NOx emission limit rather than the 9 ppmv NOx emission limit because they are load-following units. The 20 to 75 MMBTU/hr heaters with ultra-low NOx burners and flue gas recirculation may require up to 40% of the flue gas to be re-circulated. However, one burner manufacturer states that, with state-of-the-art controls, no more than 15% of flue gas would need to be re-circulated to achieve NOx emissions lower than 9 ppmv.[1] Other boiler and burner manufacturers state that 9 ppmv can be achieved in new heater designs without loss of efficiency.[2][3] Finally, applications are being developed for combined heat and power units, wherein a microturbine provides combustion air and power to run elements of the NOx control system, resulting in an overall net energy decrease. One such system is slated for installation at Hitachi Systems in the Bay Area.[4] Re-circulation of 40% of the flue gas would result in about a 10% loss in overall heater efficiency. If all heaters in this size range were to suffer a 10% loss in efficiency, there would be an increase in CO_2 of 565 tons per day. Re-circulation of 15% of the flue gas would result in less than 5% loss in efficiency.

The energy efficiency measures in the proposed amendments will improve energy efficiency across the entire range of heaters, reducing greenhouse gases. The proposed energy efficiency measures are:

- Insulation requirements for all heaters, such that surfaces, including pipes and ducts, do not exceed 120^{o}F, with some exceptions, to reduce heat loss to the atmosphere;
- Stack gas temperature limits, to ensure good heat transfer within the boiler; and
- Tune-up requirements, to maintain optimal air-fuel ratios.

Insulation can increase energy efficiency in a heater by up to 5%. Over time, insulation degrades, or is removed for heater repairs and servicing and not replaced. Some heaters have inadequate insulation and older heaters may never have been insulated. If all heaters were to be able to increase energy efficiency by 5%, CO_2 emissions would be decreased by 2781 tons per day. Hot stack gas temperatures is an indication of poor heat transfer within the heaters, either as a result of insufficient opportunity for the transference of heated air to water, steam or process fluid; or fouled or corroded heat transfer surfaces. In the first case, heater design is at fault; a replacement heater or the addition of an economizer will improve heat transfer. In

[1] Weideman, Dan, Demonstration of an Ultralow NOx Burner on a Firetube Boiler, ST Johnson Co., Jan.12, 2004, http://www.johnstonboiler.com/fir_burner.php

[2] Connor, S. "Low Emissions and High Efficiency, A Dichotomy?", Cleaver-Brooks, http://www.cbboilers.com/Emissions/Technical%20Articles/Efficiency,%20a%20dichotomy%20S%20Connor.pdf

[3] Delta-NOx Ultra Low NOx Burner Achieves 9 PPM, Coen Company, Inc. July 2005

[4] Castaldini, Carlo, CMC Engineering, telephone conversation and Industrial Technologies Program/Energy Efficiency and Renewable Energy, www1.eere.energy.gov/industry/bestpractices/pdfs/steam3_recoverypdf

the second, cleaning the heat transfer surfaces and maintaining an optimal liquid blowdown rate to keep the transfer surfaces clean will improve heat transfer and lower stack gas temperatures. As a rule of thumb, 1% in overall heater efficiency can be gained for every 40^{o}F reduction in flue gas. Tune-up requirements can increase heater efficiency by up to 10% by optimizing air-fuel ratios. This also ensures that NOx emissions are not increasing beyond the proposed limits. A tune-up will also check blowdown rates, so that heat is not lost from overly frequent blowdowns. If all heaters in the smallest size range, 2 to 10 MM BTU/hr, could increase their efficiency by 10%, CO_2 emissions would be decreased by 4809 tons per day.

It is difficult to assess the overall greenhouse gas impacts of the energy efficiency measures, which reduce CO_2, and the proposed NOx limit for the 20 to 75 MM BTU/hr size category, which may increase CO_2. The reason for this difficulty is that the number of heaters that will opt for the ultra-low NOx burners in conjunction with high flue gas recirculation is unknown because a considerable number are expected to be load-following units, some may opt for SCR, which does not significantly reduce energy efficiency, and some may install advanced controls that may limit the amount of flue gas recirculation needed. Also, the number of heaters that will need insulation is unknown. Most heaters are installed with insulation, but, over time, insulation degrades, and repair or replacement of old insulation could be of considerable value. Finally, the number of heaters that do not now receive annual tune-ups, and thus would benefit from the tune-up requirement, is unknown.

It is likely that the reduction in greenhouse gases from energy efficiency measures, overall, far outweighs a possible increase in greenhouse gases from NOx control equipment in the 20 to 75 MM BTU/hr size category. Air district staff developed a spreadsheet to calculate overall increases or reductions in CO_2 from the proposed amendments based on numbers of heaters that would require insulation and tune-ups, and numbers in the 20 to 75 MM BTU/hr range that would suffer an energy efficiency loss. Staff used a 10% reduction in efficiency for the 20 to 75 MM BTU/hr heaters, a 5% benefit from insulating heaters, and a 10% benefit from tune-ups to heaters. For the purposes of the calculations, staff only input benefit from tune-ups to the smallest size heaters, those in the 2 to 10 MM BTU/hr range. These are the heaters most likely to be in institutional or commercial use, or in places like apartment buildings, office buildings and hotels. The large heaters tend to be in industrial use and staff assumed that, because fuel usages are so great, they would be more likely to be tuned up at least annually. PG&E estimates a 10% to 20% energy efficiency increase from tune-ups, so the 10% benefit used for the calculation is conservative. Also, a variety of sources estimates that insulation can improve a heater's efficiency by 5% to 10%. Five percent has been used for these calculations. All heaters were input at their reported fuel usages, as derived from assumptions made from the District's permitted heater database.

The calculations show that, if 90% of the heaters are already insulated with insulation that has not degraded due to age, and if 90% of the heaters in the smallest size range already have annual tune-ups (as noted above, the calculations assume all larger heaters are tuned up annually), and all the 20 to 75 MM BTU/hr heaters suffer a 10% energy efficiency loss, then there would still be a net CO_2 reduction of 194 tons per day. It is likely that the net reduction of greenhouse gases are much greater, for the reasons described below.

First, based on information gathered from boiler service companies in the District, it is unlikely that 90% of heaters in the District are adequately insulated. Rather, most heaters have had insulation degradation, as described above, so that the majority of heaters could benefit from upgrading insulation.

Second, it is also unlikely that 90% of all heaters have annual inspection and maintenance (tune-ups). Although heaters are inspected periodically for safety, and insurance companies require these inspections, air-fuel optimization is not necessarily a part of these inspections. Many operators in the commercial service sector will not tune-up to maximize efficiency routinely, although larger operators will. The District regularly inspects, and conducts source tests on, heaters rated equal to or greater than 10 MM BTU/hr. In the District's experience, larger units are more likely to be tuned up. However, the effectiveness of air-fuel controllers varies among heaters; generally, newer units equipped with digital controls can more precisely measure air/fuel mixtures, resulting in greater efficiency, than can mechanical controls typically found on older units.

It is probable that the assumption of a 10% energy efficiency reduction from all heaters in the 20 – 75 MM BTU/hr size range is an over-estimate because it is unlikely that all these heaters will suffer a 10% loss in efficiency. As discussed above, technology is available to reduce the energy efficiency loss in this size range. At current high energy costs, it is reasonable to assume that this technology would become more economically attractive. The proposed NOx limit could also be met with other technology, such as SCR. SCR, while generally more expensive than ultra-low NOx burners and FGR, does not significantly degrade efficiency. Finally, a number of heaters are likely load-following units, so would be subject to a less stringent standard.

Researchers are developing what are known as Super Boilers.[5] These devices, currently in the testing stage, have shown energy efficiencies of 94% and NOx emissions of less than 5 ppmv. These technologies should be available as the proposed amendments become mandatory. Operators who choose this technology could ultimately see cost savings over retrofitting and further reduce greenhouse gas emissions.

Table 3-5 shows a range of expected CO_2 reductions from various percentages of heaters that are able to gain energy efficiency if all the 20 to 70 MM BTU/hr heaters were to suffer a 10% energy efficiency loss.

Table 3-5

CO2 Reductions from Insulation and Small Boiler Tune-Ups Including Efficiency Loss, 20 – 75 MM BTU/hr Heaters, Tons/day

	Percentage of heaters that already get annual tune-ups		
Percent heaters already insulated	50% already get annual tune-ups	75% already get annual tune-ups	90% already get annual tune-ups
10% insulated	4342	3140	2418
25% insulated	3925	2723	2001
50% insulated	3230	2027	1306
75% insulated	2534	1332	611
90% insulated	2117	915	194

[5] US Department of Energy, Energy Efficiency and Renewable Energy, Super Boiler, First Generation, Ultra-High Efficiency Firetube Boiler, June, 2007, http://www1.eere.energy.gov/industry/combustion/pdfs/spperboiler.pdf

Finally, the proposed amendments to Regulation 9-7 are expected to require the addition of SCR on an estimated seven facilities with larger heaters. The energy requirements for the use of SCR units is 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 is only expected to be installed at seven industrial facilities that already use electricity and the increase in energy use at these facilities and related greenhouse gas emissions are expected to be negligible.

Therefore, the proposed energy efficiency requirements (insulation, stack gas temperature maxima and tune-ups of heaters) included as part of the amendments to Regulation 9-7 are expected to reduce greenhouse gas emissions to a greater extent than the minimal additional energy use associated with add-on control equipment is expected to increase energy usage.

Based on the above discussion, implementation of the proposed amendments to Regulation 9-7 is expected to result in overall reductions in NOx emissions and no increase in emissions of other air pollutants. The proposed rule amendments would not require increased firing of heaters, boilers and steam generators; therefore, no increases in VOC, PM10, SOx or greenhouse gas emissions are expected. The proposed rule amendment allows an operator to comply with the new standards, at least in part, through energy efficiency, therefore, incentives have been provided that may result in a reduction in emissions of other air pollutants. Based on the above, no significant adverse air quality impacts are expected due to implementation of the proposed rule amendments.

Secondary Particulate Emissions: Although most facilities are expected to comply with the proposed amendments to Regulation 9-7 through installation of low NOx burners and/or FGR, the use of SCR control equipment is also feasible to reduce control equipment to reduce NOx emissions has become a widespread method of complying with SCAQMD NOx control rules. SCR technology uses ammonia as a catalyst. The SCAQMD has reviewed SCR technology in a number of CEQA documents (e.g., Final EIR for Rule 1135, August 1989, SCH No. 88032315 and Final EIR for Rule 1134, August 1989, SCH No. 86121708). The SCAQMD has evaluated potential air quality impacts resulting from secondary particulate formation from ammonia slip emissions. The SCAQMD concluded in the CEQA documents identified above that secondary particulate formation from ammonia slip would not be considered a significant adverse air quality impact if ammonia slip is limited to 10 ppm or less.

Ammonia slip depends on a variety of factors including space velocity, 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 velocity, and maintaining an optimal temperature regime (SCAQMD, 1990). The potential for secondary particulate emissions can be alleviated by limiting ammonia slip to no more than 10 ppm, 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. It is estimated that the reduction in NOX will reduce the formation of secondary particulate matter by 0.5 tons/day. The use of SCR to comply with the proposed amendments to Regulation 9-7 is expected to be limited to seven facilities so that limiting the ammonia slip to 10 ppm or less is expected to limit the potential for secondary particulate emission formation to less than significant, and will be more than offset by the reduction in secondary PM.

Based on the above discussion, implementation of the proposed amendments to Regulation 9-7 is expected to result in overall reductions in NOx and PM2.5 and no increase in emissions of GHG and other air pollutants. The proposed rule amendments would not require increased firing of heaters, boilers and steam generators; therefore, no increases in VOC, PM10, or SOx emissions are expected. Based on the above, no significant adverse air quality impacts are expected due to implementation of the proposed rule amendments.

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 amendment to the rules is a decrease in NOx emissions. Therefore, the cumulative air quality impacts of the proposed rule amendments are expected to be beneficial.

III d. Although most facilities are expected to comply with the proposed amendments to Regulation 9-7 through installation of low NOx burners and/or RFG, the use of SCR control equipment is also feasible to reduce control equipment to reduce NOx emissions has become a widespread method of complying with NOx control rules. SCR technology uses ammonia as a catalyst and can potentially generate ammonia emissions through ammonia slip. Ammonia is regulated as a toxic air contaminant. However, limiting ammonia slip to 10 ppm is expected to minimize the potential exposure to sensitive receptors so that no significant impacts associated with ammonia use is expected.

III e. The proposed project is not expected to result in an increase in odors. The proposed amendments to Regulation 9-7 propose improved technology for reducing NOx emissions from industrial, institutional, and commercial boilers, steam generators and process heaters. Affected facilities are expected to comply by replacing or retrofitting boilers, steam generators and process heaters with low-NOx technologies. While the new technology for boilers, steam generators and process heaters will produce less NOx, they will continue to be fueled with natural gas and LPG which will not lead to any change 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 bouyant 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 9-7 are not expected to be significant. Therefore, no significantly adverse incremental odor impacts are expected due to the proposed rule amendments.

The proposed project is not expected to result in an increase in odors. The proposed amendments to Regulation 9-7 propose improved technology for reducing NOx emissions from heaters. Industrial, institutional, or commercial facilities are expected to comply by upgrading existing equipment with low NOx emitting technology. New units to be installed will be in compliance with the emission standards adopted in the proposed amendment to Regulation 9-7. While the new technology for natural gas-fired heaters will produce less NOx, they will continue to be fueled with the natural gas which will not lead to any change in odors produced during operation. Potential odor impacts from the proposed project are not expected to be significant. Therefore, no significantly adverse incremental odor impacts are expected due to the proposed rule amendments.

Based upon these considerations, the implementation of the proposed rule amendments will provide considerable air quality benefits by reducing NOx emissions and subsequent formation of ozone and by reducing secondary particulate formation. Also, no increase in greenhouse gas emissions is anticipated.

		Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV.	**BIOLOGICAL RESOURCES.** Would the project:				
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☑
e)	Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f)	Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, 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 in industrial, institutional, or commercial areas throughout the Bay Area. The affected areas have been graded to develop various industrial, institutional, or commercial 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 or newly constructed facilities with industrial, institutional, and commercial heaters. Existing heaters will be replaced or upgraded, and new facilities will install the designated equipment required by the proposed amendments to Regulation 9-7. The existing heaters are generally located in industrial and commercial areas, which do not usually include sensitive biological species. The areas have typically been graded and developed, and biological resources, with the exception of landscape species, have generally been removed. Construction activities associated with the proposed amendments to Regulation 9-7 are expected to be limited to the boundaries of existing development 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 rule amendments.

		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 Section 15064.5?	☐	☐	☐	☑
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☐	☐	☑
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☑
d)	Disturb any human remains, including those interred outside a formal cemeteries?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural and open space uses. Cultural resources are defined as buildings, sites, structures, or objects which might have historical architectural, archaeological, cultural, or scientific importance.

The Carquinez Strait represents the entry point for the Sacramento and San Joaquin Rivers into the San Francisco Bay. This locality lies within the San Francisco Bay and the west end of the Central Valley archaeological regions, both of which contain a rich array of prehistoric and historical cultural resources. The areas surrounding the Carquinez Strait and Suisun Bay have been occupied for millennia given their abundant combination of littoral and oak woodland resources.

The areas with natural gas-fired heaters affected by the proposed rule amendments are primarily located in industrial, institutional, or commercial areas throughout the Bay Area. These sites have already been graded to develop industrial, institutional, or commercial facilities and are typically surrounded by uses of similar kind. 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 industrial and commercial heaters. The heaters affected by the proposed rule amendments already exist and are primarily located within the confines of existing industrial, institutional, or commercial facilities. New heaters are expected to be installed in similar areas, and would be compliant with the amendments of the proposed Regulation 9-7. 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 9-7. Therefore, no significant adverse impacts to cultural resources are expected due to the proposed amendments to Regulation 9-7.

Based upon these considerations, no significant adverse impacts to cultural 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
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:	☐	☐	☐	☑
	• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☑
	• Strong seismic groundshaking?	☐	☐	☐	☑
	• Seismic–related ground failure, including liquefaction?	☐	☐	☐	☑
	• 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 expected to be located primarily in residential and commercial areas throughout the Bay Area.

The affected areas with 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 Straight and Suisun Bay. The estuarine sediments found along the shorelines of Solano County are soft, water-saturated mud, peat and loose sands. The organic, soft, clay-rich sediments along the San Francisco and San Pablo Bays are referred to locally as Bay Mud and can present a variety of engineering challenges due to inherent low strength, compressibility and saturated conditions. Landslides in the region occur in weak, easily weathered bedrock on relatively steep slopes.

The San Francisco Bay Area is a seismically active region, which is situated on a plate boundary marked by the San Andreas Fault System. Several northwest trending active and potentially active faults are included with this fault system. Under the Alquist-Priolo Earthquake Fault Zoning Act, Earthquake Fault Zones were established by the California Division of Mines and Geology along "active" faults, or faults along which surface rupture occurred in Holocene time (the last 11,000 years). In the Bay area, these faults include the San Andreas, Hayward, Rodgers Creek-Healdsburg, Concord-Green Valley, Greenville-Marsh Creek, Seal Cove/San Gregorio and West Napa faults. Other smaller faults in the region classified as potentially active include the Southampton and Franklin faults.

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 natural gas-fired heaters affected by the proposed rule amendments already exist and are primarily located within the confines of existing industrial, institutional, or commercial facilities. New heaters are expected to be installed in similar areas, and would be compliant with the amendments of the proposed Regulation 9-7. No new construction activities would be required as a result of adopting the proposed amendments to Regulation 9-7, rather, old equipment would be required to be upgraded with newer technology to lower NOx emissions, while new equipment will meet the requirements of Regulation 9-7 upon installation. New industrial, institutional, or commercial 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 constuction 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.

New industrial, institutional, or commercial development will install low NOx emitting equipment and will be required to obtain building permits, as applicable, for all 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 9-7.

VII b. The natural gas-fired heaters affected by the proposed rule amendments already exist and are primarily located within the confines of existing industrial, institutional, or commercial facilities. New heaters are expected to be installed in similar areas, and would be compliant with the amendments of the proposed Regulation 9-7. The specified equipment will be upgraded with low NOx emitting equipment. No new construction activities would be required due to the adoption of Regulation 9-7. Therefore, the proposed amendments are not expected to result in substantial soil erosion or the loss of topsoil as no major construction activities would be required.

VII c – e. The natural gas-fired heaters that already exist and are located within the confines of existing industrial, institutional, or commercial facilities so no major construction activities are expected. Since the industrial, institutional, or commercial facilities already exist, no additional structures would be constructed 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. Therefore, no adverse significant impacts to geology and soils are expected due to the proposed amendments to Regulation 9-7.

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
VII.	**HAZARDS AND HAZARDOUS MATERIALS.** Would the project:				
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☑	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☑	☐
c)	Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☑	☐
d)	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☑
e)	Be located within an airport land use plan or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f)	Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☑

Setting

Many of the affected 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 and commercial 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 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 includes 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 9-7 will lead to a reduction in NOx emissions from existing heaters at affected facilities thus reducing PM and NOx emissions. About seven facilities could choose to comply by installing SCR technology to reduce NOx emissions. SCRs use ammonia or urea to react with NOx, 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, but city codes and planning agencies in the Bay Area generally require the use of aqueous ammonia. In addition, District permit conditions can also specify the use of aqueous ammonia.

Most affected facilities are expected to comply with the proposed amendments to Regulation 9-7 by installation of low NOx burners and/or FGR. However, a few facilities may comply with add on pollution control units, e.g., SCR. SCR units require ammonia to react with NOx emissions in the exhaust gases to reduce the NOx emissions. 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.

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, aqueous ammonia is regulated under California Health and Safety Code Section 2770.1.

The proposed amendments may require the increased use and storage of ammonia, primarily in industrial/commercial zones. 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. However, anhydrous ammonia is unlikely to be allowed by planning agency conditions, city codes or District permit conditions.

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).

- The Occupational Safety and Health Administration (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 hve 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: 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 use SCR is limited to an estimated seven so no significant increase in the transport of ammonia is expected (about one truck per day). Therefore, the proposed amendments to Rule 9-7 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 industrial, institutional, or commercial 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 affect on hazardous materials nor would the amendment create a significant hazard to the public or environment. Natural gas-fired heaters already exist and are located within the confines of industrial, institutional, or commercial 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 natural gas-fired heaters. The natural gas-fired heaters that already exist are located within the confines industrial or commercial facilities. Once the proposed amendment is implemented, facilities would be expected to comply by replacing or retrofitting process heaters. These changes are expected to be made with the confines of the existing facilities. No development outside of existing facilities is expected to be required by the proposed amendments to Regulation 9-7. Therefore, no significant adverse impacts on an air port 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 industrial, institutional, or commercial facilities. The natural gas-fired heaters which already exist are located within the confines of existing industrial or commercial facilities. The proposed rule amendments neither require, nor are likely to result in, activities that would impact the emergency response plan, and new industrial, institutional, or commercial development would consider emergency response as part of the City/County General Plans prior to approval. Therefore, 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 natural gas-fired heaters affected by the proposed amendments that already exist are located within the confines of existing industrial or commercial facilities. No increase in exposure to wildfires will occur due to the proposed amendments to Regulation 9-7.

Based upon these considerations, no significant adverse hazards and hazardous materials 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
VIII. HYDROLOGY AND WATER QUALITY. Would the project:					
a)	Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☑
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☑
c)	Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	☐	☐	☐	☑
d)	Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	☐	☐	☐	☑
e)	Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☑
f)	Otherwise substantially degrade water quality?	☐	☐	☐	☑
g)	Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☑
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☑
j)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, 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 industrial, institutional, or commercial facilities affected by the proposed rule amendments are located throughout the Bay Area. Affected areas are generally surrounded by other industrial, institutional, 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 constituents 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/water quality resources are anticipated from the proposed rule amendments, which would apply primarily to existing industrial, institutional, or commercial 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 9-7.

VIII b. The natural gas-fired heaters boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing industrial, institutional, or commercial facilities. As equipment is upgraded, and new equipment installed, low NOx emitting units will be in place. The 2005 Ozone Strategy addressed the impacts of control measures on water demand. The proposed amendments to Regulation 9-7 are not expected to require additional water use. The NOx control technologies (i.e., low NOx burners, FGR, and SCR equipment) does 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 9-7.

VIII c - f. Industrial and commercial facilities are expected to comply with the proposed amendments to Regulation 9-7 by upgrading or installing low NOx emitting natural gas-fired heaters. All affected equipment is primarily located in industrial or commercial areas, where storm water drainage has been controlled and no construction activities outside of the existing facilities are 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 heaters affected by the proposed rule amendments are primarily located within industrial and commercial areas. No major construction activities outside the boundaries of existing facilities are expected due to the adoption of the proposed amendments to Regulation 9-7. Industrial and commercial facilities are generally located to avoid flood zone areas and other areas subject to flooding. The proposed amendments

are not expected to require additional 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 industrial and commercial facilities affected by the proposed rule amendments are located within industrial and commercial areas. No major construction activities are expected outside of the boundaries of the existing facilities due to the adoption of the proposed amendments to Regulation 9-7. 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 rule amendments.

		Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
IX.	**LAND USE AND PLANNING.** Would the project:				
a)	Physically divide an established community?	☐	☐	☐	☑
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to a general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, 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 residential and commercial 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 natural gas-fired heaters affected by the proposed rule amendments already exist and are primarily located within the confines of existing industrial, institutional, or commercial facilities. Industrial, institutional, or commercial facilities are expected to comply with Regulation 9-7 by upgrading or installing low NOx emitting natural gas-fired heaters or NOx control equipment. These changes are expected to be made within the confines of existing facilities as it will generally require modifications to existing heaters or replacement of existing heaters. SCR may be required for compliance at a few facilities but 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 9-7.

Based upon these considerations, no significant adverse impacts to land use are expected due to the proposed rule amendments.

		Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
X.	**MINERAL RESOURCES.** Would the project:				
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b)	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The facilities affected by the proposed rule amendments are primarily located in residential and commercial areas throughout 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 natural gas-fired heaters affected by the proposed rule amendments already exist and are primarily located within the confines of existing industrial and commercial facilities. New heaters and control equipment are expected to be installed in similar areas and 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
XI.	**NOISE.** Would the project:				
a)	Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☑
b)	Expose persons to or generate of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☑
c)	Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☑
d)	Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☑
e)	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 and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑
f)	Be located within the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, 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, institutional, or commercial areas throughout the Bay Area. A majority of the affected areas are surrounded by other industrial, institutional, 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 Plan 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 natural gas-fired heaters affected by the proposed rule amendments already exist and are primarily located within the confines of existing industrial and commercial facilities. The rule amendments impose limitations on the NOx emissions from this equipment. Compliance will be achieved by upgrading or installing low NOx emitting natural gas-fired heaters.

No new construction activities would be required due to the adoption of the proposed amendments to Regulation 9-7. No noise impacts associated with construction would result from adoption of the proposed rule. No increase in noise is expected due to operation of the low NOx emitting equipment. The technologies that are expected to be used to comply with the proposed rule amendment are not expected to result in an increase in noise. Therefore, no adverse significant impacts to noise are expected due to the proposed project.

XI a-d. Owners/operators of facilities affected by the proposed rule amendments would be required to replace, retrofit heaters with low NOx equipment or install pollution control devices. Modifications or changes associated with the implementation of the proposed amendments will take place at existing facilities that are located in industrial and commercial settings. The existing noise environment at each of the affected facilities is typically dominated by noise from existing equipment onsite, vehicular traffic around the facilities, and trucks entering and exiting facility premises. Construction activities for the proposed project may generate some noise associated with the use of construction equipment and construction-related traffic in the event that grading for the installation of new ammonia tanks and SCR unit, for example, is necessary. However, noise from the proposed project is not expected to produce noise in excess of current operations at each of the existing facilities. Depending on the air pollution control technology installed, replaced, or modified, the operations phase of the proposed project may add new sources of noise to the affected facility. Noise increases associated with SCR units are expected to be limited to small motors for air blowers and or pumps. However, it is expected that each facility affected will comply with all existing noise control laws or ordinances. Further, Occupational Safety and Health Administration (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.

XI. e-f. Though some of the facilities affected by the proposed project are located at sites within an airport land use plan, or within two miles of a public airport, the addition of new or modification of existing equipment would not expose people residing or working in the project area to the same degree of excessive noise levels associated with airplanes. All noise producing equipment must comply with local noise ordinances and applicable OSHA or Cal/OSHA workplace noise reduction requirements. Based upon the above considerations, significant noise impacts are not expected from the implementation of the proposed project.

Based upon these considerations, significant noise 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.	**POPULATION AND HOUSING.** Would the project:				
a)	Induce substantial population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	☐	☐	☐	☑
b)	Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
c)	Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, 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 residential and commercial areas throughout the Bay Area.

Regulatory Background

Population and housing growth and resources are generally protected and regulated by the City and/or County General Plans through land use and zoning requirements.

Discussion of Impacts

XII. a. Minor 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 project can draw from the existing labor pool in the local Bay Area. Further, it is not expected that replacing existing equipment with new equipment or installing air pollution control equipment will require new employees during operation of the equipment. In the event that new employees are hired, it is expected that the number of new employees at any one facility would be small. Human population within the jurisdiction of the BAAQMD is anticipated to grow regardless of implementing the proposed project. As a result, the proposed project is 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 and commercial 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 rule amendments.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☑
Police protection?	☐	☐	☐	☑
Schools?	☐	☐	☐	☑
Parks?	☐	☐	☐	☑
Other public facilities?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) 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, institutional, or commercial 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 affected facilities. 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 (about seven). Therefore, the proposed project is not expected to increase the need or demand for additional public services (e.g., fire departments, police departments, schools, parks, 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
XIV. RECREATION. Would the project:					
a)	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.?	☐	☐	☐	☑
b)	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, 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 areas affected by the proposed rule amendments are located in industrial and commercial areas throughout the Bay Area. Public recreational land uses are generally located adjacent 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. 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
XV. TRANSPORTATION/TRAFFIC. Would the project:					
a)	Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☐	☐	☑	☐
b)	Cause, either individually or cumulatively, exceedance of a level-of-service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☑	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑
d)	Substantially increase hazards because of a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☐	☑
e)	Result in inadequate emergency access?	☐	☐	☐	☑
f)	Result in inadequate parking capacity?	☐	☐	☐	☑
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	☐	☐	☐	☑

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 2000. The portion of commuters that carpool was about 12.9 percent in 2000. About 3.2 percent of commuters walked to work

in 2000. In addition, other modes of travel (bicycle, motorcycle, etc.), account for 2.2 percent of commuters in 2000 (MTC, 2004). Cars, buses, and commercial vehicles travel about 143 million miles a day (2000) on the Bay Area Freeways and local roads. Transit serves about 1.7 million riders on the average weekday (MTC, 2004).

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. Caltrans constructed a second freeway bridge adjacent and east of the existing Benicia-Martinez Bridge. The new bridge consists of five northbound traffic lanes. The existing bridge was re-striped to accommodate four lanes for southbound traffic. 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 9-7 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. However, the proposed project is not expected to cause a significant increase in traffic relative to the existing traffic load and capacity of the street systems surrounding the affected facilities. 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 operation-related traffic is expected to be minimal. 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 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 siting of each affected facility is expected to be consistent with surrounding land uses and traffic/circulation in the surrounding areas of the affected facilities. Thus, the proposed project is not expected to substantially increase traffic hazards or create incompatible uses at or adjacent to the affected facilities. Aside from the temporary effects due to a slight increase in truck traffic for those facilities that will undergo construction activities during installation or modification of air pollution control equipment, 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. Each affected facility will be required to provide parking for the construction workers, as applicable, either on or within close proximity to each facility. No additional parking will be needed after completion of the construction phase because the work force at each facility is not expected to significantly increase as a result of the proposed project. Therefore, the proposed rule amendments will not result in significant adverse impacts on parking.

XV g. Construction and operation activities resulting from the proposed project 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
XVI. UTILITIES AND SERVICE SYSTEMS. Would the project:					
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☑
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements needed?	☐	☐	☐	☑
e)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☑
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☑
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☑

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, 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 most 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 maintain within the local jurisdiction.

Discussion of Impacts

XVI a, b, d and e. The natural gas-fired heaters affected by the proposed rule amendments already exist and are primarily located within the confines of existing industrial, institutional, or commercial facilities. New heaters are expected to be installed in similar areas, and would be compliant with the amendments of the proposed Regulation 9-7. The proposed rule amendments are not expected to generate additional wastewater generated by the affected industrial, institutional, or commercial facilities. Additionally, no increase in water consumption would be associated with NOx control equipment. Therefore, no impacts on wastewater treatment requirements or wastewater treatment facilities is expected.

XVI c. Industrial, institutional, or commercial facilities are expected to comply by installing NOx control equipment. Construction activities would involve replacing existing heaters or installing air pollution control equipment within the confines of existing facilities. 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 affected the ability of industrial and commercial 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 number 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 the SCR unit. 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 rule amendments.

		Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII.	**MANDATORY FINDINGS OF SIGNIFICANCE.**				
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☑
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☐	☐	☑
c)	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☑

Discussion of Impacts

XVII a. The proposed rule amendments 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 industrial and commercial facilities with heaters , thus providing a beneficial air quality impact and improvement in air quality. As discussed in Section IV, Biological Resources and Section V, Cultural Resources, no significant adverse impacts are expected to biological or cultural resources.

XVII b-c. The proposed amendments are expected to result in emission reductions of NOx from affected industrial and commercial facilities with heaters, thus providing a beneficial air quality impact and improvement in air quality. 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 rule amendments are not expected to have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly. No significant adverse environmental impacts are expected.

Chapter 4

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AGENDA: 12

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Jerry Hill and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: July 17, 2008

Re: Overview of the California Air Resources Board's Draft Scoping Plan Pursuant to AB 32, the California Global Warming Solution Act of 2006.

RECOMMENDED ACTION:

None. For information only.

DISCUSSION

Pursuant to AB 32, the California Global Warming Solution Act of 2006, the California Air Resources Board has prepared a draft Scoping Plan for implementation of AB 32. The Scoping Plan outlines measures for California to achieve AB 32 target for reducing greenhouse gas emissions to 1990 levels by 2020. The Draft Scoping Plan was released for public review and comment on June 26, 2008 and will be considered for adoption in November 2008. Staff will provide an overview of the Scoping Plan including an analysis of recommended measures and their effect on the Bay Area and Air District operations.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Sigalle Michael
Reviewed by: Henry Hilken