



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

BOARD OF DIRECTORS' REGULAR MEETING

November 7, 2007

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

Questions About an Agenda Item

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

Meeting Procedures

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

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

BOARD OF DIRECTORS' REGULAR MEETING A G E N D A

WEDNESDAY
NOVEMBER 7, 2007
9:45 A.M.

BOARD ROOM
7TH FLOOR

CALL TO ORDER

Opening Comments
Roll Call
Pledge of Allegiance
Commendation/Proclamation

Chairperson, Mark Ross
Clerk of the Boards

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.

PROCLAMATION/COMMENDATION

The Board of Directors will recognize Director Patrick Kwok for his outstanding service on the Board of Directors.

CONSENT CALENDAR (ITEMS 1 – 8)

Staff/Phone (415) 749-

1. Minutes of October 3, 2007
M. Romaidis/4965
mromaidis@baaqmd.gov
2. Communications
Information only.
J. Broadbent/5052
jbroadbent@baaqmd.gov
3. Quarterly Report of Air Resources Board Representative
J.Broadbent/5052
jbroadbent@baaqmd.gov
4. 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.

5. Consider Approval of Resolution Authorizing Use of an Optional Benefit with the California Public Employees' Retirement System Pursuant to *Government Code Section 20903*

J.Broadbent/5052

jbroadbent@baaqmd.gov

The Board of Directors will consider approval of resolution authorizing use of an optional benefit with the California Public Employees' Retirement System pursuant to Government Code Section 20903.

6. Set Public Hearing for December 5, 2007 to Consider Adoption of new District Regulation 6, Rule 2: Commercial Cooking Equipment, amendments to Regulation 3: Fees, amendments to Regulation 6: Particulate Matter and Visible Emissions, and Adoption of a CEQA Negative Declaration

H. Hilken/4642

hhilken@baaqmd.gov

Proposed Regulation 6, Rule 2 would regulate chain driven charbroilers at restaurants that purchase over 500 lbs of beef per week and large under-fired charbroilers at restaurants that purchase over 1000 lbs of beef per week. A proposed exemption is provided for those restaurants that do not charbroil at least 80% of the beef purchased. Equipment registration fees, adopted in June, 2007, are proposed to be lowered due to a reduction in expected program costs, and amendments to Regulation 6: Particulate Matter and Visible Emissions renumber and rename the rule.

7. Consider Adjusting the District's Maximum Medical Contribution Declared to California Public Employees' Retirement System (CalPERS)

J.Broadbent/5052

jbroadbent@baaqmd.gov

The Board of Directors will consider approval of the attached resolution adjusting the District's Maximum Medical Contribution declared to CalPERS for management, confidential, represented, and miscellaneous employees and retirees.

8. Consider Approval of Request to Amend Signature Authorization

J.Broadbent/5052

jbroadbent@baaqmd.gov

The Board of Directors will consider approval of staff recommendation to grant Jeffrey M. McKay, Deputy Air Pollution Control Officer authorization to sign orders drawn by the District.

COMMITTEE REPORTS AND RECOMMENDATIONS

9. Report of the **Stationary Source Committee** Meeting of October 29, 2007

CHAIR: S. HAGGERTY

J.

Broadbent/5052

jbroadbent@baaqmd.gov

10. Report of the **Mobile Source Committee** Meeting of October 31, 2007

CHAIR: T. SMITH

J. Broadbent/5052

jbroadbent@baaqmd.gov

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

- A) *Fiscal Year 2007/2008 Transportation Fund for Clean Air (TFCA) Regional Fund grant awards listed in Attachment 1, totaling \$10,348,655; and*
- B) *Reallocation of any funds remaining from the \$1,000,000 in FY 2007/2008 TFCA Regional Funds set aside for clean-air vehicle advanced technology demonstration projects back to the TFCA Regional Fund.*

PRESENTATION

11. Summary of 2007 Ozone Season and Overview of Upcoming Spare the Air Tonight Campaign

G. Kendall/4932

gkendall@baaqmd.gov

Staff will provide a summary of the 2007 Ozone Season, background information on particulate matter for the upcoming winter season, and an overview of the upcoming Spare the Air Tonight campaign.

PUBLIC HEARING

12. Public Hearing to Consider Adoption of Amendments to District Regulation 9 Rule 6: Nitrogen Oxides from Natural Gas-Fired Water Heaters, and Adoption of a CEQA Negative Declaration

H.Hilken/4642

hhilken@baaqmd.gov

Proposed amendments to Regulation 9, Rule 6 would expand the scope of the rule to regulate NOx emissions from larger water heaters and small boilers, include currently exempt mobile home water heaters and commercial spa and pool heaters and establish more stringent NOx emission limits for all affected equipment.

CLOSED SESSION

13. Conference with Legal Counsel: ***Existing litigation***

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

- A) ***Hornblower Cruises and Events v. California Air Resources Board, Bay Area Air Quality Management District, David Burch, et al.***, Superior Court of the County of San Francisco, Case No. CGC-07-464286
- B) ***San Francisco Chapter of the A. Philip Randolph Institute, et al. v. United States Environmental Protection Agency, Bay Area Air Quality Management District, Mark Ross***, United States District Court, Northern District of California, Case No. C 07 4936 JCS

OPEN SESSION

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, November 21, 2007- 939 Ellis Street, San Francisco, CA 94109
18. Adjournment

CONTACT CLERK OF THE BOARDS - 939 ELLIS STREET SF, CA 94109

(415) 749-4965
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.

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

EXECUTIVE OFFICE:
MONTHLY CALENDAR OF DISTRICT MEETINGS

NOVEMBER 2007

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Public Outreach Committee <i>(Meets 1st Thursday every other Month)</i> - CANCELLED	Thursday	1	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Regular Meeting <i>(Meets 1st & 3rd Wednesday of each Month)</i>	Wednesday	7	9:45 a.m.	Board Room
Advisory Council Executive Committee	Wednesday	14	9:00 a.m.	Room 716
Board of Directors Personnel Committee <i>(At the Call of the Chair)</i>	Wednesday	14	9:30 a.m.	4 th Floor Conf. Room
Advisory Council Regular Meeting	Wednesday	14	10:00 a.m.	Board Room
Board of Directors Climate Protection Committee <i>(Meets 3rd Thursday every other Month)</i>	Thursday	15	9:30 a.m.	4 th Floor Conf. Room
Joint Policy Committee	Friday	16	10:00 a.m. – 12:00 p.m.	MTC 101 - 8 th Street Oakland, CA 94607
Board of Directors Executive Committee <i>(At the Call of the Chair)</i>	Monday	19	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Regular Meeting <i>(Meets 1st & 3rd Wednesday of each Month)</i>	Wednesday	21	9:45 a.m.	Board Room
Board of Directors Legislative Committee <i>(Meets 4th Monday of every Month)</i>	Monday	26	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Budget & Finance Committee <i>(Meets 4th Wednesday of each month)</i>	Wednesday	28	9:30 a.m.	4 th Floor Conf. Room

DECEMBER 2007

<u>TYPE OF MEETING</u>	<u>DAY</u>	<u>DATE</u>	<u>TIME</u>	<u>ROOM</u>
Board of Directors Stationary Source Committee <i>(Meets 3rd Monday Quarterly)</i>	Monday	3	9:30 a.m.	Board Room
Board of Directors Regular Meeting <i>(Meets 1st & 3rd Wednesday of each Month)</i>	Wednesday	5	9:45 a.m.	Board Room
Board of Directors Ad Hoc Committee on Port Emissions <i>(At the Call of the Chair)</i>	Thursday	6	9:30 a.m.	4 th Floor Conf. Room

DECEMBER 2007 (Continued)

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Advisory Council Technical Committee <i>(Meets 2nd Monday of each even Month)</i>	Monday	10	9:00 a.m.	Board Room
Advisory Council Air Quality Planning Committee <i>(Meets 2nd Wednesday of each even Month)</i>	Wednesday	12	9:30 a.m.	Board Room
Advisory Council Public Health Committee <i>(Meets 2nd Wednesday of each even Month)</i>	Wednesday	12	1:30 p.m.	Board Room
Board of Directors Stationary Source Committee – Rescheduled to 12/3/07)	Monday	17	9:30 a.m.	Board Room
Board of Directors Regular Meeting <i>(Meets 1st & 3rd Wednesday of each Month)</i>	Wednesday	19	9:45 a.m.	Board Room
Board of Directors Legislative Committee <i>(Meets 4th Monday of every Month)</i>	Monday	24	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Budget & Finance Committee <i>(Meets 4th Wednesday of each Month)</i>	Wednesday	26	9:30 a.m.	4 th Floor Conf. Room
Board of Directors Mobile Source Committee – <i>(Meets 4th Thursday of each Month)</i>	Thursday	27	9:30 a.m.	4 th Floor Conf. Room

mr
10/31/07 (2:01 p.m.)

P/Library/Forms/Calendar/Calendar/Moncal

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Mark Ross and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 24, 2007

Re: Board of Directors' Draft Meeting Minutes

RECOMMENDED ACTION:

Approve attached draft minutes of the Board of Directors meeting of October 3, 2007.

DISCUSSION

Attached for your review and approval are the draft minutes of the October 3, 2007 Board of Directors' meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

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

Draft Minutes: Board of Directors' Regular Meeting – October 3, 2007

Call To Order

Opening Comments: Chair Mark Ross called the meeting to order at 9:51 a.m.

Roll Call: Present: Mark Ross, Chair, , Chris Daly, Erin Garner, Jerry Hill, Carol Klatt, Patrick Kwok, Janet Lockhart, Jake McGoldrick (9:56 a.m.), Michael Shimansky, John Silva, Pamela Torliatt, Gayle B. Uilkema.

Absent: Tom Bates, Harold Brown, Dan Dunnigan, John Gioia, Scott Haggerty, Yoriko Kishimoto, Liz Kniss, Nate Miley, Tim Smith, Brad Wagenknecht.

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

Commendation/Proclamation: There were none.

Public Comment Period: There were none.

Consent Calendar (Items 1 – 6) Approval of the Consent Calendar was deferred until a quorum was present.

Committee Reports and Recommendations

7. Report of the Budget and Finance Committee Meeting of September 26, 2007

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

- A) Deletion of the Fleet and Facilities Manager position; and*
- B) Addition of a New Deputy Air Pollution Control Officer Position.*

Director Daly presented the report and stated that the Committee met on Wednesday, September 26, 2007.

The Committee received the fourth quarter financial report for Fiscal Year 2006-07.

Staff presented information and a status report on the Air District's existing facilities and the challenges associated with District growth. Options regarding the leased Richmond facility were presented to the Committee, as well as longer term facility needs. The Committee provided direction to staff on this item. Staff will report back to the Committee on several other options regarding additional space.

Staff presented information and justification regarding the deletion of the Fleet and Facilities Manager position and the Committee recommends Board of Directors' approval of the deletion the Fleet and Facilities Manager position.

The Committee considered a request to add a new Deputy Air Pollution Control Officer position. The creation of a third DAPCO position would consolidate administrative functions and improve organizational efficiencies. The Committee recommends Board of Directors' approval of the addition of a new Deputy Air Pollution Control Officer position.

The next meeting of the Committee is scheduled for 9:30 a.m., Wednesday, October 24, 2007.

Board Action: Director Daly deferred a motion on the item until a quorum was present.

8. Report of the Mobile Source Committee Meeting of September 27, 2007

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

- A) Incorporate amended Voluntary Accelerated Light-Duty Vehicle Retirement (VAVR) Program regulations into the Vehicle Buy Back Program (VBBP);*
- B) Approve a change in the eligibility requirement of the VBBP;*
- C) Authorize the amendment of the current dismantler contracts;*
- D) Authorize an increase in the contract amount by \$111,000 to continue the program's direct mail campaign; and*
- E) Allocation of Santa Clara County Program Manager funds.*

Chair Mark Ross presented the report and stated that the Committee met on Thursday, September 27, 2007.

Director Jake McGoldrick arrived at 9:56 a.m.

Staff presented the Vehicle Buy Back Program (VBB) 2007 Annual Report, which included a report on dismantlers' advertising rates.

The Committee received a report on the Air Resources Board's (ARB) Voluntary Accelerated Vehicle Retirement (VAVR) regulation amendments, the proposed changes to increase the vehicle purchase rate for the District's Vehicle Buy Back Program, and an amendment to the Direct Mail contract. The Committee recommends Board of Directors' approval of the following:

- A) Incorporate the ARB's amended VAVR regulations into the District's VBB Program;
- B) Change the VBB eligibility requirements to include 1987 and older model year vehicles;
- C) Authorize the Executive Officer/APCO to execute amended contracts with vehicle dismantlers to incorporate the requirements of the amended VAVR regulations and the updated VBB Program vehicle eligibility; and

- D) Authorize the Executive Officer/APCO to execute an amended contract with Direct Mail Center to increase the contract amount by up to \$111,000 to continue the VBB Program direct mail campaign.

The Committee received a report on the Transportation Fund for Clean Air (TFCA) amendment to the Santa Clara County Program Manager expenditure program and recommends that the Board of Directors' approve the following:

- E) An amendment to the TFCA Santa Clara County Program Manager FY 2007/2008 expenditure fund, to allocate \$526,684 in TFCA County Program Manager funds to expanding CNG fueling opportunities at the San Jose International Airport.

Staff provided an update on the Metropolitan Transportation Commission's Regional Transportation Plan. Air District staff's technical input to MTC staff on air quality performance targets was also reviewed.

The next meeting of the Committee is scheduled for Thursday, October 25, 2007.

Board Action: With a quorum present, Chair Ross moved that the Board of Directors approve the recommendation and report of the Mobile Source Committee; seconded by Director Kwok; carried unanimously without objection.

- 7. Report of the Budget and Finance Committee Meeting of September 26, 2007

Board Action: Director Daly moved that the Board of Directors approve the recommendations and report of the Budget and Finance Committee; seconded by Director Torliatt; carried unanimously without objection.

- 9. Report of the Public Outreach Committee Meeting of September 27, 2007

Director Kwok presented the report and stated that the Public Outreach Committee met on Thursday, September 27, 2007.

Staff provided a summary of the 2007 Spare the Air Program, including media coverage and public survey measurement results. The report also included an overview of the Spare the Air Tonight 2007/2008 outreach campaign. Outreach for this program includes educating the public about particulate matter, promoting the District's Incentive Program, and holding community meetings on the wood smoke rule making process.

The Committee received an update on the Air District's Youth Outreach campaign and the results of the youth focus groups. Information was provided on the Clean Air Challenge curriculum and piloting a climate change curriculum for 4th and 5th grade.

Staff presented an update on the Air District's climate outreach program that included information on youth outreach, special events, advertising, printed materials, and additional staff resources. An overview of a new climate outreach program, The Green Thing, was given to the Committee. This is an internet-based outreach program that would target youth and tech-savvy people. Staff will present a recommendation on The Green Thing at a future meeting.

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

Board Action: Director Kwok moved that the Board of Directors approve the report of the Public Outreach Committee; seconded by Director McGoldrick; carried unanimously without objection.

Public Comment Period: The following individuals spoke:

Tessie R. Espen
Hunter's View Mother's Committee
San Francisco, CA 94124

Marie Harrison
Green Action
San Francisco, CA 94102

About air monitoring and concerns regarding asbestos and other pollutants from the shipyard redevelopment in the Bayview Hunter's Point area.

Jack Broadbent, Executive Officer/APCO, informed the Board that these issues will be on the agenda for a future Stationary Source Committee meeting. Director Daly requested that the Air District's CARE Program look at the cumulative impacts in the Bayview Hunter's Point area.

Consent Calendar (Items 1 – 6)

1. Minutes of September 19, 2007 Regular Meeting
2. Communications. Correspondence addressed to the Board of Directors. For information only.
3. Quarterly Report of the Executive Office
4. Approval of Employee Contract Amendments for the Executive Officer and District Counsel

The Board of Directors considered approval of employment contract amendments for Jack P. Broadbent, Executive Officer/APCO and Brian C. Bunger, District Counsel.

5. Approval of Acceptance of Disclosure of Costs for Optional Retirement Benefit as Required by Government Code Section 7507

The Board of Directors considered acceptance of the disclosure of costs resulting from implementation of an optional retirement benefit as required by Government Code Section 7507.

6. Set Public Hearing for November 7, 2007 to Consider Amendments to District Regulation 9, Rule 6: Nitrogen Oxides from Natural Gas-Fired Water Heaters, and Adopt CEQA Negative Declaration

Proposed amendments to Regulation 9, Rule 6 would expand the scope of the rule to regulate NOx emissions from larger water heaters and small boilers, include currently exempt mobile home water heaters and commercial spa and pool heaters and establish more stringent NOx emission limits for all affected equipment.

Board Action: Director Shimansky moved approval of Consent Calendar items 1 through 6; seconded by Director Torliatt; carried unanimously without objection.

Other Business

10. Report of the Executive Officer/APCO – Jack Broadbent, Executive Officer/APCO reported on the following:
 - A) The Spare the Air season will conclude on October 12, 2007. The Air District is in discussions with the Metropolitan Transportation Commission on how to use the balance of the free transit funds.
 - B) The Spare the Air Tonight Program is coming up and will start in November.
11. Chairperson’s Report – Chair Ross stated that he and Mr. Broadbent went to Sacramento and met with Mary Nichols, Chairperson of the California Air Resources Board.
12. Board Members’ Comments – Director Lockhart thanked staff for providing materials for the walk to school day in which she participated.

Director McGoldrick noted he had participated in a walk to school day event and the focus was on clean air and the environment.

Director Kwok thanked the APCO and District Counsel for doing a good job and stated that they represent the District well.

Chair Ross commented that there would be an article in a Contra Costa newspaper about the Carl Moyer audits.

13. Time and Place of Next Meeting – Chair Ross cancelled the October 17, 2007 Board meeting. The next Regular Board meeting is scheduled for 9:45 a.m., Wednesday, November 7, 2007 – 939 Ellis Street, San Francisco, CA 94109
14. Adjournment – The meeting adjourned at 10:16 a.m.

Mary Romaidis
Clerk of the Boards

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Mark Ross and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 24, 2007

Re: Board Communications Received from October 3, 2007 through November 6, 2007

RECOMMENDED ACTION:

Receive and file.

DISCUSSION

A list of Communications received by the Air District from October 3, 2007 through November 6, 2007, if any, will be at each Board member's place at the November 7, 2007 Regular Board meeting.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

BAY AREA AIR QUALITY MANGEMENT DISTRICT

Memorandum

To: Chairperson Mark Ross and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 25, 2007

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.

DISCUSSION

Jack Colburn, Outreach & Incentives Division Director, attended the Residential Wood Combustion Workshop in Philadelphia, PA September 24 – 27, 2007.

Luna Salaver, Senior Public Information Officer, attended the Residential Wood Combustion Workshop in Philadelphia, PA September 24 – 27, 2007.

Derek Klein, Programmer Analyst, attended SANS Institute Training Conference in Las Vegas, NV September 21 – 28, 2007.

David James, Supervising Systems Analyst, attended SANS Institute Training Conference in Las Vegas, NV September 21 – 28, 2007.

Eddie Ng, System Analyst, attended SANS Institute Training Conference in Las Vegas, NV September 22 – 29, 2007.

John Chiladakis, Information Systems Manager, attended SANS Institute Training Conference in Las Vegas, NV September 21 – 27, 2007.

Michael Bachmann, Information Systems Manager, attended SANS Institute Training Conference in Las Vegas, NV September 21 – 28, 2007.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Linda Serdahl
Reviewed by: Jeff McKay

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Ross and
Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: November 7, 2007

Re: Consider Approval of Resolution Authorizing Use of an Optional Benefit
with the California Public Employees' Retirement System Pursuant to
Government Code Section 20903

RECOMMENDATION

Approve resolution authorizing use of an optional benefit with the California Public Employees' Retirement System pursuant to Government Code Section 20903.

BACKGROUND

The District's contract with the California Public Employees' Retirement System provides for an optional retirement benefit pursuant to Government Code Section 20903. The optional benefit is only utilized in the event of curtailment of or changes in the manner of providing services that are in the best interests of the agency. A resolution by the Board of Directors is required in order to authorize designation of a period in which eligible employees must retire in order to receive the optional benefit pursuant to Section 20903.

DISCUSSION

The particulars and justifications for utilizing the optional benefit have been discussed at the Budget and Finance Committee meeting on September 26, 2007. The authorizing resolution is included as part of this agenda item.

BUDGET CONSIDERATION/FINANCIAL IMPACT

The cost of utilizing the optional benefit was disclosed at the regular Board meeting on October 3, 2007.

Respectfully Submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Michael Rich

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Resolution No. 2007-___

**A Resolution of the Board of Directors of the Bay Area Air Quality Management District
Granting Another Designated Period for Two Years of Additional Service Credit.**

WHEREAS, the Board of Directors of the Bay Area Air Quality Management District is a contracting Public Agency of the Public Employees' Retirement System; and

WHEREAS, said Public Agency desires to provide another designated period for Two Years Additional Service Credit, Section 20903, based on the contract amendment included in said contract which provided for Section 20903, Two Years Additional Service Credit, for eligible members;

NOW, THEREFORE, BE IT RESOLVED, that said Board of Directors does seek to add another designated period, and does hereby authorize this Resolution, indicating a desire to add a designated period from December 1, 2007 through March 1, 2008 for eligible members in the classification of Fleet and Facilities Manager.

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 _____, 2007 by the following vote of the Board:

AYES:

NOES:

ABSENT:

Mark Ross
Chairperson of the Board of Directors

ATTEST:

Pamela Torliatt
Secretary of the Board of Directors

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Mark Ross and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 25, 2007

Re: Set Public Hearing for December 5, 2007 to Consider Adoption of District
Regulation 6, Rule 2: Commercial Cooking Equipment, Amendments to
Regulation 3: Fees, Amendments to Regulation 6: Particulate Matter and
Visible Emissions, and Adoption of a CEQA Negative Declaration

RECOMMENDED ACTION:

Set a Public Hearing for December 5, 2007 to consider adoption of a new rule, Regulation 6, Rule 2: Commercial Cooking Equipment; amendments to Regulation 3: Fees, Schedule R: Equipment Registration Fees; amendments to Regulation 6: Particulate Matter and Visible Emissions; and the adoption of a Negative Declaration pursuant to the California Environmental Quality Act (CEQA).

BACKGROUND

On May 16, 2007 an initial public hearing was conducted by the Board of Directors on proposed Regulation 6, Rule 2. The District Board referred the rule to the Stationary Source Committee. Since then, staff has conducted a survey of Bay Area restaurants, focusing on the size and usage of under-fired and conveyORIZED charbroilers. Based on analysis of the survey data and further discussions with affected parties, proposed Regulation 6, Rule 2 has been revised. An additional workshop was conducted on October 23, 2007 on this proposal.

DISCUSSION

Proposed Regulation 6, Rule 2 would require controls on:

- Restaurants that utilize a chain-driven charbroiler and purchase 500 pounds of beef per week; and,
- Restaurants that utilize an under-fired charbroiler of at least 10 square feet surface area and purchase at least 1000 pounds of beef per week.

An exemption has been provided for restaurants that do not cook at least 80% of the beef on the charbroiler (400 lbs for chain-driven charbroilers and 800 lbs for under-cooking charbroilers). The requirement for control is based on beef because emissions from beef are much higher than from other meats. This proposal focuses on the largest, high volume restaurants that have the highest emissions.

The rule will also require registration of charbroilers and control equipment subject to the rule. The registration fees, adopted in June 2007 with other changes to Regulation 3:

Fees, are proposed to be lowered due to a reduction in expected costs to implement the compliance program. Amendments to Regulation 6: Particulate Matter and Visible Emissions renumber and rename the rule, but do not alter the substance of the rule.

Pursuant to the California Environmental Quality Act (Public Resources Code § 21000 et seq.), an initial study for the proposed rule has been conducted, concluding that the proposed rule would not have significant adverse environmental impacts. Notice is hereby given that the District intends to adopt a negative declaration for the rule pursuant to Public Resources Code section 21080(c) and CEQA Guidelines section 15070 et seq.

A public hearing notice, proposed Regulation 6, Rule 2; proposed amendments to Regulation 3 and Regulation 6; the CEQA document; a socioeconomic analysis; and a staff report are available by request and will be posted on the District's website at http://www.baaqmd.gov/pln/ruledev/regulatory_public_hearings.htm.

BUDGET CONSIDERATION/FINANCIAL IMPACTS

Program costs are to be funded by the registration fees.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Virginia Lau
Reviewed by: Henry Hilken

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Memorandum

To: Chairperson Mark Ross and
Members of the Board of Directors

From: Jack Broadbent
Executive Officer/APCO

Date: October 7, 2007

Re: Consider Adjusting the District's Medical Contribution Declared to
California Public Employee's Retirement System (CalPERS)

RECOMMENDATION

Approve the attached resolution adjusting the District's Maximum Medical Contribution declared to CalPERS for management, confidential, represented, and miscellaneous employees and annuitants (retirees).

BACKGROUND

CalPERS requires the District to declare a maximum contribution amount that can be used by employees and annuitants to purchase medical insurance annually. In order to avoid increasing the fringe benefit allowance for current annuitants inadvertently, staff is recommending that the contribution amount be set at the lowest monthly fringe benefit allowance available to current annuitants, which is \$1,022.34. The District is not precluded from making up the difference for active employees to comply with the MOU and benefits adopted for active confidential and management employees, and for annuitants who have a higher monthly fringe benefit allowance; the District intends to keep its commitments in that regard. Accordingly, staff is recommending that the maximum contribution amount declared to CalPERS be set at the following levels for employees and annuitants.

Upon the Board's adoption of attached resolution, the District's maximum medical premium contributions declared to CalPERS will be adjusted as follows:

<u>Category</u>	<u>Contribution Effective 1/1/08</u>
Actives and Annuitants	\$1,022.34
Miscellaneous (i.e., limited term)	\$97.00

BUDGET CONSIDERATION/FINANCIAL IMPACT

There is no additional fiscal impact beyond that contemplated in the current budget approved for FY 2007-2008.

Respectfully Submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Michael Rich

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Resolution No. 2007-__

**RESOLUTION FIXING THE EMPLOYER'S CONTRIBUTION UNDER THE PUBLIC
EMPLOYEES' MEDICAL AND HOSPITAL CARE ACT**

WHEREAS, Government Code Section 22892(a) provides that a local agency contracting under the Public Employees' Medical and Hospital Care Act (PEMHCA) shall fix the amount of the employer's contribution at an amount not less than the amount required under Section 22892(B) of the Act, and

WHEREAS, the Bay Area Air Quality Management District is a local agency contracting under the Act;

NOW, THEREFORE, BE IT RESOLVED, that the employer's contribution for each employee or annuitant shall be the amount necessary to pay the full cost of his/her enrollment, including the enrollment of his/her family members in a health benefits plan up to a maximum of:

<u>Code</u>	<u>Bargaining Unit</u>	<u>Contribution Per Month</u>
004	Management	\$1,022.34
010	Non-Management	\$1,022.34
011	Confidential	\$1,022.34
005	Miscellaneous Unrepresented	\$97.00

Plus administrative fees and Contingency Fund assessments.

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 7th day of November, 2007 by the following vote of the Board:

AYES:

NOES:

ABSENT:

Mark Ross
Chairperson of the Board of Directors

ATTEST:

Pamela Torliatt
Secretary of the Board of Directors

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

TO: Chairperson Mark Ross and
Members of the Board of Directors

FROM: Jack P. Broadbent
Executive Officer/APCO

DATE: October 25, 2007

SUBJECT: Consider Approval of Request to Amend Signature Authorization

RECOMMENDED ACTION

The Board of Directors is requested to consider approval of staff recommendation to grant Jeffrey M. McKay, Deputy Air Pollution Control Officer authorization to sign orders drawn by the Air District on Air District funds held by the Treasurer of San Mateo County, and to have signature plates made for the Air District's check signing machine for Jeffrey M. McKay.

BACKGROUND

The Board of Directors has previously authorized Jack P. Broadbent, Executive Officer/APCO and District Counsel, Brian C. Bunger to sign orders drawn by the District on District funds held by the Treasurer of San Mateo County. It is appropriate to modify the signatures to include that of Jeffrey McKay, Deputy Air Pollution Control Officer to sign orders drawn by the Air District on Air District funds.

BUDGET CONSIDERATION/FISCAL IMPACT

Staff estimates that the cost of executing the signatory change will be less than \$200.

Respectfully Submitted,

Jack P. Broadbent
Executive Officer/APCO

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Resolution No. 2007 - _____

A Resolution Notifying the County Treasurer and County Controller of San Mateo County of a Change in Authorized Signatures

WHEREAS, the Board of Directors of the Bay Area Air Quality Management District (District) has previously authorized the Executive Officer/Air Pollution Control Officer (APCO) and District Counsel Brian C. Bunger to sign orders drawn by the District on District funds held by the Treasurer of San Mateo County;

WHEREAS, to better reflect the District's current organizational structure, District staff recommends that signing authority also be granted to Jeffrey M. McKay, Deputy Air Pollution Control Officer;

WHEREAS, the Board of Directors concurs with the staff's recommendation;

NOW THEREFORE, BE IT RESOLVED that the Board of Directors of the Bay Area Air Quality Management District hereby authorize Jeffrey McKay, Deputy Air Pollution Control Officer to sign orders drawn by the District on District funds held by the Treasurer of San Mateo County,

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 _____, 2007 by the following vote of the Board:

AYES:

NOES:

ABSENT:

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Mark Ross and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 29, 2007

Re: Report of the Stationary Source Committee Meeting of October 29, 2007

RECOMMENDED ACTION

Receive and file.

BACKGROUND

The Stationary Source Committee met on Monday, October 29, 2007.

The Committee received the following presentations:

- A) Status Report on Lennar Bayview-Hunters Point Parcel A Redevelopment Project and the Naturally Occurring Asbestos Dust Mitigation Plan
- B) Report on Proposed Amendments to Regulation 9; Rule 6: Nitrogen Oxides from Natural Gas-Fired Water Heaters.

Attached are the staff reports presented in the Stationary Source Committee packet for your review.

Chairperson, Scott Haggerty will give an oral report of the meeting.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Mary Romaidis
Reviewed by: Mary Ann Goodley

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Haggerty and Members
of the Stationary Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 22, 2007

Re: Status Report on Lennar Bayview Hunters Point Parcel A: Naturally
Occurring Asbestos Dust Mitigation Plan

RECOMMENDED ACTION:

Informational Report. Receive and file.

BACKGROUND

Naturally occurring asbestos (NOA) is a term used for several types of fibrous minerals found in ultramafic and serpentine rock. NOA is released and can become airborne when land is disturbed during operations such as construction, grading, quarrying, and surface mining. The California Air Resources Board developed a statewide Air Toxic Control Measure (ATCM) for NOA in order to protect the public from asbestos released during these operations. The ATCM:

- Requires prior notification of projects to local Air Districts;
- Requires submittal of formal Dust Mitigation Plans subject to Air District approval for large construction projects (> 1 acre) and quarrying and surface mining operations;
- Requires dust mitigation practices sufficient to reduce visible emissions to within the project boundaries;
- Defines air monitoring and bulk sampling methodologies, if air monitoring is required by the APCO;
- Requires reporting and recording of air monitoring and bulk sampling, if air monitoring is required by the APCO.

The ATCM was adopted into California law in July 2002 (Title 17, California Code of Regulations Section 93105), and the District began implementation of its enforcement program in November, 2002.

LENNAR PROJECT

The redevelopment project on Parcel A at Bay View Hunters Point comprises 75 acres located in the northern portion of the Hunters Point Shipyard. Lennar Bay View Hunters Point, LLC (Lennar BVHP) plans to construct approximately 1600 attached single family homes. Lennar BVHP submitted a draft Asbestos Dust Mitigation Plan (ADMP) to the Air District in May 2005. Lennar specified dust mitigation measures in its ADMP, for example, watering or using chemical dust suppressants during earth moving activities, covering or watering soil storage piles, prevention of dust track out onto public roads, dust mitigation for offsite transport of soil, and a post-construction stabilization plan. The APCO required ambient air monitoring at the Lennar BVHP Parcel A project in addition to the measures outlined in the ADMP because of Parcel A's proximity to sensitive receptors like schools and playgrounds. At the Air District's request, Lennar's consultants revised the ADMP to include an air monitoring plan and the ADMP was approved in October 2005. Lennar began ground clearing and surface soil disturbance in January 2006.

In order to protect public health and lacking any state guidelines, the Air District set two action levels based on health risk assessment protocols established by the State Office of Environmental Health Hazard Assessment (OEHHA). The first action level at 1,600 asbestos structures per cubic meter requires Lennar to notify the Air District and implement more stringent dust control measures. The second action level at 16,000 asbestos structures per cubic meter requires Lennar to stop work until asbestos levels have declined to below 16,000 structures. The Air District considers these action levels conservative and health protective because they are based on annual average concentrations and assume continuous exposure over a 70 year lifetime, whereas the actual length of exposure is much less.

The monitoring conducted at the site during initial major earthmoving activities exceeded established action levels on a number of occasions over a period of about a year and a half. The Air District has analyzed the monitoring data, and had concluded that the levels of asbestos present in the air did not constitute a significant public health risk.

Air District staff conducts surveillance at the Lennar BVHP Parcel A site on a daily basis. Staff documented the following two violations in September 2006:

- Failure of Lennar's ambient monitoring network due to inoperative equipment and improper quality control procedures, as reported to the Air District by Lennar.
- Failure to have adequate dust trackout prevention at an egress to a public roadway.

A Notice of Violation was issued in October 2006 for noncompliance with Lennar's ADMP.

The major grading at Lennar BVHP Parcel A is complete, and Lennar is currently trenching and preparing foundations for utility installations. Air District staff will continue to conduct regular inspections and require stringent dust mitigation measures until the project no longer disturbs NOA.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Vicki Dvorak
Reviewed by: Kelly Wee

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Scott Haggerty and Members
of the Stationary Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 22, 2007

Re: Proposed Amendments to Regulation 9, Rule 6: Nitrogen Oxides from
Natural Gas-Fired Water Heaters

RECOMMENDED ACTION:

Receive and file.

BACKGROUND

The 2005 Ozone Strategy Control Measure SS-13 identified Regulation 9, Rule 6 as an area of opportunity for further NO_x reductions from residential water heaters. Staff has scheduled a public hearing on the proposed amendments for November 7, 2007.

DISCUSSION

In this report, Staff will present information on:

- Background on water heaters and small boilers;
- Proposed amendments to Regulation 9, Rule 6;
- Potential NO_x emission reductions and costs; and
- Rule development process and comments received.

BUDGET CONSIDERATIONS/FINANCIAL IMPACT

None

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Guy Gimlen
Reviewed by: Henry Hilken

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Mark Ross and Members
of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 29, 2007

Re: Report of the Mobile Source Committee Meeting of October 31, 2007

RECOMMENDED ACTIONS

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

- A) Fiscal Year 2007/2008 TFCA Regional Fund grant awards listed in Attachment 1, totaling \$10,348,655; and
- B) Reallocation of any funds remaining from the \$1,000,000 in FY 2007/2008 TFCA Regional Funds set aside for clean-air vehicle advanced technology demonstration projects back to the TFCA Regional Fund.

DISCUSSION

The Mobile Source Committee met on Wednesday, October 31, 2007. The Committee consider and receive reports on the following items;

- A) Transportation Fund for Clean Air (TFCA) Regional Fund Grant Awards for FY 2007/2008; and
- B) Update on State-Wide Goods Movement Emission Reduction Program.

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

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 grant recipients. TFCA allocations do not impact the Air District's general fund or operating budget.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Tim Smith and
Members of the Mobile Source Committee

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 22, 2007

Re: Transportation Fund for Clean Air Regional Fund Grant Awards for FY 2007/2008

RECOMMENDED ACTIONS

Consider recommending Board of Directors approval of Staff Recommendations for:

- 1) Fiscal year (FY) 2007/2008 TFCA Regional Fund grant awards listed in Attachment 1, totaling \$10,348,655; and
- 2) Reallocation of any funds remaining from the \$1,000,000 in FY 2007/2008 TFCA Regional Funds set aside for clean-air vehicle advanced technology demonstration projects back to the TFCA Regional Fund.

BACKGROUND

Pursuant to California Health and Safety Code Sections 44241 and 44242, the Air District has imposed a \$4 per vehicle annual surcharge on all motor vehicles registered within the boundaries of the Air District^a. This surcharge is the funding source for the Air District's program known as the Transportation Fund for Clean Air (TFCA). TFCA revenues are awarded to public agencies and non-public entities to implement eligible projects that reduce motor vehicle emissions and support the implementation of selected transportation and mobile source control measures in the Air District's strategies to achieve state and national air quality standards.

By law, 60% of TFCA revenues after audit costs are allocated by the Air District; this portion is known as the TFCA Regional Fund. Portions of the TFCA Regional Fund are earmarked for eligible programs implemented directly by the Air District, including the Smoking Vehicle Program, the Spare the Air Program, and the Vehicle Buy Back Program. The balance is allocated on a competitive basis to eligible projects proposed by eligible project sponsors.

On April 4, 2007, the Board allocated \$1,000,000 in FY 2007/2008 TFCA Regional Funds to clean-air vehicle advanced technology demonstration projects. On May 2, 2001, the Board allocated \$2,000,000 in TFCA Regional Funds to zero-emission bus projects,

^a Revenues from an additional \$2 surcharge in motor vehicle registrations, authorized by Assembly Bill 923, are not part of TFCA. These revenues are used to implement the Air District's Mobile Source Incentive Fund (MSIF), which provides incentives for the implementation of additional mobile source projects.

including \$500,000 of the \$1,000,000 that was set aside for advanced technology demonstration projects.

The Air District received 67 grant applications totaling approximately \$17.5 million in funding requests for the FY 2007/2008 TFCA Regional Fund competitive process. Ten grant applications were found to be ineligible because they did not meet program policies, and one grant application was withdrawn by its sponsor. Thirty-seven projects met all the relevant eligibility criteria, including cost-effectiveness. Staff is recommending awarding grants totaling approximately \$10.3 million to 37 eligible projects. Attachment 1 lists the projects recommended for TFCA Regional Fund grant awards.

DISCUSSION

A discussion of the TFCA Regional Fund process follows.

TFCA Regional Fund Schedule

The milestone dates of the grant application and review process are outlined below.

Action	Date
Issue Application Guidance	April 30, 2007
Application Workshop	May 15, 2007
Application Submittal Deadline	June 29, 2007
Evaluation of Applications	July 2 - October 17, 2007

Evaluation Criteria

The Board-adopted criteria to score and rank TFCA Regional Fund grant applications for FY 2007/2008 are shown in Table 1. The evaluation criteria emphasize cost effectiveness in reducing emissions by allotting 60% of the total possible points to this criterion. Cost effectiveness is calculated by dividing the total TFCA funds proposed for the project by a factor representing the estimated lifetime emission reductions for the project, yielding TFCA funds per ton of reduced emissions. The Board-approved cost effectiveness threshold is currently \$90,000/ton of reduced emissions.

Table 1: FY 2007/2008 TFCA Regional Fund Scoring Criteria

Criteria	Maximum Points
1. TFCA Cost Effectiveness	60
2. Greenhouse Gas Emission Reductions	10
3. Other Project Attributes--	10
4. Clean Air Policies and Programs	10
5. Sensitive and Particulate Matter-Impacted Communities	10
Total	100

The Board establishes minimum point scores for projects to be eligible to receive TFCA Regional Funds. For the FY 2007/2008 funding cycle, the minimum scores are 40 points for public agency projects and 36 points for non-public entity projects. The intent of this policy is to assure that TFCA funding is provided only to projects that achieve an acceptable level of cost effectiveness and benefit to the region.

Returned and Withdrawn Grant Applications

Staff reviewed the applications to determine eligibility, based on compliance with all relevant policies adopted by the Board to govern the TFCA program. Table 2 provides a listing of grant applications that were returned because they were deemed as not eligible for funding based on one or more of the Board-adopted policies.

Table 2: Returned Grant Applications

Sponsor	Project	Reason
Barone Trucking Service Inc.	Barone Fleet Replacement Project	Did not comply with TFCA Regional Fund Policy #11 re: readiness to proceed.
Charlie the Handy Man	Medium Duty Engine Replacement	Did not comply with TFCA Regional Fund Policy #26 re: requirement for repowers to reduce emissions by at least 15% below the emission standards for the existing engine.
City of Benicia	Install Level 3 Particulate Devices on 13 Benicia Breeze Buses	Did not comply with TFCA Regional Fund Policy #4 re: identification of sufficient resources to complete project.
Cooper Trucking	Heavy Duty Truck Fleet Modernization	Did not comply with TFCA Regional Fund Policy #10 re: maximum grant amount.
George Maciel, Inc. (4 applications)	Heavy Duty Vehicle Projects - Vehicles #4, #5, #21, #48	Did not comply with TFCA Regional Fund Policy #26 re: requirement for repowers to reduce emissions by at least 15% below the emission standards for the existing engine.
Kadon Trucking	Kadon Fleet Emissions Reductions	Did not comply with TFCA Regional Fund Policy # 25, which does not allow TFCA funds to cover more than the incremental cost of the clean air vehicle. In addition, proposed engine did not comply with Application Guidance.
Marty Skoff Trucking	Heavy Duty Engine Repowers & Retrofit	Did not comply with TFCA Regional Fund Policy # 10 re: maximum grant amount.

One project sponsor withdrew its grant application. The University of California, Santa Cruz withdrew a grant application for a vanpool to San Francisco because the project was not ready to proceed.

Available Funds

TFCA Regional Funds totaling approximately \$11.9 million are available for allocation in FY 2007/2008. These funds consist of anticipated receipts from motor vehicles registered in the Air District during calendar year 2007, interest on TFCA Regional Funds, and funds

from previously approved projects that closed under budget or were canceled. Table 3 provides a summary of the total TFCA Regional Funds available.

Table 3: FY 2007/2008 TFCA Regional Funds

Source/Program	Amount	Comment
1. Projected CY 2007 DMV Receipts	\$22,164,789	Based on CY 2006 actual receipts.
2. FY 2007/08 District Admin. Cost	\$1,629,196	Per adopted Air District budget including indirect costs.
3. FY 2007/08 County Program Manager Funds	\$8,214,237	(Line 1 minus Line 2) times 0.40.
4. New FY 2007/08 Funds Available for Regional Fund	\$12,321,356	Line 1 minus Line 2 minus Line 3.
5. Projected CY 2007 Regional Fund Interest	\$1,437,273	Based on CY 2006 actual Regional Fund interest.
6. Total Available New Funds for Regional Fund	\$13,758,629	Line 4 plus Line 5.
7. Returned Funds (as of 8/30/07)	\$4,395,133	Canceled projects, projects completed under budget, projects needing less funding than allocated by Board.
8. Clean Air in Motion Program	\$1,924,132	Alameda & Santa Clara Program Manager funds to Vehicle Buy Back program
9. Total Regional Funds	\$20,077,894	Line 6 plus Line 7 plus Line 8
10. FY 2007/08 Board-Approved District Projects	\$8,197,841	Smoking Vehicle \$1,008,902
		Spare The Air \$1,761,961
		Bicycle Facility Program \$600,000
		Vehicle Buy Back \$1,924,132
		Zero-Emission Buses \$2,000,000
		Air District Overhead \$902,846
11. Total Available for FY07/08 Regional Fund Grant Awards	\$11,880,053	Line 9 minus Line 10
12. Recommended Regional Fund Grant Awards	\$10,348,655	37 TFCA Regional Fund Projects

Project Funding

Thirty-seven projects, totaling approximately \$10.3 million in funding requests, achieved the relevant minimum point score and complied with the \$90,000 per ton cost-effectiveness threshold. Attachment 1 lists the final project scores and ranking for the eligible projects.

Air District staff plans to provide an opportunity for sponsors of applications that were not cost-effective but were otherwise eligible and complete to request a lower amount of funding and compete for remaining FY 2007/2008 Regional Funds. Staff plans to contact applicable sponsors regarding this opportunity, and would bring any cost-effective projects forward for Committee and Board approval at a later date.

Projects Not Recommended for Funding

Attachment 2 lists the projects that are not recommended for funding because they did not achieve the minimum point score required – 40 points for public agencies or 36 points for non-public entities.

Emission Reductions

The 37 projects recommended for funding will result in estimated emission reductions of 303 tons of ozone precursors and particulate matter (PM), and over 53,000 tons of carbon dioxide (CO₂) over the life of the projects. The resulting average cost effectiveness estimated for these projects is \$30,800/ton^b.

Grant Allocations Summary

Table 4 shows the funding, by project type, for the 37 projects not administered by the Air District that are recommended to receive TFCA Regional Fund grant awards and are shown on Attachment 1.

Table 4:
Recommended FY 2007/2008 TFCA Regional Fund Grant Allocations by Project Type

Project Type	No. of Projects	TFCA \$	% of Total TFCA Regional Fund \$
Diesel Repowers / Retrofits	19	\$4,023,524	39%
Shuttle Buses	5	\$2,113,355	20%
Trip Reduction / Ridesharing Projects	3	\$1,430,000	14%
Transit / School Buses	1	\$750,000	7%
Arterial Management Projects	2	\$647,900	6%
Natural Gas Vehicles	2	\$590,811	6%
Light-Duty Vehicles	3	\$369,950	4%
Smart Growth Projects	2	\$423,115	4%
Totals	37	\$10,348,655	100%*

* Total may not add to 100% due to rounding.

In addition, \$499,800 of the \$500,000 remaining from the FY 2007/2008 TFCA Regional Funds that were set aside for advanced technology demonstrations are recommended for allocation, to a hydrogen and compressed natural gas project. The second recommended

^b TFCA dollars per ton of emissions reduction (ozone precursors and weighted particulate matter). The cost effectiveness calculations used for project evaluation includes a weighted factor of 20 for the reduction of tailpipe particulate matter emissions, consistent with the California Air Resources Board Carl Moyer Program guidelines.

action would free up the remaining \$200, and any funds realized from advanced technology demonstration projects that were completed under budget or were cancelled, for other TFCA Regional Fund purposes.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer /APCO

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

ATTACHMENT 1
TFCA Regional Fund Grant Applications - FY 2007/2008
Project Scores and Ranking - Projects Recommended for Funding

Proj #	Cnty (1)	P/N (2)	Sponsor	Project Description	Yrs Eff	TFCA \$ Per Ton (3)	TFCA \$ Awarded	Cumulative Total \$	CRITERIA POINT SCORES					TOTAL SCORE
									TFCA Funding Eff	Green- house Gas ER	Other Attrib.	Clean Air Pol.	Sens. & PM Impact	
07R59	SF	P	San Francisco International Airport	Purchase 14 minibuses powered by blend of 80% compressed natural gas and 20% hydrogen fuel.	10	\$17,949	\$499,800	\$499,800	60	1	10	10	4	85
07R60	SF	P	San Francisco International Airport	Purchase 27 compressed natural gas vans.	5	\$12,376	\$198,450	\$698,250	60	0	4	10	8	82
07R18	ALA	P	Metropolitan Transportation Commission	Implement the Regional Rideshare Program, which provides coordinated carpool and vanpool formation assistance and information in transportation alternatives such as Bike to Work Day, Rideshare Thursday, and Spare the Air.	1	\$22,275	\$1,000,000	\$1,698,250	58	1	6	10	3	78
07R69	SF	P	San Francisco Municipal Transportation Agency	Re-stripe, and re-time lights on, 7th Avenue between Laguna Honda Boulevard and Lincoln Way in San Francisco to reduce traffic lanes from three to two to improve pedestrian and bicycle safety and public transit access.	20	\$29,955	\$36,000	\$1,734,250	55	2	6	10	5	78
07R42	SF	P	San Francisco International Airport	Retrofit 19 Diesel Buses with PM/NOx Level 3 emission reduction devices.	5	\$11,840	\$806,431	\$2,540,681	60	0	0	10	7	77
07R71	SON	N	Industrial Carting	Retrofit 11 existing heavy-duty vehicles with Level 3 PM emission control devices.	5	\$7,067	\$465,800	\$3,006,481	60	0	0	0	10	70
07R61	SON	P	Sonoma County Transit	Replace 10 1996 compressed natural gas (CNG) buses with new CNG buses.	13.5	\$27,603	\$750,000	\$3,756,481	56	2	0	10	2	70
07R28	SF	P	County of San Francisco	Purchase 51 gasoline-electric hybrid and 24 compressed natural gas light-duty vehicles.	4	\$48,152	\$157,500	\$5,073,338	45	0	8	9	8	70
07R45	CC	N	Construction Transport Services, Inc.	Repower one 1988 Heavy-duty truck with 2006 engine with diesel particulate filter.	7	\$2,696	\$29,999	\$3,786,480	60	0	0	0	9	69
07R37	ALA	N	George Maciel, Inc. Sub of Alviso Rock, Inc.	Retrofit one vehicle with Level 3 PM/NOx emission control device.	5	\$7,680	\$29,343	\$3,815,823	60	0	0	0	9	69
07R36	ALA	N	George Maciel, Inc. Sub of Alviso Rock, Inc.	Retrofit one vehicle with Level 3 PM/NOx emission control device.	5	\$9,645	\$27,712	\$3,843,535	60	0	0	0	9	69
07R70	MAR	N	Cooper Crane & Rigging Inc.	Repower two heavy duty trucks with reconditioned engines.	7	\$6,488	\$80,136	\$3,923,671	60	0	0	0	8	68

(1) REG = regional/multi-county.

(2) Public/Non-Public Entity.

(3) TFCA\$ divided by est. lifetime ER (ozone precursors and weighted PM). May include TFCA County Program Manager funds.

ATTACHMENT 1
TFCA Regional Fund Grant Applications - FY 2007/2008
Project Scores and Ranking - Projects Recommended for Funding

Proj #	Cnty (1)	P/N (2)	Sponsor	Project Description	Yrs Eff	TFCA \$ Per Ton (3)	TFCA \$ Awarded	Cumulative Total \$	CRITERIA POINT SCORES					TOTAL SCORE
									TFCA Funding Eff	Green- house Gas ER	Other Attrib.	Clean Air Pol.	Sens. & PM Impact	
07R54	SON	N	John Benward Company, Inc.	Repower four heavy-duty trucks with new diesel engines.	7	\$5,424	\$340,000	\$4,263,671	60	2	0	0	6	68
07R35	ALA	N	Foster Farms Dairy	Retrofit one diesel heavy-duty truck with PM/NOx Level 3 emission reduction device.	5	\$19,730	\$22,917	\$4,286,588	60	0	0	0	7	67
07R12	ALA	P	City of Berkeley	Operation of one peak-period gasoline shuttle bus route from the Ashby BART station to West Berkeley area employers during morning and afternoon peak periods.	1	\$47,244	\$25,000	\$4,311,588	46	2	5	9	4	66
07R65	SM	P	City of Burlingame	Interconnect signals at seven intersections along the Bayshore Highway corridor between Millbrae Avenue and Airport Boulevard in the City of Burlingame.	4	\$16,866	\$147,900	\$4,459,488	60	1	0	3	0	64
07R66	ALA	P	City of Oakland	Implement streetscape improvements along the 0.55 mile portion of 66th Avenue between San Leandro Street and International Boulevard in the City of Oakland.	20	\$61,361	\$387,115	\$4,846,603	39	3	10	3	9	64
07R38	SM	N	South San Francisco Scavenger Co.	Retrofit two trucks with PM/NOx Level 3 emission reduction devices.	5	\$12,882	\$45,668	\$4,892,271	60	0	0	0	3	63
07R32	CC	N	Apple Trucking	Retrofit one heavy-duty diesel truck with PM/NOx Level 3 emission reduction retrofit device.	5	\$21,406	\$23,567	\$4,915,838	59	0	0	0	3	62
07R07	ALA	P	AC Transit	Conduct door-to-door education and marketing of travel options to households in Berkeley (along the San Pablo Avenue and Telegraph Avenue transit corridors) and San Leandro (around the San Leandro BART Station).	1	\$51,990	\$330,000	\$5,403,338	44	3	4	5	6	62
07R56	SOL	N	Universal Environmental	Repower six pre-1990 diesel trucks with new diesel engines.	7	\$9,479	\$360,000	\$5,763,338	60	2	0	0	0	62
07R23	SC	P	San Jose State University	Implement Transportation Solutions, a transportation demand management program which provides alternative commute incentives, such as the University Transit pass program, and ridesharing information to students and employees at San Jose State University.	1	\$58,048	\$100,000	\$5,863,338	40	2	6	8	5	61
07R51	CC	N	R.V. Stich Construction	Repower five diesel construction hauling vehicles.	7	\$3,441	\$140,000	\$6,003,338	60	0	0	0	0	60

(1) REG = regional/multi-county.

(2) Public/Non-Public Entity.

(3) TFCA\$ divided by est. lifetime ER (ozone precursors and weighted PM). May include TFCA County Program Manager funds.

ATTACHMENT 1
TFCA Regional Fund Grant Applications - FY 2007/2008
Project Scores and Ranking - Projects Recommended for Funding

Proj #	Cnty (1)	P/N (2)	Sponsor	Project Description	Yrs Eff	TFCA \$ Per Ton (3)	TFCA \$ Awarded	Cumulative Total \$	CRITERIA POINT SCORES					TOTAL SCORE
									TFCA Funding Eff	Green- house Gas ER	Other Attrib.	Clean Air Pol.	Sens. & PM Impact	
07R33	SON	N	C&A Trucking	Retrofit six heavy-duty diesel trucks with PM/NOx Level 3 emission control devices.	5	\$6,273	\$141,400	\$6,144,738	60	0	0	0	0	60
07R40	SON	N	V. Dolan Trucking	Retrofit 13 diesel vehicles with PM/NOx Level 3 emission reduction devices.	5	\$6,422	\$275,730	\$6,420,468	60	0	0	0	0	60
07R53	SF	N	Circosta Iron & Metal	Repower four pre-1990 heavy-duty diesel trucks with engines that meet 2007 standards.	7	\$5,424	\$272,000	\$6,692,468	60	0	0	0	0	60
07R46	MAR	N	Cooper Crane & Rigging Inc.	Retrofit one heavy-duty diesel truck with PM/NOx Level 3 emission control device.	5	\$37,686	\$80,136	\$6,772,604	51	0	0	0	8	59
07R24	SC	P	Santa Clara Valley Transportation Authority	Operate 8 peak-period shuttle bus routes from the Great America ACE train station in Santa Clara to employment sites in Palo Alto, Mountain View, Sunnyvale, Santa Clara, San Jose, & Milpitas using 6 diesel vehicles with ARB certified PM filters.	1	\$60,973	\$960,000	\$7,732,604	39	2	5	10	3	59
07R34	ALA	N	Foster Farms Dairy	Retrofit 20 heavy-duty diesel trucks with PM/NOx Level 3 emission reduction devices.	5	\$36,319	\$366,204	\$8,098,809	51	0	0	0	7	58
07R64	SM	P	City of Belmont	Construct a roundabout at Ralston Avenue and South Road in the City of Belmont to replace a three-way stop at the intersection.	20	\$53,737	\$500,000	\$8,598,809	43	3	5	3	3	57
07R19	SM	P	Peninsula Corridor Joint Powers Board	Operation of 29 peak-period shuttles to/from various Caltrain Stations and employment sites using four compressed natural gas vehicles, 10 gasoline vehicles, and 20 diesel vehicles with ARB-certified PM filters.	1	\$77,759	\$1,034,355	\$9,633,164	31	3	10	9	4	57
07R62	SM	N	South San Francisco Scavenger Co	Replace one heavy-duty diesel truck with a compressed natural gas roll-off truck.	10	\$37,043	\$91,011	\$9,724,175	51	2	0	0	3	56
07R41	CC	P	Contra Costa County	Retrofit five diesel prisoner transport buses with PM/NOx Level 3 emission reduction devices.	5	\$40,472	\$88,500	\$9,812,675	49	0	0	3	4	56

(1) REG = regional/multi-county.

(2) Public/Non-Public Entity.

(3) TFCA\$ divided by est. lifetime ER (ozone precursors and weighted PM). May include TFCA County Program Manager funds.

ATTACHMENT 1
TFCA Regional Fund Grant Applications - FY 2007/2008
Project Scores and Ranking - Projects Recommended for Funding

Proj #	Cnty (1)	P/N (2)	Sponsor	Project Description	Yrs Eff	TFCA \$ Per Ton (3)	TFCA \$ Awarded	Cumulative Total \$	CRITERIA POINT SCORES					TOTAL SCORE
									TFCA Funding Eff	Green- house Gas ER	Other Attrib.	Clean Air Pol.	Sens. & PM Impact	
07R22	ALA	P	San Joaquin Regional Rail Commission	Operation of two peak-period shuttle buses between the Pleasanton ACE train station in downtown Pleasanton and the Dublin/Pleasanton BART Station. The buses will service employment sites located in the Stoneridge Business Park and Bernal Business Park.	1	\$75,151	\$44,000	\$9,856,675	32	3	10	8	2	55
07R21	ALA	P	San Joaquin Regional Rail Commission	Operation of two peak-period shuttle buses between the Pleasanton ACE train station in downtown Pleasanton and the Dublin/Pleasanton BART station. The buses will service employment sites located in the Hacienda Business Park in downtown Pleasanton.	1	\$83,902	\$50,000	\$9,906,675	28	3	10	10	3	54
07R39	ALA	N	Sysco Food Service	Retrofit 21 heavy-duty diesel trucks with PM/NOx Level 3 emission control devices.	5	\$35,613	\$427,980	\$10,334,655	52	0	0	0	0	52
07R29	SM	P	County of San Mateo	Purchase 21 gasoline-electric hybrid light-duty vehicles.	10	\$74,820	\$14,000	\$10,348,655	32	0	8	0	3	43

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(2) Public/Non-Public Entity.

(3) TFCA\$ divided by est. lifetime ER (ozone precursors and weighted PM). May include TFCA County Program Manager funds.

ATTACHMENT 2
TFCA Regional Fund Grant Applications - FY 2007/2008
Projects Not Recommended for Funding

Proj #	Cnty (1)	P/N (2)	Sponsor	Project Description	Yrs Eff	TFCA \$ Per Ton (3)	TFCA \$ Request	Cumulative Total \$	CRITERIA POINT SCORES					TOTAL SCORE
									TFCA Funding Eff	Green- house Gas ER	Other Attrib.	Clean Air Pol.	Sens. & PM Impact	
07R63	ALA	P	Alameda County Congestion Management Agency	Install Transit Signal Priority system at 5 intersections along the Grand Avenue/MacArthur Boulevard Corridor and install a bus bulb at a separate intersection on Grand Avenue.	4	\$146,330	\$360,000	\$360,000	0	6	5	6	6	23
07R08	REG	P	BART	Provide incentives to BART commuters to take AC Transit bus service to BART.	1	\$133,883	\$175,000	\$535,000	0	5	9	5	5	24
07R09	SOL	P	City of Benicia	Operate a daily regional express bus route (Route 70) seven days a week from 5:00 a.m. to 9:00 p.m. between the Vallejo Ferry Terminal and the Pleasant Hill BART Station.	1	Negative	\$50,000	\$585,000	0	0	10	3	7	20
07R10	SOL	P	City of Benicia	Operation of two 16 passenger peak period shuttle routes from Solano Community College and Downtown Benicia to the Vallejo Ferry and Martinez Amtrak Station.	1	\$355,933	\$100,000	\$685,000	0	9	10	3	7	29
07R67	ALA	P	City of Oakland	Reduce vehicular lanes and implement pedestrian improvements along 7th Street between Union Street and Peralta Street in the City of Oakland.	20	\$103,869	\$400,000	\$1,085,000	0	4	6	3	6	19
07R26	CC	P	City of Pleasant Hill	Purchase four gasoline-electric hybrid light-duty vehicles.	10	\$1,560,297	\$33,268	\$1,118,268	0	0	0	3	0	3
07R13	SM	P	City of Redwood City	Provide peak period shuttle service to Redwood City Caltrain Station, downtown area, Fair Oaks neighborhood and neighborhoods west of El Camino using one diesel bus with an ARB-certified PM filter.	1	\$197,487	\$30,000	\$1,148,268	0	3	10	6	5	24
07R27	SC	P	City of San Jose	Purchase 10 gasoline-electric light-duty vehicles.	10	\$4,127,273	\$240,000	\$1,388,268	0	0	0	3	6	9
07R14	ALA	P	City of San Leandro	Operation of a peak-period weekday shuttle route to/from the San Leandro BART station and the west side of San Leandro.	1	\$139,725	\$80,000	\$1,468,268	0	5	5	3	5	18

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(2) Public/Non-Public Entity.

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ATTACHMENT 2
TFCA Regional Fund Grant Applications - FY 2007/2008
Projects Not Recommended for Funding

Proj #	Cnty (1)	P/N (2)	Sponsor	Project Description	Yrs Eff	TFCA \$ Per Ton (3)	TFCA \$ Request	Cumulative Total \$	CRITERIA POINT SCORES					TOTAL SCORE
									TFCA Funding Eff	Green- house Gas ER	Other Attrib.	Clean Air Pol.	Sens. & PM Impact	
07R68	SON	P	City of Santa Rosa	Upgrade existing traffic signal system to Intelligent Transportation System at nine intersections on Mendocino Avenue between College Avenue and Fountaingrove Parkway in the City of Santa Rosa.	4	\$277,071	\$250,000	\$1,718,268	0	10	4	10	3	27
07R57	SC	P	City of Sunnyvale	Replace two heavy-duty Diesel Collection Vehicles with compressed natural gas vehicles.	10	\$138,979	\$125,184	\$1,843,452	0	0	0	10	0	10
07R58	CC	P	Contra Costa County	Replace one diesel street sweeper with new compressed natural gas street sweeper.	10	\$216,755	\$50,000	\$1,893,452	0	0	0	3	0	3
07R15	SF	P	County of San Francisco	Install one teleconferencing interview terminal that will enable attorneys to conduct interviews with clients located in the San Bruno jail.	1	\$477,915	\$23,000	\$1,916,452	0	10	5	9	0	24
07R16	SF	P	Golden Gate Bridge, Highway & Transportation District	Provide peak-period shuttle bus service connecting Fairfax with the San Rafael Transit Center and the Larkspur Ferry Terminal.	1	Negative	\$480,244	\$2,396,696	0	10	5	10	0	25
07R17	SF	P	Golden Gate Bridge, Highway & Transportation District	Provide peak-period shuttle bus service connecting Novato with the San Rafael Transit Center and the Larkspur Ferry Terminal.	1	\$3,031,308	\$642,704	\$3,039,400	0	10	5	10	2	27
07R31	SON	N	Industrial Carting	Purchase one new compressed natural gas roll-off truck and two new compressed natural gas front-end loaders.	10	N/A	\$465,800	\$3,505,200	0	0	0	0	10	10
07R30	ALA	P	Port of Oakland	Purchase 10 gasoline electric hybrid light-duty vehicles.	10	\$992,133	\$50,000	\$3,555,200	0	0	0	8	6	14
07R20	SF	P	Presidio Trust	Operation of five 26-passenger compressed natural gas bus routes from the Presidio to the Embarcadero BART station, Transbay Bus Terminal and the San Francisco Ferry Building.	1	\$159,277	\$100,000	\$3,655,200	0	7	10	10	0	27
07R52	SM	N	Thomas Rials	Replace one 1984 heavy-duty diesel truck with 2007 heavy-duty diesel truck.	10	\$135,984	\$53,600	\$3,708,800	0	3	0	0	0	3

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(2) Public/Non-Public Entity.

(3) TFCA\$ divided by est. lifetime ER (ozone precursors and weighted PM). May include TFCA County Program Manager funds.

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: October 21, 2007

Re: Update on State-Wide Goods Movement Emission Reduction Program

RECOMMENDED ACTION:

Receive and file.

BACKGROUND

The Goods Movement Emission Reduction Program is a partnership between the Air Resources Board (ARB) and local agencies (such as air districts, ports, and transportation agencies) to protect public health through the administration of \$1 billion in State incentives for cleaner equipment and technologies associated with freight movement. In the first phase, ARB will allocate \$250 million in bond monies received in the Fiscal Year 2007-08 budget.

DISCUSSION

Air District staff has met with ARB and has attended initial workshops. Staff will update the committee on the information obtained to date, and will also discuss planned actions.

BUDGET CONSIDERATION / FINANCIAL IMPACT:

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Jeff McKay

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Mark Ross and
Members of the Board of Directors

From: Jack P. Broadbent, Executive Officer / APCO

Date: October 29, 2007

Re: Summary of 2007 Ozone Season and Overview of Upcoming Spare the Air
Tonight Campaign

RECOMMENDED ACTION:

Receive and file.

DISCUSSION

Staff will present a summary of the 2007 Ozone Season and background information on particulate matter for the upcoming winter season. Cooler weather this season kept ozone levels relatively low. The national eight-hour ozone standard was exceeded on one day, the State eight-hour ozone standard on nine days, and the State one-hour ozone standard on four days.

The summer 2007 Spare the Air campaign ran from June 1st through October 12th. This year, there were two Spare the Air/Free Transit days, August 29th and 30th. Transit ridership increased by as much as 20 percent on these two days.

Staff will also present a summary of the 2007 Spare the Air Tonight Outreach Campaign.

BUDGET CONSIDERATIONS/FINANCIAL IMPACTS

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer / APCO

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Mark Ross
and Members of the Board of Directors

From: Jack P. Broadbent
Executive Officer/APCO

Date: October 29, 2007

Re: Public Hearing to Consider Proposed Amendments to Regulation 9, Rule 6:
Nitrogen Oxides from Natural Gas-Fired Water Heaters; and Adoption of a
CEQA Negative Declaration

RECOMMENDED ACTION

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

- Adopt proposed amendments to Regulation 9, Rule 6: Nitrogen Oxides from Natural Gas-Fired Water Heaters; and
- Adopt a Negative Declaration pursuant to the California Environmental Quality Act (CEQA) for this rule-making activity.

BACKGROUND

Regulation 9, Rule 6 sets emission limits for nitrogen oxides (NO_x) from residential water heaters. The rule applies to water heaters with 75,000 Btu/hr heat input or less sold, offered for sale or installed in the District. The proposed amendments will fulfill the District's commitment to examine amendments to Regulation 9, Rule 6 as stated in control measure SS-13 from the Bay Area 2005 Ozone Strategy.

DISCUSSION

Proposed amendments to Regulation 9, Rule 6 would reduce NO_x emissions from natural gas-fired water heaters and small boilers. The proposed amendments will:

1. Expand the scope of the rule to regulate NO_x emissions from water heaters and small boilers from 75,000 Btu/hr up to 2 million Btu/hr heat input;
2. Regulate NO_x emissions from mobile home water heaters and commercial pool and spa heaters that are currently exempt from the standards in the rule; and
3. Establish more stringent NO_x limits for all affected equipment.

The amendments will require that water heaters and boilers sold, offered for sale or installed in the District comply with more stringent NO_x emissions standards effective on January 1, 2009 for some water heaters, and from January 1, 2010 through 2013 for other equipment.

The proposed amendments will reduce NO_x emissions by 2.9 tons per day.

A socioeconomic analysis has found that the costs of the rule would not create significant economic dislocation or loss of jobs.

Pursuant to the California Environmental Quality Act (Public Resources Code § 21080(c) and CEQA Guidelines 15070 et seq.) a CEQA analysis has been prepared by Environmental Audit, Inc., of Placentia, California. This analysis concludes that the proposed amendments would not have any significant adverse environmental impacts. A CEQA negative declaration is proposed for adoption.

RULE DEVELOPMENT PROCESS

The proposed rule amendments are the result of an extensive public process. The District developed proposed amendments based on existing regulations in the Santa Barbara, Ventura, San Joaquin Valley, and South Coast air districts, and e-mail information exchange and discussions with water heater manufacturers, PG&E's energy efficiency experts, and individuals from the Valley Energy Efficiency Corporation's Super Efficient Gas Water Heating Appliance Initiative (SEGWHAI) Project. A public workshop was held on June 29, 2007. Thirteen people representing water heater manufacturers, PG&E, and affected users participated in the workshop, providing oral and written comments. Staff incorporated these comments into the current proposed amendments, as appropriate.

The final proposed amendments, staff report, socio-economic report, CEQA initial analysis and negative declaration, and public hearing notice were posted for public review on October 2, 2007. Two comments have been received. These comments do not necessitate any changes to the proposed amendments. A summary of the comments and staff's responses is attached as an appendix to the staff report.

BUDGET CONSIDERATIONS/FINANCIAL IMPACTS

None. The District already tracks certified water heaters eligible for sale in the Bay Area. These amendments will not require additional District resources.

Respectfully submitted,

Jack P. Broadbent
Executive Officer / Air Pollution Control Officer

Prepared by: Guy Gimlen
Reviewed by: Henry Hilken

Attachments:

Proposed Amendments to Regulation 9, Rule 6: Nitrogen Oxides from Natural Gas-Fired Water Heaters

Staff Report, including Appendices:

1. Comments and Responses
2. Socioeconomic Analysis
3. CEQA Initial Study and Negative Declaration

**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 6
NITROGEN OXIDES EMISSIONS FROM
NATURAL GAS-FIRED BOILERS AND WATER HEATERS
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- 9-6-203 Direct-Vent Water Heater
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**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 6
NITROGEN OXIDES EMISSIONS FROM NATURAL GAS-FIRED WATER
HEATERS**

(Adopted April 1, 1992)

9-6-100 GENERAL

9-6-101 Description: This rule limits the emissions of nitrogen oxides from natural gas-fired water heaters and boilers.

9-6-110 Exemptions: The requirements of Section 9-6-301 shall not apply to the following:

- 110.1 Natural gas-fired boilers and water heaters with an rated heat input capacity rating of greater than 2,000,000 ~~75,000~~ BTU per hour.
- 110.2 Natural gas-fired water heaters used in recreational vehicles.
- 110.3 Water heaters using a fuel other than natural gas.
- 110.4 Natural gas-fired pool/spa water heaters with less than 400,000 Btu/hr rated heat input capacity used exclusively to heat swimming pools, ~~and~~ hot tubs or spas.

9-6-200 DEFINITIONS

9-6-201 Boilers and Water Heaters: Any combustion equipment used to heat water or produce steam and that is not exclusively used to produce electricity for sale. For the purposes of this Rule, a boiler does not include any waste heat recovery boiler that is used to recover sensible heat from the exhaust of a combustion turbine or any unfired waste heat recovery boiler that is used to recover sensible from the exhaust of any combustion equipment.

9-6-202 BTU: British thermal unit or units.

9-6-203 Direct-Vent Water Heater: A storage tank water heater with air intake and exhaust ducts that use a gravity system to collect air from outside a building for combustion and exhaust combustion byproducts to the outside of a building.

9-6-204 Heat Input: The heat of combustion released by fuels burned in a unit based on the higher heating value of fuel. This does not include the enthalpy of incoming combustion air.

9-6-2035 Heat Output: The product obtained by multiplying the recovery efficiency, as defined by Section 6.1.3 of the Code of Federal Regulation, Title 10, Part 430, Subpart B, Appendix E, by the input rating of the water heater.

9-6-206 Instantaneous Water Heater: A device in which water is heated only when the water flows through a heat exchanger.

9-6-207 Mobile Home Water Heater: A closed vessel manufactured exclusively for mobile home use in which water is heated and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210°F (99°C).

9-6-2028 Natural Gas: A mixture of gaseous hydrocarbons containing at least 80 percent methane by volume as determined according to Standard Method ASTM D1945-64.

9-6-209 NO_x Emissions: The sum of nitric oxide and nitrogen dioxide in the flue gas, collectively expressed as nitrogen dioxide.

9-6-210 Pool/Spa Heater: A device in which water is heated when pool or spa water circulates through a heat exchanger.

9-6-211 Power Direct-Vent Water Heater: A storage tank water heater with an air intake duct outside of a building with a blower installed to assist in the expulsion of exhaust gases.

- 9-6-212** **Power-Vent Water Heater:** A storage tank water heater with a blower installed to assist in the expulsion of exhaust gases.
- 9-6-20413** **Input Rating:** The amount of energy a water heater consumes in one hour (BTU/Hour). **Rated Heat Input Capacity:** The heat input capacity specified on the nameplate of the combustion unit.
- 9-6-2014** **Natural Gas-Fired Storage Tank Water Heater:** A closed vessel, in which water is heated by the combustion of natural gas and is withdrawn for use external to the vessel at pressures not exceeding 160 psig, including the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210⁰F.

9-6-300 STANDARDS

9-6-301 Natural Gas-Fired Storage Tank Water Heaters with an Rated Heat Input Rating Capacity of 75,000 BTU/Hour or Less:

- 301.1 A ~~No~~ person shall ~~not~~ sell, install, or offer for sale within the District any natural gas-fired storage tank water heater, manufactured after July 1, 1992, with an rated heat input capacity rating of 75,000 BTU/Hour or less, that emits more than 40 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output.
- 301.2 No person shall sell, install, or offer for sale within the District any natural gas-fired storage tank water heater less than or equal to 50 gallons capacity that is manufactured after January 1, 2009, and that emits more than 10 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output. This subsection shall not apply to direct-vent, power-vent, power direct-vent water storage tank heaters and water heaters used for mobile homes.
- 301.3 No person shall sell, install, or offer for sale within the District any natural gas-fired storage tank water heater greater than 50 gallons capacity that is manufactured after January 1, 2010, and that emits more than 10 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output. This subsection shall not apply to direct-vent, power-vent, power direct-vent storage tank water heaters and water heaters used for mobile homes.
- 301.4 No person shall sell, install, or offer for sale within the District any natural gas-fired storage tank water heater that is manufactured after January 1, 2011, and that emits more than 10 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output. This subsection shall not apply to water heaters used for mobile homes.

9-6-302 Certification of Boilers and Water Heaters: No person shall sell, install, or offer for sale within the District any ~~W~~water heaters subject to Section 9-6-301, 303, 304, or 305 ~~shall be~~ unless the water heater manufacturer brand name and model is certified in accordance with Sections 9-6-401, ~~and~~ 402, ~~and~~ 403.

9-6-303 Natural Gas-Fired Boilers and Water Heaters with a Rated Heat Input Capacity of 75,001 to 2,000,000 BTU/Hour:

- 303.1 No person shall sell, install, or offer for sale within the District any large natural gas-fired boiler, storage tank water heater, or instantaneous water heater with a rated heat input capacity from 75,001 to 400,000 BTU/Hour, inclusive, manufactured after January 1, 2008, that emits more than 40 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output.
- 303.2 No person shall sell, install, or offer for sale within the District any large natural gas-fired boiler, storage tank water heater, or instantaneous water heater with a rated heat input capacity from 75,001 to 400,000 BTU/Hour, inclusive, manufactured after January 1, 2013, that emits more than 14 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output.
- 303.3 No person shall sell, install, or offer for sale within the District any large natural gas-fired boiler, storage tank water heater, or instantaneous water heater with a rated heat input capacity from 400,001 to 2,000,000 BTU/Hour, inclusive, manufactured after January 1, 2008, that emits more than 20

nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output, or more than 30 ppm NO_x at 3% O₂, dry.

303.4 No person shall sell, install, or offer for sale within the District any large natural gas-fired boiler, storage tank water heater, or instantaneous water heater with a rated heat input capacity from 400,001 to 2,000,000 BTU/Hour, inclusive, manufactured after January 1, 2013, that emits more than 14 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output, or more than 20 ppm NO_x at 3% O₂, dry.

9-6-304 Natural Gas-Fired Mobile Home Water Heaters: No person shall sell, install, or offer for sale within the District any natural gas-fired mobile home water heater manufactured after January 1, 2008, that emits more than 40 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output.

9-6-305 Natural Gas-Fired Pool/Spa Heaters:

305.1 No person shall sell, install, or offer for sale within the District any natural gas-fired pool/spa heater with an input rating from 400,001 to 2,000,000 BTU/Hour, inclusive, manufactured after January 1, 2008, that emits more than 40 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output, or more than 55 ppm NO_x at 3% O₂, dry.

305.2 No person shall sell, install, or offer for sale within the District any natural gas-fired pool/spa heater with an input rating from 400,001 to 2,000,000 BTU/Hour, inclusive, manufactured after January 1, 2013, that emits more than 14 nanograms of nitrogen oxides (calculated as NO₂) per joule of heat output, or more than 20 ppm NO_x at 3% O₂, dry.

9-6-400 ADMINISTRATIVE REQUIREMENTS

9-6-401 Compliance with Emissions Standards: Certification: The manufacturer shall obtain confirmation demonstrate from an independent testing laboratory that each boiler or water heater model it intends to sell or distribute for sale into the District that is subject to the requirements of Section 9-6-301, 303, 304, or 305 has been tested in accordance with the procedures in 9-6-601.

401.1 The measurement of nitrogen oxides emissions shall be conducted in accordance with the Manual of Procedures, Volume IV, Method ST 13B or EPA Reference Method RM-7 (40 CFR Part 60, Appendix A, Test Method 7, including 7A-E).

401.2 Each tested water heater shall be operated in accordance with Section 2.4 of American National Standards ANSI Z21.10.1-1990 at normal test pressure, input rates, and with a five-foot exhaust stack installed during the nitrogen oxides emissions tests.

401.3 The following procedure shall be used to calculate the NO_x emission rate in nanograms of NO_x per joule of heat output:

$$N = \frac{4.566 \times 10^4 \times P \times U}{H \times C \times E}$$

Where:

N = NO_x Emission Rate in nanograms of NO_x emitted per joule of heat output

P = Concentration of NO_x in the flue gas in parts per million (volume)

U = Dry volume percent of CO₂ in flue gas necessary for stoichiometric combustion

H = Gross heating value of the gas, BTU/Cu Ft (at 60°F and 30" Hg)

C = Dry volume percent of CO₂ in flue gas

E = Recovery efficiency, percentage, as defined in Section 6.1.3 of the Code of Federal Regulation, Title 10, Part 430, Subpart B, Appendix E.

401.4 The manufacturer may submit to the District an approved SCAQMD certification in lieu of conducting duplicative certification tests.

9-6-402 Application for Certification: Compliance Statement:

- 402.1 Each manufacturer shall submit an application to the APCO for certification of their compliant boiler or water heater model. The application must:
 - 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.
 - 1.2 Provide a description of the model being certified
 - 1.3 Include a complete certification source test report demonstrating that the boiler or water heater model was tested in accordance with procedures in Section 9-6-601 and a written statement that the model complies with Section 9-6-301, 303, 304, or 305 and is tested in accordance with procedures in Section 9-6-601.
 - 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 9-6-401.
 - 1.5 Be submitted to the District no less than 90 days before the intention to sell or distribute a new water heater model within the District, or no less than 90 days before the effective dates in Section 9-6-301, 303, 304, 305.
- 402.2 After completing review of the application for certification and source test report, the APCO will approve, or will deny approval of, the device.
- 402.3 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 9-6-402.
- 402.4 In lieu of submitting an application as provided in Section 9-6-402.1, the manufacturer may submit to the District an approved SCAQMD certification that complies with Section 9-6-301, 303, 304, or 305.

9-6-403 Identification: The water heater manufacturer shall display the model number and the certification status of a water heater complying with this rule on the shipping carton and on the rating plate of each unit.

9-6-600 MANUAL OF PROCEDURES

9-6-601 Determination of Emissions: Emissions of oxides of nitrogen from water heaters subject to Section 9-6-301, 303, 304, or 305 shall be tested in accordance with the South Coast Air Quality Management District Protocol: "Nitrogen Oxides Emission Compliance Testing for Natural Gas-Fired Water Heaters and Small Boilers, January 1995", or in accordance with the following provisions: ~~measured as prescribed in the Manual of Procedures, Volume IV, Section St-13B or EPA Reference Method RM-7 (40 CFR Part 60, Appendix A, Test Method 7, including 7A-E).~~

- 601.1 Confirmation shall be based on emission tests of a randomly selected unit of each water heater model.
- 601.2 The measurement of nitrogen oxides emissions shall be conducted in accordance with the Manual of Procedures, Volume IV, Method ST-13B or EPA Reference Method RM-7 (40 CFR Part 60, Appendix A, Test Method 7, including 7A-E).
- 601.3 Each tested water heater shall be operated in accordance with Section 2.4 of American National Standards ANSI Z21.10.1-1990 at normal test pressure, input rates, and with a five-foot exhaust stack installed during the nitrogen oxides emissions tests.
- 601.4 The following procedure shall be used to calculate the NO_x emission rate in nanograms of NO_x per joule of heat output:

$$N = \frac{4.566 \times 10^4 \times P \times U}{H \times C \times E}$$

Where:

N = NO_x Emission Rate in nanograms of NO_x emitted per joule of heat output

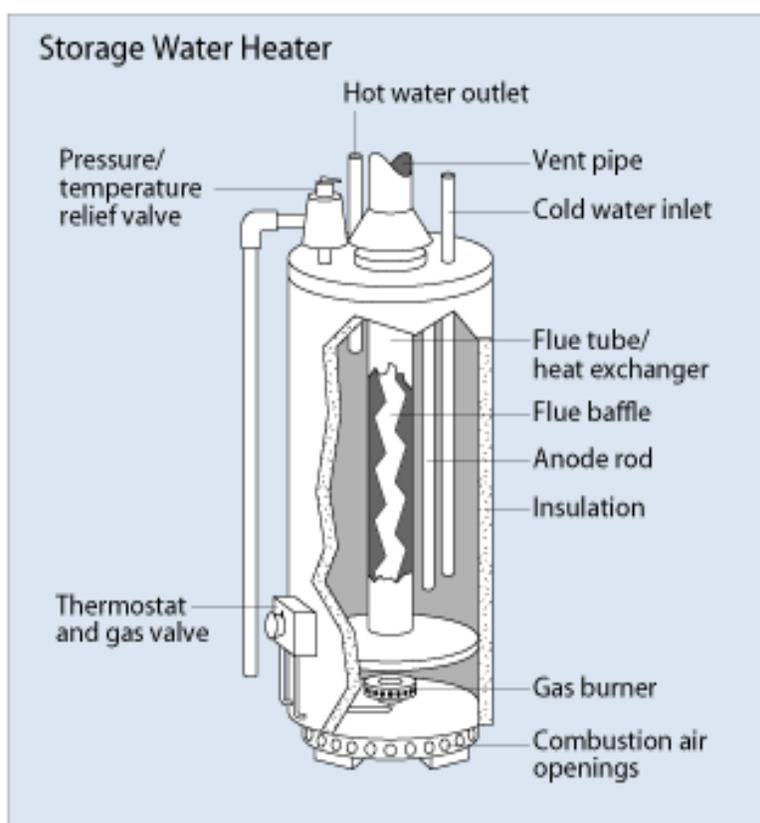
- P = Concentration of NO_x in the flue gas in parts per million (volume)
U = Dry volume percent of CO₂ in flue gas necessary for stoichiometric combustion
H = Gross heating value of the gas, BTU/Cu Ft (at 60°F and 30"Hg)
C = Dry volume percent of CO₂ in flue gas
E = Recovery efficiency, percentage, as defined in Section 6.1.3 of the Code of Federal Regulation, Title 10, Part 430, Subpart B, Appendix E.

Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109

Bay Area 2005 Ozone Strategy
Control Measure SS 13

BAAQMD Regulation 9, Rule 6: Nitrogen Oxides from Natural Gas-Fired Water Heaters and Small Boilers



Staff Report
October, 2007

Prepared by:
Guy A. Gimlen
Air Quality Engineer
Planning, Rules and Research Division

STAFF REPORT
REGULATION 9, RULE 6: Nitrogen Oxides from Natural Gas-Fired
Water Heaters and Small Boilers

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I. EXECUTIVE SUMMARY

This Staff Report provides information regarding proposed amendments to Bay Area Air Quality Management District (“BAAQMD” or the “Air District”) Regulation 9, Rule 6: Nitrogen Oxides from Natural Gas-Fired Water Heaters (“Regulation 9-6”). Staff proposes these amendments to Regulation 9-6 to reduce emissions of nitrogen oxides (NO_x) by updating the NO_x emissions requirements for residential water heaters and by extending lower NO_x limits to commercial and industrial water heaters and small steam and hot water boilers not currently regulated by Regulation 9-6, thus implementing Control Measure SS-13 in the Air District’s 2005 Ozone Strategy.

NO_x compounds are precursors in the formation of ground level ozone. In addition, NO_x reacts in the atmosphere to form fine particulate matter. The Bay Area is in non-attainment status for the State 1-hour and 8-hour, and federal 8-hour ozone standards, and has committed to implement all feasible measures to reduce emissions of ozone precursors, including NO_x. The Bay Area is currently in attainment of the federal PM₁₀ (particulate matter of 10 microns or less in diameter) standard; but like most of the state, is designated as non-attainment for the California PM₁₀ and PM_{2.5} (particulate matter of 2.5 microns or less in diameter) standards. The Bay Area has not yet been designated for the newer federal PM_{2.5} standard. It is important to reduce the public’s exposure to both ozone and particulate matter to protect public health.

Regulation 9, Rule 6 is currently a “point of sale” type regulation, limiting sale and installation of new water heaters to only those that achieve the NO_x emissions standards specified in the Rule. Proposed amendments continue use of this strategy, but would further reduce NO_x emissions by requiring low NO_x combustion burners on new water heaters, and by extending the lower NO_x emissions standards to large water heaters and small boilers not currently subject to the Rule.

Existing Bay Area residential water heaters emit an estimated 3.3 tons per day (tpd) of NO_x. Emissions reductions expected as a result of the proposed amendments are based on lower emissions for each water heater sold starting in 2009 and an estimated 12 year life expectancy for a typical water heater. NO_x reductions are estimated to start at 0.2 tpd in mid-2009 and accrue to a total reduction of 2.5 tpd by 2021.

Current NO_x emissions from large water heaters and small boilers are estimated to be 0.5 tons per day. The South Coast, the Santa Barbara, the Ventura, and the San Joaquin Valley air districts have already enacted regulations that limit NO_x emissions from similar new large water heaters and small boilers. The implementation strategy for these units is also based on replacement of existing large water heaters and small boilers when they reach the end of useful life. These large water heaters and small boilers typically have a longer life expectancy – estimated at 25 years. Expected NO_x reductions from extending this regulation to larger water heaters and small boilers in the

Bay Area are estimated at 0.4 tpd when the proposed amendments are fully implemented.

The Air District is proposing NO_x limits on mobile home water heaters, sources that are not currently subject to BAAQMD regulations. Mobile home water heaters are similar in design to power assist vent style water heaters, and have technology available to control emissions.

The Air District is also proposing NO_x limits on large pool and spa heaters, sources that are not currently subject to BAAQMD or other districts' regulations. Residential pool heaters are seldom used for significant periods so will remain exempt, but the larger pool and spa heaters used at commercial, institutional, and public pools in hotels, schools and fitness facilities operate all year, and are sources of significant NO_x emissions. Manufacturers of large pool and spa heaters can adapt low NO_x burners to successfully reduce NO_x.

The technology to achieve these proposed limits is available now. New low-emission water heaters will replace higher emission water heaters at the end of their useful life. Low-emission water heaters cost 15 - 20% more than previous designs, but also achieve higher energy efficiency and have been designed to meet more stringent safety standards. Higher efficiency means that less natural gas is burned for the amount of hot water generated. Replacement of existing water heaters with more energy-efficient models to meet new NO_x standards would also reduce emissions of CO₂, a greenhouse gas.

Consumer and industry impact is expected to be minimal. A socio-economic analysis of the proposed rule amendments has found that they would not have significant adverse effects. An initial study of the proposed amendments concludes that there would not be significant adverse environmental impacts, and as a result, Staff proposes the adoption of a California Environmental Quality Act (CEQA) Negative Declaration.

In preparing these amendments, staff consulted with water heater manufacturers, the PG&E Food Service Technology Center, the Gas Appliance Manufacturers Association, and the Project Manager of Valley Energy Efficiency Corp's Super Efficient Gas Water Heating Appliance Initiative (SEGWHAI) project. A workshop to discuss the proposal was conducted on June 29, 2007. Comments from the workshop have been incorporated into the final proposal.

II. BACKGROUND

A. Introduction

This report describes the work Air District staff conducted in considering amendments to Regulation 9-6 in order to reduce the emissions of nitrogen oxides in the Bay Area.

Boilers and water heaters burn fuel, typically natural gas, to heat water and/or generate steam. Fuel burns with oxygen in the air to form carbon dioxide (CO₂) and water vapor (H₂O). An unwanted byproduct of this combustion occurs when nitrogen (N₂) in the air also burns with oxygen to form NO and NO₂. The ratios of NO and NO₂ vary with flame temperatures and excess oxygen levels, so the combined sum of both is described as nitrogen oxides (NO_x).

NO_x compounds are precursors in the formation of ground level ozone. The Air District is in non-attainment status for the State 1-hour and 8-hour, and the federal 8-hour ozone standard, and has committed to implement all feasible measures to reduce emissions of ozone precursors, including NO_x. In addition, NO_x reacts in the atmosphere to form fine particulate matter. The Bay Area is currently in attainment of the federal PM₁₀ (particulate matter of 10 microns or less in diameter) standard; but like most of the state, is designated as non-attainment for the California PM₁₀ and PM_{2.5} (particulate matter of 2.5 microns or less in diameter) standards. The Bay Area has not yet been designated for the newer federal PM_{2.5} standard. It is important to reduce the public's exposure to both ozone and particulate matter to protect public health. Ozone causes eye irritation and affects the respiratory system by irritating the mucous membranes in the nose and throat and lung tissue. Normal functioning of lungs is impaired, thus 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, elderly, and athletes. Inhalation of PM₁₀ and PM_{2.5} deep into the lungs reduces human pulmonary function. Regulation 9, Rule 6 currently establishes NO_x emissions limits for residential water heaters.

The Air District's 2005 Ozone Strategy Control Measure SS-13 identified water heaters and small boilers as a source category from which emissions reductions could be attained. Control Measure SS-13 suggested reducing emissions of nitrogen oxides (NO_x) by updating the NO_x emissions requirements for residential water heaters. Control Measure SS-13 also suggested reducing NO_x emissions from commercial and industrial water heaters and small steam and hot water boilers that are larger than those currently regulated by Regulation 9-6.

B. Regulatory History

Regulation 9, Rule 6 was adopted in 1992. It prohibits the sale and installation of any water heater within the Air District that does not achieve NO_x emissions of 40 nanograms (ng) NO_x, or less, per joule of heat output. Regulation 9, Rule 6 currently

applies to water heaters with a rated heat input capacity of 75,000 Btu/hr or less. These water heaters are conventional storage tank water heaters typically found in single-family residences. A typical home water heater is a 40 gallon storage tank water heater with a 40,000 Btu/hr heat input rating.

Large boilers are regulated by the Air District under three separate rules. Two rules apply to large industrial boilers at refineries and power plants (Regulation 9, Rules 10 and 11 respectively). The third rule, Regulation 9, Rule 7 ("Regulation 9-7"), imposes a 30 ppm NO_x limit on industrial, institutional, and commercial boilers with a rated heat input of 10 million Btu/hr or more. Regulation 9-7 was adopted September 15, 1993. Control Measures SS-12 and SS-13 in the Air District's 2005 Ozone Strategy proposed review of Regulation 9-6 and Regulation 9-7, and closure of the gap that currently exists between the two regulations. Control Measure SS-12 committed the Air District to consider extending coverage of Regulation 9-7 to smaller boilers (less than 10 million Btu/hr heat input) that are currently exempt. Control Measure SS-13 committed the Air District to review NO_x emission limits for residential water heaters and to consider extending coverage of Regulation 9-6 to larger water heaters, with a heat input greater than 75,000 Btu/hr, and small boilers.

Water heaters between 75,001 and 400,000 Btu/hr heat input are usually tank type water heaters similar in appearance, design, and construction to the smaller water heaters subject to Regulation 9, Rule 6. Instantaneous water heaters are also in this heat input range. Units larger than 400,000 Btu/hr are typically small boilers and are different in appearance, design, and construction from water heaters. The small boilers to which this measure applies are generally sold as "package boilers" that are prefabricated, equipped and shipped complete with burners and control systems. Boilers in this size range generally rely on natural draft rather than mechanical (fan assisted) draft. They are used in office buildings, hotels, schools, and commercial and industrial facilities to supply heat, hot water, or steam. Regulation 9-6 does not apply to any other kind of space heaters, process fluid heaters, or other industrial heaters in this size range.

The South Coast Air Quality Management District ("SCAQMD") adopted Rule 1121 in 1978, then amended it into a "technology forcing" regulation in 1995, requiring water heaters to meet 20 ng/joule by 2002, and 10 ng/joule by 2005. This regulation has subsequently been amended twice as delays occurred in adapting this technology to water heaters. Discussions with SCAQMD staff and water heater manufacturers validate that natural draft storage tank water heaters of less than 50 gallons capacity now appear to be able to meet the 10 ng/joule NO_x limit and that units able to meet that limit will be commercially available in the fourth quarter of 2007. Similarly, manufacturers appear to be on track to produce natural draft storage tank water heaters of greater than 50 gallons that will meet the 10 ng/joule NO_x limit by 2009. They also appear to be on track to produce storage tank water heaters with power assisted draft that will meet the 10 ng/joule limit by 2010.

SCAQMD Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers, adopted on January 9, 1998, established NO_x emission limits for large water heaters and small boilers ranging from 75,001 Btu/hr up to and including 2 million (MM) Btu/hr with various effective dates from 2000 to 2006, and expected NO_x reductions between 2010 and 2012. As with Rule 1121, these timetables have been amended to match with the actual technology development. The Santa Barbara, Ventura, and San Joaquin Valley air districts have subsequently enacted similar regulations that reflect the South Coast limits and amended implementation schedules.

C. Source Description

A wide variety of products are available to heat water in residential and commercial applications. Four primary companies make residential water heaters, and several other manufacturers produce boilers; electric and gas-fired storage tank water heaters; electric and gas-fired instantaneous water heaters; and hot water storage tanks where water is heated by another source such as a boiler or by solar heating. Water heater manufacturing companies also make combination solar and electric water heater tanks. In other countries, combination solar and gas-fired water heaters are also available.

Within the category of gas-fired storage tank water heaters with heat input of 75,000 Btu/hr or less, there are four styles which differ in the way combustion air and combustion exhaust gases are handled.

- Typical home gas-fired storage tank water heaters are designed to have combustion air enter at the bottom of the unit and combustion products are vented through an exhaust duct to the outside of the building. These are known as atmospheric (natural draft) water heaters.
- There are also three water heater designs that use fan assist to draw air in, or exhaust gases out of the water heater. These designs have various names:
 - power-vent;
 - direct-vent; and
 - power direct-vent

Each of these styles fall under the label of “Power Assist” storage tank water heaters. Each design is based on the ducting required for combustion air inlet, and exhaust gas outlet.

Large water heaters are also tank type water heaters, similar in appearance, design, and construction to the smaller water heaters. These larger water heaters range in size from 75,000 to 400,000 Btu/hr and are used in small hotels, apartment buildings, office buildings, and industrial and commercial facilities to supply hot water. A newer style of water heater in this heat input range is an instantaneous, tank-less water heater. Instantaneous water heaters heat water “on demand”, and are becoming more popular for specific use needs, and may be more efficient because they have less heat loss during non-use periods.

Units larger than 400,000 Btu/hr are typically small boilers and are different in appearance, design, and construction from water heaters. These small boilers are generally sold as “package boilers” that are prefabricated, equipped and shipped complete with burners and control systems. Boilers in this size range generally rely on natural draft rather than mechanical draft equipment. They are used in office buildings, hotels, schools, and industrial facilities to supply heat, steam, or hot water. These units are not currently regulated by an Air District rule.

Each system for water heating (other than solar) results in emissions of nitrogen oxides. Electric water heaters do not emit nitrogen oxides directly, but they result in increased power plant emissions. Solar water heating is the technology with the greatest potential to reduce overall emissions from the heating of water for residential and commercial use. A variety of solar water heating systems are now available. However, for most applications, an additional source of heat is needed when sunlight is not available.

Mobile home water heaters are very similar in design to Power Vent style water heaters. These water heaters have technology to control NO_x emissions to 40 ng/joule of heat output.

Pool and spa water heaters are designed to warm water, rather than generate hot water. They combust natural gas to create heat, but generally warm the circulating water stream by only 10 – 15°F. Pool and spa heaters used for residential pools are usually in the 75,000 to 400,000 Btu/hr heat input range. Large pool and spa heaters used for commercial and industrial pools and spas are typically in the 400,000 to 2,000,000 Btu/hr heat input range.

D. Current Technology for Reducing NO_x Emissions

All natural gas fired water heaters and boilers rely on a burner to combust fuel to generate heat that in turn heats the water. Manufacturers have tested a variety of burner types to achieve low NO_x emissions. The principle technique involves premixing of fuel and air before combustion takes place. This results in a lower and more uniform flame temperature. A lower flame temperature reduces formation of NO_x. Some premix burners also use staged combustion with a fuel rich zone to start combustion and stabilize the flame and a fuel lean zone to complete combustion and reduce the peak flame temperature. Burners can also be designed to spread flames over a larger area to reduce hot spots and lower NO_x emissions. For residential water heaters, manufacturers have focused on pre-mixed radiant burners. These burners mix fuel and air before the mixture is ignited at the surface of the burner. Radiant burners with ceramic, sintered metal or metal fiber heads spread the flame and produce more radiant heat while at the same time reducing flame temperature. When a burner produces more radiant heat, it can result in less heat escaping the boiler through exhaust gases. In addition, radiant burners evenly distribute the heat of combustion which stabilizes the

flame and prevents "hot spots." When hot spots are prevented, NO_x emissions are also minimized.

The technology to produce water heaters that emit less than 10 ng/joule of heat output is currently available. Manufacturers have integrated these low NO_x burners into a re-design of their water heaters that started with the 50 gallon and smaller water heaters. The re-design was required to meet U.S. Department of Energy Regulations¹, and California Energy Commission Appliance Efficiency Standards². These standards require greater than 80% efficiency, and enhanced safety requirements including Flammable Vapor Ignition Resistance (FVIR). Each manufacturer is now certifying their parts suppliers and manufacturing process to ensure each water heater meets all requirements. Manufacturers expect to be able to supply water heaters that meet the efficiency, safety, and NO_x standards by late 2007. Manufacturers expect to supply water heaters over 50 gallons that meet all requirements by 2009, and power assisted ventilation water heaters that meet all requirements by 2010.

Low NO_x burners for large heaters and small boilers can achieve NO_x emissions of less than 14 ng/joule. Manufacturer certification test results provided to SCAQMD show that manufacturers have made substantial progress in reducing the NO_x emissions from large water heaters and small boilers, and appear to be on track to develop low NO_x capability. Approximately 20% of the large water heaters providing test results in the 75,001 to 400,000 Btu/hr units size range meet the proposed Regulation 9, Rule 6 limit of 14 ng NO_x/joule. Approximately 45% of the small boilers and boiler type water heaters in the 400,001 to 2,000,000 Btu/hr size range units tested under the SCAQMD certification program meet the proposed limit. While no instantaneous water heaters currently meet the proposed emission limit, manufacturers have reported they are making progress, and indicate they are on-track to achieve these standards by 2012.

III. PROPOSED RULE AMENDMENTS

A. Introduction

Regulation 9, Rule 6 is a "point of sale" type regulation, currently limiting sale and installation of new water heaters to only those that achieve the NO_x emissions standards specified in the Rule. Proposed amendments continue this strategy, but reduce NO_x emissions by requiring lower NO_x emission standards for new water heaters, by extending the lower NO_x emissions standards to larger water heaters and small boilers, and by establishing NO_x emissions standards for water heaters not currently subject to the Rule. All proposed changes apply to new water heaters and boilers only. No retrofits of existing facilities' water heaters and boilers are proposed.

Air District staff proposes no change for most existing exemptions. Water heaters for recreational vehicles and those using any fuel other than natural gas are exempt.

D. Mobile Home Water Heaters

Water heaters used exclusively for mobile homes are similar in design to those with power assist vent systems. Staff recommends requiring any new heaters to meet a NO_x emissions standard of 40 ng/joule, effective July 1, 2008. This water heater technology is now readily available, so mobile home water heaters should no longer be exempt from this regulation.

E. Pool/Spa Heaters

Water heaters used exclusively for swimming pools and spas have been exempt from this regulation in the past. Pool and spa heaters are specifically designed for pool and spa applications, but are similar in design and rated heat input capacity to larger commercial water heaters. Residential pool/spa heaters are typically less than 400,000 Btu/hr rated heat input capacity. Residential pools are seldom heated year-round, so emissions from these units are minimal. Commercial, institutional and public swimming pools are typically larger, and equipped with larger heaters. In addition, these pools are normally heated all year, and therefore can be significant sources of NO_x emissions. Staff recommends requiring any new pool and spa heaters greater than 400,000 Btu/hr rated heat input capacity to meet a NO_x emissions standard of 40 ng/joule (~55 ppm), effective January 1, 2008. This water heater technology is now readily available, and large swimming pool and spa heaters should no longer be exempt from this regulation. Further, staff recommends that these large commercial, institutional, and public pool and spa water heaters be required to meet a 14 ng/joule NO_x emission limit by January 1, 2013, consistent with other large commercial water heaters.

F. Other Amendments

Administrative Requirements for certifying heater models for use and sale within the District have been clarified and strengthened. Manufacturers will be required to obtain written confirmation from an independent testing laboratory that the specific make and model of water heater or boiler they intend to sell or distribute in the District is compliant with the appropriate NO_x emissions standards. Re-certification is required every three years to ensure these products remain compliant. In addition, application requirements for District certification of water heaters are clarified. The District will continue to accept SCAQMD certification where the NO_x standards are identical, in lieu of duplicate emissions tests and applications for certification.

The standards for determining emissions from water heaters are established in Section 9-6-600: Manual of Procedures. The methods set out in section 9-6-601 include those normally used when the District conducts compliance testing on an emissions source. Section 9-6-601 also provides alternate methods, including the SCAQMD protocol for water heater NO_x testing.

IV. EMISSIONS AND EMISSION REDUCTIONS

Emissions Subject to Control

Emissions from water heaters currently included in the Air District emission inventory are shown in Table 1:

Table 1

Source Category	Description	Emissions: tons per day
284	Fuels Combustion – Domestic <ul style="list-style-type: none"> • Residential water heaters 	3.29 tpd
1590	Fuels Combustion – Other External Combustion <ul style="list-style-type: none"> • Estimate for large water heaters 	7.03 tpd 0.46 tpd
307	Other natural gas combustion <ul style="list-style-type: none"> • Estimate for large water heaters 	3.49 tpd 0.08 tpd

Emissions from residential water heaters along with emissions from larger residential, commercial and industrial combustion equipment are included in the BAAQMD inventory in three different categories. Emissions from residential water heaters are included in the emission inventory Source Category 284, called Fuels Combustion – Domestic. NO_x emissions from residential water heaters in this category are estimated to be 3.29 tons of NO_x per day based on estimated volumes of natural gas burned for water heating from Pacific Gas & Electric (PG&E). Mobile home water heaters are included in this estimate.

Estimated emissions from larger residential, commercial and industrial combustion equipment, 75,001 through 2,000,000 Btu/hr heat input that are not permitted as point sources are captured as area source emissions in Category 1590, Fuels Combustion – Other External Combustion. Commercial and institutional pool and spa heaters are included in this category. Emissions from this category are 7.03 tons per day, including emissions from devices with input heat ratings less than 2 MM Btu/hr. An inspection of boiler population data provided by the San Francisco Department of Building Inspection (DBI) for 2003 shows that devices rated less than 2 MM Btu/hr constitute one third of the total number of devices rated less than 10 MM Btu/hr. We expect this information to be representative of other commercial installations throughout the Bay Area. However, because devices rated less than 2 MM Btu/hr have a maximum fuel consumption that is one fifth of the largest devices (10 MM Btu/hr), the NO_x emissions from these devices will be assumed to be only 20% of that suggested by their population:

$$(7.03 \text{ ton/day})(0.33)(0.20) = 0.46 \text{ ton/day NO}_x$$

Emissions from permitted point sources are captured in Category 307. These sources are permitted for some other reason than their NO_x emissions – as part of a larger

facility or from their potential to burn liquid fuels. Category 307 NO_x emissions are estimated to be 3.49 tpd from “other” natural gas combustion – some of which may be water heating. Staff analyzed these point sources using source codes for Industrial – Other, and Commercial / Institutional. Expansion of the rule will include a small number of large water heaters whose emissions appear to be relatively small – no more than 0.01 tpd. Similar analysis of small boilers indicates their emissions appear to be no more than 0.07 tpd.

The conclusion from the above data is that the NO_x emissions subject to control from water heaters in the 75K through 2 MM Btu/hr range is approximately 0.5 tons per day.

Emission Reductions Expected

Emissions reductions from the proposed amendments are shown in Table 2:

Table 2

Heat Input Range	Emissions	Emission Reductions
Water Heaters: 75,000 Btu/hr heat input or less	3.29 tpd	2.47 tpd
Large Water Heaters and Small Boilers: 75,001 – 2,000,000 Btu/hr	0.54 tpd	0.40 tpd

Current emissions for residential water heaters are estimated at 3.29 tons per day (tpd). The proposed amendments will reduce NO_x by 75%, or 2.47 tpd. These emission reductions will occur as new water heaters replace the existing higher emissions water heaters. Typical life expectancy for a residential water heater is 12 years. Staff proposes that this element of the rule amendments go into effect on January 1, 2009, thus reducing NO_x emissions by a cumulative 0.2 tpd for each of the subsequent 12 years.

Current estimates for NO_x emissions from commercial, institutional, and industrial water heaters from 75K through 2 MM Btu/hr heat input in the Air District inventory are a cumulative 0.5 tpd. The NO_x emission reductions staff expects will occur in two phases. The first phase is a reduction from uncontrolled NO_x emissions (~74 ng/joule) to 40 ng/joule beginning in 2008. The second phase is a reduction from 40 ng/joule to 14 ng/joule beginning in 2013. Large water heaters and small boilers also have a longer lifespan – estimated at 25 years, which equates to 4% replacement each year. NO_x reductions will be 0.01 tpd each year beginning in 2008. NO_x reductions will increase to 0.016 tpd in 2013. Since this is a relatively small amount of potential NO_x reduction, staff proposes the strategy of replacement with new low emission water heaters and package boilers when they reach their end of useful life, rather than require a retrofit or accelerated replacement. The total NO_x emissions reduced from these larger water heaters will be 0.4 tpd.

These NO_x reductions will also contribute to reduced emissions of fine particulate matter. PM_{2.5} (particulate matter of 2.5 microns diameter or less) is formed from a conversion of NO_x to ammonium nitrate (NH₄NO₃). District staff has estimated the ratio between NH₄NO₃ formation to NO_x emissions to range between 1:6 and 1:10. Assuming an average ratio of 1:8 conversion, the 2.9 tpd reduction in NO_x emission will reduce PM_{2.5} by 0.36 tpd.

V. ECONOMIC IMPACTS

A. Compliance Costs

Cost of a typical residential 40 gallon, 40,000 Btu/hr heat input water heater is \$400 to \$500, plus additional costs for installation. Additional cost for a low-NO_x residential water heater is approximately \$50. These water heaters have also been redesigned to be more energy efficient, as required by Department of Energy standards. The additional cost for increased energy efficiency of the new water heater is approximately \$60. The average residential water heater burns 200 Therms/year, producing 1.08 lbs. of NO_x. NO_x reductions are estimated at 0.81 lbs. of NO_x per year. The cost effectiveness for these residential water heaters is about \$17,300/ton of NO_x reduced, excluding consideration of energy savings. However, new residential water heaters are required to be at least 5% more efficient, and are estimated to actually be ~9% more energy efficient. Estimated energy savings are \$20 per year, generating a simple payback period of less than 6 years for the expense of both increased efficiency and lower NO_x emissions. Costs are similar for Power Vent style water heaters, and water heaters for mobile homes.

Water heaters from 75,000 through 400,000 Btu/hr heat input range in cost from \$2500 to \$10,000 plus installation. Incremental costs for low NO_x capability in large water heaters are estimated to be \$100 - 200 per unit. A 100,000 Btu/hour commercial heater is expected to burn 876 Therms/year, generating 4.65 lbs of NO_x. NO_x reductions are estimated at 3.72 lbs. of NO_x per year. The cost effectiveness for this size range is \$7500 – 15,000/ton NO_x reduced. Potential improvements in energy efficiency for these larger units are less clear. These units are required to be at least 80% energy efficient. Energy efficiency improvements for new heaters and small boilers is less quantifiable because there have been no mandatory improvements required for these units. In addition, these large water heaters and small boilers vary more in size and design. These new units are expected to be at least 5% more efficient, and will save 44 Therms, or approximately \$48/year.

Small boilers from 400,001 through 2,000,000 Btu/hr heat input range in cost from \$10,000 to \$50,000 plus installation. Additional costs for low NO_x capability are estimated to be \$400 – 800 per unit. A 1,000,000 Btu/hour commercial heater is expected to burn 8760 Therms/year, generating 46.5 lbs of NO_x. NO_x reductions are estimated at 37.2 lbs. of NO_x per year. The cost effectiveness for these units is \$3000 -

6000/ton NO_x reduced. Estimates of improved efficiency for these larger water heaters and small boilers is also approximately 5%, generating savings of 438 Therms, or about \$480/year.

B. Incremental Cost Effectiveness

Section 40920.6 of the California Health and Safety Code requires an air district to perform an incremental cost analysis for any proposed Best Available Retrofit Control Technology 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.”

Low NO_x burners are the only reasonable, feasible way to reduce NO_x emissions from residential water heaters. Since there are no viable alternatives, cost effectiveness is calculated by dividing the annualized incremental capital cost by the tons of NO_x emissions reduced. Cost effectiveness for low NO_x residential water heaters are estimated at \$17,300 per ton. Benefits from improved thermal efficiency are specifically excluded from this analysis.

Similarly, low NO_x burners are the only viable way to reduce NO_x from large water heaters ranging from 75,001 through 400,000 Btu/hr heat input. Cost effectiveness for these large water heaters is estimated at \$7,500 per ton. Again, any improvements in thermal efficiency are specifically excluded from this analysis.

Low NO_x burners are the lowest cost, most efficient means to reduce NO_x emissions from small boilers ranging from 400,001 through 2MM Btu/hr heat input. Cost effectiveness for these small boilers is estimated at \$3,800 per ton. Flue gas recirculation is another viable means of reducing NO_x from boilers. Flue gas recirculation can, at best, reduce NO_x down to ~10 ppm. This would provide an additional reduction of 4.65 lbs. per year of NO_x for a 1,000,000 Btu/hr heat input boiler. However, flue gas recirculation capital costs are at least three times more than those for low NO_x burners, and may have the added cost of operating a flue gas blower. Even assuming that flue gas recirculation can be achieved with natural draft, annualized capital costs are an additional \$140/year for each small boiler. Incremental cost effectiveness of flue gas recirculation over low NO_x burners is very expensive, estimated at \$60,000 per ton of NO_x reduced. Catalytic reduction is the other technology available to reduce NO_x emissions from boilers. Catalytic reduction capital costs are even higher than those for flue gas recirculation, and have an impact on boiler efficiency. Catalytic reduction can reasonably reduce NO_x down to ~5 ppm. This would provide an additional reduction of 7.0 lbs. per year of NO_x for each small boiler. However, catalytic reduction capital and operating costs are at least five times more

than those of a low NO_x burner, estimated at \$280/year for each small boiler. Incremental cost effectiveness of catalytic reduction over flue gas recirculation is also quite expensive, estimated at \$80,000 per ton of NO_x reduced. Neither of these options can compete with the simplicity and effectiveness of low NO_x burners for water heaters and small boilers. Because of these reasons, and the poor incremental cost effectiveness associated with flue gas recirculation and catalytic reduction technologies, the proposed limits reflect emissions achievable with low NO_x burners.

C. 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 Development Economics of Walnut Creek, California has prepared a socioeconomic analysis of the proposed amendments to Regulation 9, Rule 6. The analysis concludes that the affected facilities and individuals should be able to absorb the costs of compliance with the proposed rule when water heaters or small boilers require replacement without significant economic dislocation or loss of jobs.

VI. ENVIRONMENTAL IMPACTS

Pursuant to the California Environmental Quality Act, the BAAQMD 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 BAAQMD Board of Directors. The initial study and negative declaration has been circulated for public comments. No comments were received.

Regulation 9, Rule 6 supports efficiency and energy conservation as a primary preventive approach to pollution. The rule currently has NO_x standards defined in terms of nanograms of NO_x per joule of heat output. The current rule uses the “output based” emission limits, as recommended by USEPA. A more efficient water heater will generate less NO_x because it uses less fuel. The proposed amendments continue this approach, but do, where appropriate, accommodate the industry norm of also stating emission standards in flue gas volumetric parts per million (ppm) on a dry gas basis at 3% oxygen. The output based limits support and reinforce the preventive approach to pollution. Reducing pollution while promoting efficiency is crucial to reducing CO₂ emissions and their impact on global climate change.

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 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 difference between these existing requirements and the requirements imposed by the proposed change.

There are no federal or state air pollution control requirements for water heaters. Several California air districts currently have NO_x requirements for water heaters and small boilers. The proposed amendments to Regulation 9, Rule 6 meet or exceed these other air district standards.

District Staff Impacts

Implementation of the proposed amendments is not expected to impose a significant administrative burden for the Air District. BAAQMD air quality permits are not currently required for water heaters and boilers, and will not be required under the proposed amendments. NO_x limits for these units will continue to be enforced by requiring certification of any water heaters sold, or installed.

VIII. RULE DEVELOPMENT PROCESS

The Air District developed proposed amendments and documented rationale for these proposals in a workshop report. These proposals were based on existing regulations in the Santa Barbara, Ventura, San Joaquin Valley, and South Coast air districts, and e-mail information exchange and discussions with water heater manufacturers, PG&E's Food Technology Center personnel, and individuals from the Valley Energy Efficiency Corporation's Super Efficient Gas Water Heating Appliance Initiative (SEGWHAI) Project. A public workshop was held on June 29, 2007. Thirteen people representing water heater manufacturers, PG&E, and affected users participated in the workshop, providing oral and written comments. Staff incorporated these comments into the current proposed amendments, as appropriate.

The final proposed amendments, staff report, socio-economic report, CEQA analysis and negative declaration, and public hearing notice were posted for public review on October 2, 2007. Two comments have been received. These comments do not necessitate any changes to the proposed amendments. A summary of the comments and staff's responses is attached as Appendix A.

IX. CONCLUSIONS

Pursuant to the California Health and Safety Code Section 40727, before adopting, amending, or repealing a rule the Board of Directors must make findings of necessity, authority, clarity, consistency, non-duplication and reference. The proposal is:

- Necessary to supplement the District's ability to attain the State one-hour and eight-hour ozone standards,;
- Authorized by California Health and Safety Code Section 40702;
- Clear, in that the new regulation specifically delineates the affected industries, compliance options and administrative and monitoring requirements for industry subject to this rule;
- Consistent with other District rules, and not in conflict with state or federal law;
- Non-duplicative of other statutes, rules or regulations; and
- The proposed regulation properly references the applicable District rules and test methods and does not reference other existing law.

A socioeconomic analysis prepared by Applied Development Economics has found that the proposed amendments would not have a significant economic impact or cause regional job loss. District staff have reviewed and accepted this analysis. A California Environmental Quality Act analysis prepared by Environmental Audit, Inc., concludes that the proposed amendments would not result in adverse environmental impacts. District staff have reviewed and accepted this analysis as well. A Negative Declaration for the proposed amendments was prepared and circulated for comment. No comments were received.

Staff recommends the adoption of the proposed amendments to Regulation 9, Rule 6: *Nitrogen Oxides from Natural Gas-Fired Water Heaters and Small Boilers*, and approval of the CEQA Negative Declaration.

X. REFERENCES

1. 10 CFR Part 430, Energy Conservation Program for Consumer Products: Energy Conservation Standards for Water Heaters; Final Rule, January 17, 2001; and U.S. Department of Energy, 42 U.S.C. Sections 6302(a)(5), 6316(a), and 6316(b)(1)
2. California Energy Commission, APPLIANCE EFFICIENCY REGULATIONS, CEC-400-2006-002-Rev1, Revised July 2006
3. Control Measure 13, 2005 Ozone Strategy, September 2005 Draft, Volume II, Bay Area Air Quality Management District Base Year 2005 Emission Inventory, Category 284 for residential water heaters, Categories 299 and 307 for point sources and Category 1590 for other area sources, BAAQMD, February, 2007
4. South Coast Air Quality Management District Rule 1121 – Control of Nitrogen Oxides from Residential Type, Natural Gas-Fired Water Heaters, Amended September 2004
5. SCAQMD Staff Report, Proposed Amended Rule 1121 – Control of Nitrogen Oxides from Residential Type, Natural Gas-Fired Water Heaters, August 2004
6. South Coast Air Quality Management District Rule 1146.2 – Emission of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters, Amended May 5, 2006
7. SCAQMD Staff Report, Proposed Amended Rule 1146.2 – Emission of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters, April 2006
8. SCAQMD Staff Report, Proposed Amended Rule 1146.2 – Emission of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters, December 2004
9. San Joaquin Valley Air Pollution Control District Rule 4308 – Boilers, Steam Generators, and process Heaters – 0.075 MM Btu/hr to 2.0 MM Btu/hr, Adopted 10/20/2005
10. Santa Barbara County APCD Rule 352 - Natural Gas-Fired Fan Type Central Furnaces and Residential Water Heaters, Adopted 9/16/1999
11. Santa Barbara County APCD Rule 360 - Emissions of Oxides of Nitrogen From Large Water Heaters and Small Boilers, Adopted 10/17/2002
12. Ventura County APCD Rule 74.11 – Natural Gas-Fired Residential Water Heaters – Control of NO_x, Adopted 4/9/85
13. Ventura County APCD Rule 74.11.1 – Large Water Heaters and Small Boilers, Adopted 9/14/1999
14. Internal District Memorandum, A First Look at NO_x/Ammonium Nitrate tradeoffs, BAAQMD, 9/8/1997

APPENDIX A COMMENTS AND RESPONSES

Staff received two comments during the public comment period:

- from the staff of the California Air Resources Board in a letter dated October 16, 2007; and
- from Robert Brose of the Robert Brose Company in an e-mail and attached document on October 16, 2007.

California Air Resources Board, October 16, 2007 Letter:

- ARB Staff had “No Comments” on the proposed rule or accompanying documentation.

Robert Brose of the Robert Brose Company, October 16, 2007 e-mail:

Comment – regarding Section 9-6-303, NO_x limits from small boilers

- Expressed concern about providing the option of volumetric NO_x limits (30 ppm NO_x at 3% O₂ dry, or 20 ppm NO_x at 3% O₂ dry effective 2013) for boilers from 400,001 to 2,000,000 Btu/hr heat input capacity.
- More stringent NO_x limits may cause boiler manufacturers to use greater excess air to reduce NO_x emissions. Greater excess air reduces boiler efficiency, requiring more fuel and consequently generating more Green House Gases for the same amount of work delivered.
- Suggested remedy was to establish a limit on total excess air allowed for these boilers.

Staff Response:

The rule as written establishes the NO_x limit in nanograms of NO_x per joule of delivered heat, so this “output based” NO_x limit includes efficiency of the water heater in the standard. However, the rule also provides a volumetric concentration limit in parts per million (ppm), and requires a correction for the NO_x concentration back to 3% O₂ dry. This prevents use of excess air to dilute the NO_x concentration to meet the standard.

Staff agrees that high volumes of excess air can help reduce NO_x by reducing flame temperatures, and excess air also reduces the overall boiler efficiency. Boilers in the 400,001 to 2,000,000 Btu/hr heat input capacity range are generally designed to be self controlling, with very little instrumentation or air flow adjustments available to the end user. In new boiler designs, pre-mix low NO_x burners, air ducts and burner controls are integrated to ensure stable flame patterns, and normally operate at 5 – 10% excess O₂ levels. This level of excess air provides adequate air for combustion without sophisticated instrumentation, and yet can accommodate changes in ambient air temperature and humidity. This

design approach delivers low NO_x performance, moderate excess air, and high efficiency. Our discussions with boiler manufacturers indicate they do not, and will not, design for extremely high excess air, for the very reason that such a design approach would render their boiler designs inefficient and ultimately not saleable in the competitive boiler marketplace.

SOCIOECONOMIC
ANALYSIS
PROPOSED RULE

REGULATION 9, RULE 6:
NITROGEN OXIDES FROM NATURAL GAS-FIRED
WATER HEATERS

September, 2007

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

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1. EXECUTIVE SUMMARY

Bay Area Air Quality Management District (“District”) seeks to amend to Regulation 9, Rule 6 to further limit NO_x emissions from residential, commercial and industrial water heaters. The Bay Area Air Quality Management District will not require households and businesses to retrofit or replace existing water heaters during the lifetime of the existing water heater. At the end of their useful life, existing water heaters will be replaced with new water heaters that comply with the proposed amendments. Households and businesses can purchase new water heaters when needed, particularly when their existing units breakdown. Thus, the report analyzes incremental costs associated with proposed amendments to Regulation 9, Rule 6, not the total cost of new compliant water heaters, on the grounds that households and businesses would need to purchase a water heater in any case, and the impact to households and businesses is the incremental increase in cost due to the proposed amendments.

According to District staff, the incremental cost of new water heaters range between \$50 and \$100 for housing of a variety of sizes, from single-family units to small-to-large multi-family units. Impacts to households are less than significant. District staff also places incremental costs of new water heaters for commercial and industrial users between \$100 and \$500. With respect to households, the socioeconomic analysis shows that incremental costs for residential new water heaters are a small fraction of what households typically spend every year on “miscellaneous household equipment and large appliances” and what they spend on retail and services in general. With respect to industries, the analysis concludes that the incremental costs of new commercial and industrial water heaters are less than significant. In addition, the analysis concludes by saying that small businesses are not disproportionately impacted by the proposed amendments to Regulation 9, Rule 6.

2. DESCRIPTION OF THE PROPOSED RULE

CURRENT STATUS OF THE RULE

The Bay Area Air Quality Management District (“District”) regulates NO_x emissions from water heaters under Regulation 9, Rule 6, which imposes a NO_x limit of 40 nanograms NO_x per joule of heat output on water heaters with a rated heat input capacity of 75,000 Btu/hr or less. The regulated water heaters are conventional tank water heaters typically found in single-family residences. This rule was adopted April 1, 1992.

In addition to water heaters with rated heat input capacity of 75,000 Btu/hr or less, there are larger water heaters that are also tank type water heaters, similar in appearance, design, and construction to the smaller water heaters. These larger water heaters range in size from 75,000 to 400,000 Btu/hr and are used in small hotels, apartment buildings, office buildings, and industrial and commercial facilities to supply hot water. Units larger than 400,000 Btu/hr are typically small boilers and are different in appearance, design, and construction from water heaters. These small boilers are generally sold as “package boilers” that are prefabricated, equipped and shipped complete with burners and control systems. Boilers in this size range generally rely on natural draft rather than mechanical draft equipment. They are used in office buildings, hotels, schools, and industrial facilities to supply heat, steam, or hot water. These units are not currently regulated by the District.

Larger water heaters and boilers are regulated under three separate rules. Two rules apply to large industrial boilers at refineries and power plants (Regulation 9, Rules 10 and 11 respectively). The third rule, Regulation 9, Rule 7 (“Regulation 9-7”), imposes a 30 ppm NO_x limit on industrial, institutional, and commercial boilers with a rated heat input of 10 million Btu/hr or more. Regulation 9, Rule 7 was adopted September 15, 1993.

PROPOSED RULE AMENDMENTS

Residential Water Heaters

Regulation 9, Rule is a “point of sale” type rule, requiring new water heaters sold, offered for sale, or installed in the District to meet the NO_x requirements. District staff proposes to amend Regulation 9, Rule 6 to require the following categories of residential water heaters (less than 75,000 Btu/hr heat input) to meet a NO_x emission limit of 10 ng/joule from the current 40 nanograms/joule limit according to the following schedule:

- < 50 gallon storage tank effective January 1, 2009
- > 50 gallon storage tank effective January 1, 2010
- Power assist storage tank effective January 1, 2011

Swimming Pool & Spa Heaters

District staff recommends requiring any new heaters used exclusively for commercial, public, and institutional swimming pools and spas to meet a NO_x emissions standard of 40 ng/joule, (~55 ppm), effective January 1, 2008. This water heater technology is now readily available, and swimming pool and spa heaters should no longer be exempt from this regulation, according to the District. Further, staff recommends that the commercial, public and institutional pool and spa water heaters be required to meet a 14 ng/joule NO_x emission limit by January 1, 2013, consistent with other large commercial water heaters.

Mobile Home Water Heaters

District staff recommends requiring any new heaters used exclusively for mobile homes not to exceed a NO_x emissions standard of 40 ng/joule, effective July 1, 2008, particularly since water heater technology is now readily available to lower emissions.

Commercial Water Heaters

The District does not currently regulate water heaters larger than 75,000 Btu/hr heat input. The District seeks to amend Rule 9-6 by imposing a NO_x limit of 40 nanograms per joule of heat output (~55 ppm) for new water heaters from greater

than 75,000 Btu/hr up to 400,000 Btu/hr heat input, effective January 1, 2008. Instantaneous water heaters are included here because they have similar rated heat input capacity, since they are designed to heat cold water up to normal hot water temperatures (typically 140 – 160°F) for immediate delivery. Water heaters certified to meet these emissions are currently available in southern California. Staff proposes a 14 ng/joule standard become effective in the Bay Area by January 1, 2013.

The District also seeks to regulate new package boilers larger than 400,000 Btu/hr to 2 million Btu/hr inclusive, via proposed amendments to Regulation 9, Rule 6. In particular, the District would impose a similar NO_x limit of 20 nanograms per joule (~30 ppm) of heat output for new water heaters from greater than 400,000 Btu/hr up to 2 million Btu/hr heat input, effective January 1, 2008. Staff further proposes to require water heaters with a heat input of 400,000 Btu/hr to 2 million Btu/hr to meet a 14 ng/joule standard effective January 1, 2013.

All of the NO_x emissions limits proposed for Regulation 9, Rule 6 will apply to new units only.

EMISSIONS REDUCTIONS

According to District staff, Regulation 9, Rule 6 draft amendments are similar to the standards and implementation timetable established by SCAQMD for residential water heaters. Emissions reductions are based on lower emissions for each water heater sold starting in 2009 and an estimated 12-year life expectancy for a typical water heater. NO_x reductions are estimated to be 0.2 tpd in mid-2009 and accrue to a total reduction of 2.47 tpd by 2021.

3. 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 households and industries impacted by the proposed amendments to Regulation 9, Rule 6.

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 rule amendments concerning nitrogen oxides from stationary gas turbines 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 would affect households and businesses in a wide set of industries, particularly as affected entities purchase new water heaters. The BAAQMD does not require affected entities to replace existing water heaters with water heaters that meet Regulation 9, Rule 6, as amended, during the lifetime of the existing water heater. Affected entities will purchase compliant water heaters at the point in time they need to replace existing units. For this reason, this report analyzes *incremental* compliance costs associated with amendments to Regulation 9, Rule 9, not the *total* cost of a new heater.

With this information we began to prepare economic descriptions of the industry groups of which the impacted sites are a part, as well as to analyze data on the number of

jobs, sales levels, the typical profit ratios and other economic indicators for the Bay Area businesses. In addition, we collected demographic information of typical households living in various housing settings, from owner-occupied single-family homes to renters living in large apartment complexes.

With the annual reports and 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 sites impacted by the proposed water heater rule amendments. In calculating aggregate revenues generated by Bay Area businesses in wide number of industries, ADE first estimated annual revenue based upon available data. Using annual reports and publicly available data, ADE calculated ratios of profit per dollar of sales for the businesses on which the analysis focused. To estimate employment, ADE used employment data from 2002 Economic Census and the California Employment Development Department.

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. 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.

With respect to impacts on households purchasing new water heaters that comply with Regulation 9, Rule 6 as amended, ADE gathered information from US Census, particularly data from 2005 American Community Survey (ACS) on households in the nine-county Bay Area. ADE identified typical households in a variety of housing arrangements, from households in owner-occupied single-family homes to renters living in large apartment complex. ADE identified average household incomes for households in various housing arrangements, and based on this information, calculated annual retail spending in general and spending on appliances-and-miscellaneous household equipment. ADE compared incremental cost of purchasing new water heaters against spending in general and on household equipment and

appliance in particular, and made a determination on the significance of the incremental cost.

REGIONAL DEMOGRAPHIC TRENDS

The Bay Area experienced moderate population growth from 1995 to 2005. Between 1995 and 2000, the nine-county region increased by nearly 6.7 percent, from 6.3 million in 1995 to almost 6.8 million in 2000. From 1995 to 2005, the population increase was from 6.3 million to close to 7.1 million for an increase of approximately 10.4 percent. At the same time, California had population growth of almost 14 percent.

Within the Bay Area, the greatest percentage increase occurred in Contra Costa County. From 1995 to 2005 Contra Costa increased its population by nearly 15 percent. All other Bay Area counties had population increases slower than the State. The smallest percentage increase occurred in Marin County where population grew less than 5.5 percent from 1995 to 2005. Table 1 shows the population changes that have occurred in the Bay Area and California from 1995 to 2005.

TABLE 1
Population Growth: San Francisco Bay Area

	Population			Percent Change		
	1995	2000	2005	95-00	00-05	95-05
California	31,617,000	33,871,648	36,728,196	6.7%	7.8%	13.9%
Bay Area	6,329,800	6,783,760	7,067,403	6.7%	4.0%	10.4%
Alameda County	1,332,900	1,443,741	1,500,228	7.7%	3.8%	11.2%
Contra Costa County	869,200	948,816	1,019,101	8.4%	6.9%	14.7%
Marin County	238,100	247,289	251,820	3.7%	1.8%	5.4%
Napa County	116,800	124,279	132,990	6.0%	6.6%	12.2%
San Francisco County	741,600	776,733	792,952	4.5%	2.0%	6.5%
San Mateo County	673,300	707,161	719,655	4.8%	1.7%	6.4%
Santa Clara County	1,568,200	1,682,585	1,752,653	6.8%	4.0%	10.5%
Solano County	368,000	394,542	420,307	6.7%	6.1%	12.4%
Sonoma County	421,700	458,614	477,697	8.0%	4.0%	11.7%

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. With these remarkable advantages, it has led through innovation in a wide range of research and industrial fields.

Many of the Bay Area's most prominent industries are manufacturing related. From Intel to PowerBar, Bay Area manufacturers are often high profile companies with world-renowned recognition. From small to large, Bay Area industry has been dynamic, creating wealth and jobs in both the export sector and local serving industries.

The economic base is typically comprised of export industries within the manufacturing, minerals-resource extraction, and agricultural sectors. There are also the "local support industries" such as retail or service sectors, the progress of which is a function of the economic base and demographic changes, and more so the latter than the former. As population increases in a given area, demand for services – such as realtors, teachers, healthcare – increases, as does demand for basic retail items like groceries, gas for commuting, or clothing at the local apparel shops.

As of 2005, the professional and business services sector was the largest employer in the region, at 529,100 jobs or 17 percent of all private and public sector jobs. This is a change from 1995 when professional and business services accounted for 16 percent of all Bay Area employment. During the same period, professional and business services increased 14 percent. The next largest industry in the Bay Area is public service, or government, with 468,100 jobs. In 2005, government accounted for 15 percent of all Bay Area employment. From 1995 to 2005, government had one of the lowest growth rates of all industries at less than 6 percent. Two other industries came close to manufacturing in total employment. Retail trade and education & health care both made up 11 percent of total employment and had only a few

thousand jobs less than manufacturing. Unlike manufacturing, both retail trade and education & health care had significant job gains from 1995 to 2005. All other industries made up less than manufacturing in total employment in 2005. Table 2 shows Bay Area industry sectors and their trends from 1995 to 2005.

TABLE 2
Employment Profile of the San Francisco Bay Area, 1995-2005

Industry	1995	2000	2005	% of Total Employment in 2005	% Change 1995 - 2000	% Change 2000 - 2005
Farm	21,100	25,800	20,000	1%	4%	-5%
Natural Resources & Mining	1,261	1,986	4,560	0.1%	10%	18.1%
Construction	105,200	165,700	164,100	5%	10%	0%
Manufacturing	428,800	484,500	351,300	11%	2%	-6%
Wholesale Trade	121,700	138,800	122,900	4%	3%	-2%
Retail Trade	304,900	350,600	336,600	11%	3%	-1%
Transportation, Warehousing and Utilities	116,600	125,600	100,400	3%	1%	-4%
Information	92,100	151,600	112,300	4%	10%	-6%
Financial Activities	189,300	198,500	213,000	7%	1%	1%
Professional and Business Services	464,400	670,300	529,100	17%	8%	-5%
Educational and Health Services	299,300	334,300	361,600	11%	2%	2%
Leisure and Hospitality	260,400	297,700	311,000	10%	3%	1%
Other Services	100,700	110,800	109,900	3%	2%	0%
Government	442,100	465,200	468,100	15%	1%	0%
Total	2,947,861	3,521,386	3,204,860	100%	4%	-2%

Source: Applied Development Economics from data supplied by the Labor Market Information Division of the California Employment Development Department

DESCRIPTION OF AFFECTED HOUSEHOLDS AND INDUSTRIES

Proposed amendments to Regulation 9, Rule 6 potentially affect almost all industries and households in the Bay Area, in so far as affected businesses and households occupy buildings that utilize a water heater in one capacity or another. Many businesses will share a building with other businesses in small to large building complex, meaning incremental costs would be distributed on a pro rata basis. Likewise, households living in single-family units to multi-family structures, from duplexes to large apartment buildings, are also potentially subject to the rule, at the point in time they need a new water heater.

The discussion below analyzes household and economic trends in greater detail. The discussion first examines household trends, including analysis on what proportion of household spending incremental costs associated with rule amendments represents. After this discussion, the report examines economic trends, including detailed discussion on businesses by size categories in terms of number of workers. This discussion also analyzes incremental costs in relation to economic indicators, particularly estimated aggregate industry net profits.

Household Trends and Impacts

As Table 3 shows, there are 2.5 million households in the nine-county Bay Area. Of these households, 1.1 million live in owner-occupied housing in which households maintain a mortgage. Over 348,000 households live in owner-occupied units with no mortgage payments. Table 3 also shows that there are over 1 million renting households in the Bay Area.

TABLE 3
Households By Housing Units in Structure and Tenure

	San Francisco Bay Area Region			
	Total	Owner-Occupied		Renter-Occupied
		Mortgage	No Mortgage	No Mortgage
Housing Units in Structure:	2,502,669	1,140,563	348,213	1,013,893
1, detached or attached	1,613,073	1,016,640	310,380	286,053
2 to 4	233,856	33,705	10,290	189,861
5 to 9 (small apartment\condo\townhouse)	153,136	17,297	5,281	130,558
10 to 19 (medium apartments\condo\townhouse)	135,897	10,496	3,204	122,197
20 or more (large apartments\condo\townhouse)	311,256	27,840	8,499	274,917
Mobile home	52,654	33,418	10,202	9,034
Boat, RV, van, etc.	2,797	1,168	356	1,273

Source: Applied Development Economics, based on US Census American Community Survey 2005

Data is broken into three broad categories of “mortgage,” “no mortgage,” and “renters” as incomes for households in each of these broad categories typically differ even when adjusted for housing unit type (i.e. single-family units, duplex, small apartment, mid-sized apartment, and large apartment). Thus, the average household income for households in owner-occupied living situations with a mortgage is \$127,250 versus \$81,845 for households without a mortgage. Because spending on a wide variety of goods, including household equipment and large appliances, varies with income, it is

important to characterize average household incomes as accurately as possible.

Table 4 identifies average household incomes for households living in various housing arrangements. At \$127,250, the typical household living in single-family units with mortgage payments has a higher income than households living in other situations, on average. At \$31,029, the typical household that rents in apartment complexes with at least 20 units has the lowest incomes, on average.

TABLE 4
Avg. Household Income By Housing Units in Structure and Tenure

	San Francisco Bay Area Region			
	All Households	Owner-Occupied		Renter-Occupied
		Mortgage	No Mortgage	No Mortgage
Housing Units in Structure:	\$90,046	\$122,566	\$78,832	\$57,315
1, detached or attached	\$108,868	\$127,250	\$81,845	\$72,862
2 to 4	\$62,876	\$90,590	\$58,266	\$58,205
5 to 9 (small apartment\condo\townhouse)	\$66,577	\$80,449	\$51,743	\$65,339
10 to 19 (medium apartments, etc)	\$49,352	\$65,217	\$41,946	\$48,184
20 or more (large apartments, etc)	\$32,755	\$49,984	\$32,149	\$31,029
Mobile home	\$81,053	\$92,911	\$59,759	\$61,236

Source: Applied Development Economics, based on US Census American Community Survey 2005

Tables 5 and 6 identify estimated annual spending on “miscellaneous household equipment” and “large appliances” by households living in the different housing arrangements. Spending amounts in Tables 5 and 6 are directly related to average household incomes found in Table 4 above. Spending data comes from the US Bureau of Labor Statistics (BLS), which annually surveys over 100,000 consumers of various incomes and their respective spending habits.

The tables below show that the typical household living in a single-family unit with mortgage payments spends an estimated \$2,384 on “miscellaneous household equipment/large appliances” (Table 5), and, in general, spends \$59,490 on retail and services (Table 6). Thus, the typical household that lives in single-family unit with a mortgage spends over 46 percent of household income on retail and services (i.e. \$59,490/\$127,250). In contrast, the typical renter in an apartment complex with at least 20 units spends \$777 and \$9,507 on “miscellaneous household

equipment/large appliances” and retail and services respectively. Thus, this household spends 36 percent of its household income on retail and services (i.e. \$9,507/\$31,029).

TABLE 5
Miscellaneous Household Equipment and Major Appliances: Annual Expenditures By Type of Units and Tenure, 2005

	San Francisco Bay Area Region		
	Owner-Occupied		Renter-Occupied
	Mortgage	No Mortgage	No Mortgage
Units in Structure By Avg. Household	\$1,354	\$855	\$331
1, detached or attached	\$2,384	\$1,212	\$367
2 to 4	\$1,577	\$800	\$312
5 to 9 (small apartment, etc)	\$1,449	\$960	\$960
10 to 19 (medium apartments, etc)	\$960	\$835	\$835
20 or more (large apartments, etc)	\$835	\$777	\$777
Mobile home	\$1,577	\$800	\$312

Source: Applied Development Economics, based on US Bureau of Labor Statistics Consumer Expenditures Annual Survey

TABLE 6
Average Annual Household Consumer Retail and Services Expenditures By Housing Units in Structure and Tenure, 2005*

	San Francisco Bay Area Region		
	Owner-Occupied		Renter-Occupied
	Mortgage	No Mortgage	No Mortgage
Housing Units in Structure:	\$48,386	\$31,067	\$21,653
1, detached or attached	\$59,490	\$38,196	\$26,622
2 to 4	\$36,922	\$23,706	\$16,523
5 to 9 (small apartment, etc)	\$39,095	\$25,102	\$17,496
10 to 19 (medium apartments, etc)	\$29,895	\$19,194	\$13,378
20 or more (large apartments, etc)	\$21,245	\$13,641	\$9,507
Mobile home	\$36,922	\$23,706	\$16,523

Source: Applied Development Economics, based on US Bureau of Labor Statistics Consumer Expenditures Annual Survey (*note: Total consumer spending excludes housing-shelter payment, food, utilities, and healthcare)

Incremental Cost and Impact Analysis:

Residential Water Heaters

Table 7 below identifies total and incremental costs of new water heaters that comply with Regulation 9, Rule 6 as amended. The Bay Area Air Quality Management District does not require households to replace existing water heaters with new compliant water heaters. In other words, households and owners of rental properties can purchase new water heaters when needed, particularly when their existing

water heaters breakdown. Thus, the report analyzes incremental costs associated with proposed amendments to Regulation 9, Rule 6 and not on the total cost of new compliant water heaters. As Table 7 shows, the District estimates incremental cost at \$50 for a new water heater for a typical single-family unit and \$100 for a new water heater for small to large apartment building.

**TABLE 7
Incremental Cost of Residential Water Heaters (Proposed)**

	Total Cost Before Rule Adoption	Incremental Cost
Conventional water heaters (75,000 Btu/hr or less): single-family dwellings	\$400 - \$500	\$50
Large water heaters (75K - 400K Btu/hr or less): apartment bldgs. (small to large)	\$2,500 - \$10,000	\$100

Source: Bay Area Air Quality Management District

Tables 8 and 9 express incremental cost as a share of spending for “miscellaneous household equipment/large appliances” in particular, and as a share of overall retail and services spending. These tables shows that incremental costs are a small share of the amount of dollars typical households spend on “miscellaneous household equipment/large appliances,” meaning that incremental cost due to the proposed amendments to Regulation 9, Rule 6 are less than significant.

Table 8 shows that in most instances a typical household will spend no more than five percent of its respective “miscellaneous household equipment/large appliances” spending on the incremental cost of new water heaters. For example, for a typical mortgage-paying homeowner of a single-family unit, the \$50 incremental cost amounts to 2.1 percent of annual spending on “miscellaneous household equipment\large appliances.” For a typical renter of a single-family unit, the \$50 incremental cost represents 13.6 percent of annual spending household equipment and large appliances, assuming the landlord bills the tenant for the cost of a new water heater. For a typical mortgage-paying homeowner who lives in a building consisting of 2 to 4 units, the \$50 incremental cost amounts to, on average, 1.1 percent of annual spending on “miscellaneous household equipment\large appliances.” In general, for households

living in multi-family buildings, the incremental cost of a new water heater relative to typical “miscellaneous household equipment/large appliances” spending is less than 1.5 percent. This is so because incremental costs are distributed among the number of units in a multi-family building. For example, assuming property owners pass costs to tenants, apartment buildings with more than 20 units contain, on average, 53 units, meaning that the \$100 incremental cost translates to \$1.89 *per unit*, which, in turn, is 0.2 percent of \$777, i.e. the estimated spent every year on “miscellaneous household equipment/large appliances” by the typical renter living in an apartment building with more than 20 units. Table 9 shows smaller incremental cost-to-spending ratios than cost-to-spending ratios found in Table 8.

TABLE 8
Incremental Cost As Percent of Miscellaneous Household Equipment and Major Appliances Spending

	San Francisco Bay Area Region		
	Owner-Occupied		Renter-Occupied
	Mortgage	No Mortgage	No Mortgage
Units in Structure By Avg. Household			
1, detached or attached	2.1%	4.1%	13.6%
2 to 4	1.1%	2.1%	5.3%
5 to 9 (small apartment, etc)	1.0%	1.5%	1.5%
10 to 19 (medium apartments, etc)	0.7%	0.8%	0.8%
20 or more (large apartments, etc)	0.2%	0.2%	0.2%
Mobile home	1.1%	2.1%	5.3%

Source: Applied Development Economics

TABLE 9
Incremental Cost As Percent of Total Annual Household Consumer Retail and Services Spending*

	San Francisco Bay Area Region		
	Owner-Occupied		Renter-Occupied
	Mortgage	No Mortgage	No Mortgage
Units in Structure By Avg. Household			
1, detached or attached	0.08%	0.13%	0.19%
2 to 4	0.05%	0.07%	0.10%
5 to 9 (small apartment, etc)	0.04%	0.06%	0.08%
10 to 19 (medium apartments, etc)	0.02%	0.03%	0.05%
20 or more (large apartments, etc)	0.01%	0.01%	0.02%
Mobile home	0.05%	0.07%	0.10%

Source: Applied Development Economics (*note: Total consumer spending excludes housing-shelter payment, food, utilities, and healthcare)

Economic Trends and Impacts

Table 10 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.

TABLE 10
Economic Profile: San Francisco Bay Area, 2005

SECTOR	NAICS	REGION	Type of Use	Establishments	Employment
Private	11	Agriculture, forestry, fishing and hunting	Other	1,885	20,863
Local Government	11	Agriculture, forestry, fishing and hunting	Other	1	11
Private	21	Mining	Industrial	79	2,046
Private	22	Utilities	Industrial	119	6,262
Local Government	22	Utilities	Industrial	76	6,781
Private	23	Construction	Other Industrial	16,167	195,805
Local Government	23	Construction	Other Industrial	23	2,524
Private	31-33	Manufacturing	Industrial	9,335	364,614
Private	42	Wholesale trade	Other	9,846	129,229
Private	44-45	Retail	Commercial	20,325	348,804
Private-Govt	48-49	Transportation Warehousing	Other Industrial	3,540	120,084
Private	51	Information	Office	3,791	117,074
Local Government	51	Information	Office	44	3,477
Federal Government	51	Information	Office	1	11
Private	52	Finance and insurance	Office	10,478	153,465
Local Government	52	Finance and insurance	Office	10	4,104
Federal Government	52	Finance and insurance	Office	2	6
Private	53	Real estate and rental and leasing	Office	9,491	63,791
Local Government	53	Real estate and rental and leasing	Office	6	33
Private	54	Professional and technical services	Office	27,100	304,670
Local Government	54	Professional and technical services	Office	5	50
State Government	54	Professional and technical services	Office	2	20
Federal Government	54	Professional and technical services	Office	16	538
Private	55	Management of companies and enterprises	Office	985	56,990
Private	56	Administrative and waste services	Industrial	9,290	188,104
Local Government	56	Administrative and waste services	Industrial	12	109
Private	61	Educational services	Institutional	2,563	68,554
Local Government	61	Educational services	Institutional	2,188	84,712
State Government	61	Educational services	Institutional	668	32,093
Private	62	Health care and social assistance	Institutional	17,993	294,227
Local Government	62	Health care and social assistance	Institutional	31	4,893
State Government	62	Health care and social assistance	Institutional	256	6,727
Federal Government	62	Health care and social assistance	Institutional	4	6,896
Private	71	Arts, entertainment, and recreation	Other	2,519	51,500
Local Government	71	Arts, entertainment, and recreation	Other	57	6,403
Federal Government	71	Arts, entertainment, and recreation	Other	10	764
Private	72	Accommodation and food services	Commercial	14,846	270,423
Local Government	72	Accommodation and food services	Commercial	4	72
Federal Government	72	Accommodation and food services	Commercial	6	59
	721	<i>Traveler Accommodation</i>	Commercial	889	47,377
Private	81	Other services, except public administration	Commercial	68,568	145,611
Local Government	81	Other services, except public administration	Commercial	21	417
Federal Government	81	Other services, except public administration	Commercial	2	44
Local Government	92	Public administration	Office	394	97,032
State Government	92	Public administration	Office	700	21,846
Federal Government	92	Public administration	Office	291	22,686
Private	99	Unclassified	Other	160	436
				233,910	3,204,860

Source: Applied Development Economics, based on California EDD LMID

In Tables 11 and 12, we re-organize Table 10 data in terms of size of businesses by employment. Of the 233,910 public and private establishments in the region, 132,442 employ between one and four workers (see Table 11). Similarly, Table 12 shows that, of the 3.2 million workers in the region, 173,531 are employed in businesses with one to four workers.

TABLE 11
Establishments By Land Use Types and By Size of Business: SF Bay Area, 2005

Type of Use	Establishments	Number of Employees								
		1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial	103,772	58,184	21,392	12,414	8,063	2,443	1,065	153	47	12
Office	53,316	33,626	7,788	5,433	3,665	1,535	825	250	130	64
Industrial	18,911	8,836	3,201	2,548	2,311	1,096	641	181	56	41
Other industrial	19,730	11,509	3,366	2,330	1,479	585	332	81	32	16
Accommodations	889	284	137	172	158	45	55	27	7	2
Institutional	23,703	12,178	5,021	3,272	1,882	727	415	100	59	50
Other	14,478	8,109	2,580	1,766	1,257	459	228	53	19	7
	233,910	132,442	43,348	27,764	18,658	6,843	3,506	817	342	190

Source: Applied Development Economics, based on California EDD LMID

TABLE 12
Employment By Land Use Types and By Size of Business: SF Bay Area, 2005

Type of Use	Employment	Number of Employees								
		1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial	765,431	58,494	83,742	113,545	180,653	131,396	132,688	46,368	20,352	13,192
Office	845,793	50,910	53,169	75,635	116,102	114,583	131,651	88,991	95,871	111,381
Industrial	567,916	10,191	25,274	41,721	83,453	90,078	114,436	72,207	42,083	80,971
Other industrial	318,413	20,234	24,212	34,574	49,614	45,578	55,897	30,851	24,492	32,961
Accommodations	47,377	416	1,147	2,933	5,975	3,951	10,296	11,794	6,227	4,639
Institutional	498,101	16,716	39,125	53,049	68,692	62,351	76,504	42,961	48,868	89,837
Other	209,206	16,985	20,443	26,418	38,519	30,387	33,317	18,265	13,902	10,969
	3,204,860	173,531	245,966	344,943	537,034	474,373	544,493	299,643	245,567	339,310

Source: Applied Development Economics, based on California EDD LMID

Tables 13 and 14 estimate amount of revenues generated by businesses, including public sector entities, 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 size of business (see Table 13). Table 14 translates aggregate revenues in Table 13 into average revenues per business by size of business category.

TABLE 13
Aggregate Value By Land Use Types and By Size of Business: SF Bay Area, 2005

Type of Use	Aggregate Value ('000)	Number of Employees								
		1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial	\$108,405,884	\$6,826,150	\$12,120,620	\$15,029,589	\$22,719,389	\$19,092,623	\$21,427,610	\$7,546,510	\$2,277,585	\$1,365,808
Office	\$158,984,604	\$10,473,451	\$9,658,257	\$13,957,136	\$21,829,575	\$21,260,660	\$25,926,770	\$17,962,059	\$18,533,599	\$19,383,097
Industrial	\$148,455,055	\$4,107,048	\$6,396,438	\$10,845,523	\$21,740,358	\$22,968,039	\$27,982,415	\$18,000,466	\$11,452,645	\$24,962,122
Other industrial	\$47,832,325	\$3,207,519	\$3,796,657	\$5,322,140	\$7,573,277	\$6,801,482	\$8,394,998	\$4,604,164	\$3,673,897	\$4,458,191
Accommodations	\$3,779,838	\$33,225	\$91,473	\$233,980	\$476,663	\$315,222	\$821,410	\$940,970	\$496,777	\$370,117
Institutional	\$48,852,267	\$1,641,915	\$3,843,776	\$5,206,284	\$6,736,640	\$6,107,154	\$7,494,024	\$4,203,439	\$4,793,677	\$8,825,359
Other	\$109,159,385	\$7,406,945	\$9,909,066	\$13,587,568	\$21,339,902	\$16,222,423	\$16,878,930	\$8,312,288	\$6,854,002	\$8,648,261
	\$621,689,520	\$33,663,027	\$45,724,813	\$63,948,239	\$101,939,141	\$92,452,381	\$108,104,748	\$60,628,926	\$47,585,405	\$67,642,839

Source: Applied Development Economics, based on California EDD LMID and US Economic Census

TABLE 14
Average Value By Land Use Types and By Size of Business: SF Bay Area, 2005

Type of Use	Average Value	Number of Employees								
		1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial	\$1,044,654	\$117,321	\$566,604	\$1,210,674	\$2,817,807	\$7,816,769	\$20,123,709	\$49,183,279	\$48,955,903	\$110,823,050
Office	\$2,981,917	\$311,470	\$1,240,112	\$2,569,099	\$5,955,664	\$13,851,662	\$31,414,988	\$71,951,477	\$142,512,242	\$301,956,790
Industrial	\$7,850,382	\$464,820	\$1,998,379	\$4,256,040	\$9,405,737	\$20,962,125	\$43,626,016	\$99,581,867	\$205,788,952	\$612,032,032
Other industrial	\$2,424,345	\$278,686	\$1,128,019	\$2,284,259	\$5,118,907	\$11,628,970	\$25,299,557	\$57,138,034	\$116,216,497	\$270,291,154
Accommodations	\$4,251,786	\$116,832	\$665,685	\$1,359,837	\$3,022,100	\$6,942,318	\$14,944,218	\$34,238,862	\$69,291,776	\$154,874,516
Institutional	\$2,061,016	\$134,827	\$765,539	\$1,590,941	\$3,579,410	\$8,401,825	\$18,059,266	\$42,224,160	\$81,730,770	\$178,258,989
Other	\$7,539,673	\$913,391	\$3,840,265	\$7,694,023	\$16,977,315	\$35,374,558	\$74,147,265	\$157,056,859	\$352,135,550	\$1,265,530,672
	\$2,657,817	\$254,172	\$1,054,835	\$2,303,315	\$5,463,555	\$13,509,629	\$30,834,719	\$74,218,856	\$139,157,561	\$355,756,803

Source: Applied Development Economics

Tables 15 and 16 are similar to the previous tables except that these tables track aggregate net profits and average net profits. Net profit rates are industry-specific and were multiplied against Table 13 revenues. Net profit rates come from Dun and Bradstreet, and rates are based on a ten-year period to adjust for periods when profits were either unusually high or unusually low.

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TABLE 15
Aggregate Net Profits By Land Use Types and By Size of Business: SF Bay Area, 2005

Type of Use	Aggregate Profits ('000)	Number of Employees								
		1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial	\$3,091,733	\$200,458	\$361,001	\$451,098	\$684,241	\$527,273	\$553,713	\$190,469	\$76,398	\$47,082
Office	\$26,391,117	\$651,420	\$773,769	\$1,245,760	\$2,746,872	\$3,769,092	\$3,567,836	\$2,380,499	\$2,645,177	\$8,610,693
Industrial	\$9,056,619	\$169,709	\$258,615	\$448,355	\$868,087	\$865,227	\$1,140,823	\$620,512	\$782,488	\$3,902,804
Other industrial	\$1,823,809	\$134,366	\$156,214	\$212,145	\$297,393	\$256,081	\$319,960	\$173,379	\$139,706	\$134,565
Accommodations	\$224,270	\$1,971	\$5,427	\$13,883	\$28,282	\$18,703	\$48,737	\$55,831	\$29,475	\$21,960
Institutional	\$16,759,956	\$411,852	\$913,705	\$1,571,643	\$2,337,894	\$2,595,557	\$3,145,323	\$2,066,692	\$1,590,907	\$2,126,382
Other	\$2,821,380	\$178,473	\$237,765	\$329,900	\$538,916	\$437,129	\$474,809	\$255,669	\$197,196	\$171,524
	\$59,944,615	\$1,746,278	\$2,701,069	\$4,258,901	\$7,473,403	\$8,450,359	\$9,202,464	\$5,687,219	\$5,431,872	\$14,993,050

Source: Applied Development Economics, based on California EDD LMID, US Economic Census and Dun and Bradstreet

TABLE 16
Average Net Profits By Land Use Types and By Size of Business: SF Bay Area, 2005

Type of Use	Average Net Profits	Number of Employees								
		1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial	\$29,794	\$3,445	\$16,876	\$36,337	\$84,864	\$215,872	\$520,019	\$1,241,355	\$1,642,144	\$3,820,314
Office	\$494,992	\$19,373	\$99,351	\$229,308	\$749,416	\$2,455,624	\$4,323,080	\$9,535,680	\$20,339,819	\$134,140,441
Industrial	\$478,919	\$19,207	\$80,797	\$175,945	\$375,569	\$789,662	\$1,778,601	\$3,432,783	\$14,060,272	\$95,690,624
Other industrial	\$92,438	\$11,674	\$46,413	\$91,053	\$201,013	\$437,840	\$964,245	\$2,151,645	\$4,419,330	\$8,158,377
Accommodations	\$252,273	\$6,932	\$39,497	\$80,684	\$179,311	\$411,911	\$886,690	\$2,031,506	\$4,111,312	\$9,189,221
Institutional	\$707,082	\$33,820	\$181,976	\$480,264	\$1,242,204	\$3,570,798	\$7,579,670	\$20,760,220	\$27,124,495	\$42,949,723
Other	\$194,874	\$22,008	\$92,146	\$186,807	\$428,743	\$953,202	\$2,085,784	\$4,830,740	\$10,131,275	\$25,099,692
	\$256,272	\$13,185	\$62,312	\$153,399	\$400,546	\$1,234,811	\$2,624,819	\$6,962,005	\$15,884,828	\$78,853,572

Source: Applied Development Economics

Incremental Cost and Impact Analysis: Commercial and Industrial Water Heaters

Table 17 below identifies total and incremental costs of new water heaters that comply with Regulation 9, Rule 6 as amended. Costs are for commercial and industrial water heaters. For the most part, the analysis assumes that businesses employing less than 50 workers utilize new water heaters between 75,000 Btu/hr up and 400,000 Btu/hr heat input. In addition, the analysis assumes that businesses employing more than 50 workers utilize water heaters greater than \$400,000 Btu/hr.

TABLE 17
Incremental Cost of Proposed Rule Borne By Business Organized By Land Use and Size of Business

Type of Use	Incremental Cost	Number of Employees								
		1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial	\$100 - \$500	\$100	\$100	\$100	\$100	\$500	\$500	\$500	\$500	\$500
Office	\$100 - \$500	\$100	\$100	\$100	\$100	\$500	\$500	\$500	\$500	\$500
Industrial	\$100 - \$500	\$100	\$100	\$100	\$500	\$500	\$500	\$500	\$500	\$500
Other industrial	\$100 - \$500	\$100	\$100	\$100	\$100	\$500	\$500	\$500	\$500	\$500
Accommodations	\$100 - \$500	\$100	\$100	\$100	\$100	\$500	\$500	\$500	\$500	\$500
Institutional	\$100 - \$500	\$100	\$100	\$100	\$100	\$500	\$500	\$500	\$500	\$500
Other	\$100 - \$500	\$100	\$100	\$100	\$100	\$500	\$500	\$500	\$500	\$500

Source: Applied Development Economics, based on BAAQMD

Table 18 compares incremental cost per business (as organized by land-use\building type and number of workers) versus estimated net profits per business. Across the board, incremental net costs are far below the ten-percent threshold of significance employed for the purposes of evaluating socioeconomic impacts of proposed amendments or new rules. It is important to note that in analyzing incremental annual compliance costs versus net profits, the analysis assumes each individual business and public sector entity bears all of the incremental costs. Since many businesses occupy a single building, in reality, businesses impacted by incremental costs resulting from proposed amendments to Regulation 9, Rule 6 will not bear either \$100 or \$500 in incremental costs. Instead, they will bear a share of incremental costs, meaning that cost-to-net profit ratios are actually less than what is indicated in Table 18.

TABLE 18
Incremental Cost of Proposed Rule As Percent of Net Profits of Business Organized By Land Use and Size of Business

Type of Use	Incremental Cost	Number of Employees								
		1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000 or more
Commercial	\$100 - \$500	2.9%	0.6%	0.3%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%
Office	\$100 - \$500	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Industrial	\$100 - \$500	0.5%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Other industrial	\$100 - \$500	0.9%	0.2%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
Accommodations	\$100 - \$500	1.4%	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
Institutional	\$100 - \$500	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other	\$100 - \$500	0.5%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%

Source: Applied Development Economics,

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

Table 14 above showed that most businesses that employ less than 100 workers generate less than \$10 million in revenue, on average, meaning that most businesses in these categories are small businesses, with the exception of office, industrial and other industrial businesses. Office, industrial, and other industrial that employ between 50 and 99 workers generate more than \$10 million, so the typical business in these categories is not a small business.

Because Table 14 showed that most businesses employing less than 100 workers fit the profile of a small business, proposed amendments to Regulation 9, Rule 6 *could* impact small businesses disproportionately. However, Table 18 showed that, across the board, the incremental cost-to-net profit ratios were well below the ten-percent significance threshold employed for purposes of evaluating new rules and proposed amendments. Thus, the proposed amendments to Regulation 9, Rule 6 do not disproportionately impact small businesses.

**Initial Study/Negative Declaration for the
Amendments to Bay Area Air Quality
Management District Regulation 9, Rule 6:
Nitrogen Oxides (NOx) from Natural Gas-Fired Water Heaters**

Prepared for:

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Contact: Guy Gimlen
(415) 749-4734

Prepared By:

Environmental Audit, Inc.
1000-A Ortega Way
Placentia, CA 92870
Contact: Debra Bright Stevens
(714) 632-8521

September 2007

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Chapter 1

Introduction

Purpose of this Document

This Initial Study/Negative Declaration (IS/ND) assesses the environmental impacts of the proposed adoption of amendments to Regulation 9, Rule 6 – Nitrogen Oxides from Natural Gas-Fired Water 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.). An IS/ND 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 IS/ND because no significant adverse impacts would 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 6, 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 Air District regulates NO_x emissions from water heaters under Regulation 9, Rule 6, (“Regulation 9-6”) which currently imposes a NO_x limit of 40 nanograms NO_x per joule of heat output on water heaters with a rated heat input capacity of 75,000 British thermal units per hour (Btu/hr) or less. The regulated water heaters are conventional tank water heaters typically found in single-family residences. Regulation 9-6 was adopted April 1, 1992. Bay Area 2005 Ozone Strategy Control Measure SS-13 (Nitrogen Oxides (NO_x) from Natural Gas-Fired Water Heaters) proposed amendments to Bay Area Air Quality Management District Regulation 9-6. The proposed amendments to Regulation 9-6 would implement Control Measure SS-13 by supplementing existing requirements in Regulation 9-6.

Larger water heaters and boilers are regulated under three separate rules. Two rules apply to large industrial boilers at refineries and power plants (Regulation 9, Rules 10 and 11 respectively). The third rule, Regulation 9, Rule 7 (“Regulation 9-7”), imposes a 30 ppm NO_x limit on industrial, institutional, and commercial boilers with a rated heat input of 10 million Btu/hr or more. Regulation 9-7 was adopted September 15, 1993. Control Measures SS-12 and SS-13 in the Air District’s 2005 Ozone Strategy propose to review each regulation, and close the gap that currently exists between Regulation 9-6 and Regulation 9-7, by amending each rule so that together they regulate all water heaters and boilers with a rated heat input of less than 10 million Btu per hour. Control Measure SS-12 committed the Air District to consider extending coverage of Regulation 9-7 to smaller boilers (less than 10 million Btu/hr heat input) that are currently exempt. Control Measure SS-13 committed the Air District to review NO_x emission limits for residential water heaters, and consider extending coverage of Regulation 9-6 to larger water heaters (heat input greater than 75,000 Btu/hr) and some small boilers.

Larger water heaters, between 75,001 and 400,000 Btu/hr heat input, are usually tank type water heaters, and are similar to the smaller water heaters subject to Regulation 9-6 in appearance, design, and construction. Units larger than 400,000 Btu/hr are typically small boilers and are different in appearance, design, and construction from water heaters. The small boilers to which this measure applies are generally sold as “package boilers” that are prefabricated, equipped and shipped complete with burners and control systems. Boilers in this size range generally rely on natural draft rather than mechanical (fan assisted) draft. They are used in office buildings, hotels, schools, and commercial and industrial facilities to supply heat, steam, or hot water. Regulation 9-6 does not apply to any other kind of space heaters, process fluid heaters or other industrial heaters in this size range.

Objectives

In Control Measure SS-13, the District suggested review of NO_x emission requirements for residential water heaters, and to include small boilers and large commercial water heaters. The objective of the amendments for Regulation 9-6 is to further reduce NO_x emissions from natural gas-fired water heaters in order to reduce ozone levels in the Bay Area and reduce transport of air pollutants to neighboring air basins. The Bay Area and neighboring regions are not yet in attainment with the State one-hour ozone standard, so further reductions in ozone precursors, NO_x and reactive organic gases (ROG) are needed. Additional NO_x 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 NO_x.

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 and eight-hour ozone standards and is a marginal non-attainment area for the 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.

Rule Amendments Being Considered

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 (NO_x and ROG). Control Measure SS-13 of the Air District's 2005 Ozone Strategy included consideration of amendments to Regulation 9, Rule 6: *Nitrogen Oxides from Natural Gas-Fired Water Heaters*. Control Measure SS-13 suggested review of the Regulation 9-6 NO_x emission limits to include larger commercial water heaters and small boilers to further reduce NO_x emissions.

NO_x emissions also react in the atmosphere to form secondary particulate matter (PM). The Bay Area is not in attainment of either California's particulate matter of 10 microns or less (PM₁₀) or particulate matter of 2.5 microns or less (PM_{2.5}) standards.

Regulation 9-6 is a "point of sale" type regulation, currently limiting sale and installation of new water heaters to only those certified to meet 40 nanograms of NO_x per joule (ng/joule) of heat output. The regulation applies to typical tank residential water heaters of 75,000 Btu/hr heat input or less.

Proposed Method of Control

Residential Water Heaters

This measure would reduce the NO_x emissions limit for new residential water heaters of 75,000 Btu/hr heat input rating or less sold, offered for sale or installed in the District to 10 nanograms/joule (ng/Joule) of heater output from its current limit of 40 ng/Joule. Staff proposes amending Regulation 9-6 to require the following categories of new residential water heaters to meet a NO_x emission limit of 10 ng/joule according to the following schedule:

- < 50 gallon storage tank effective January 1, 2009
- > 50 gallon storage tank effective January 1, 2010
- Power assist storage tank effective January 1, 2011

Manufacturers claim that they are certifying their new water heater designs, and will be able to deliver less than 50 gallon tank water heaters that meet the efficiency, safety, and NO_x standards to California customers by late 2007. Manufacturer progress reports also anticipate being able to achieve similar emissions for the greater than 50 gallon tank water heaters by 2009, and for the direct-vent, power-vent, and power direct-vent water heaters by 2010.

Swimming Pool & Spa Heaters

Water heaters used exclusively for swimming pools and spas are similar in design to large commercial water heaters, and have been exempt from this regulation in the past. Residential pools are seldom heated year-round, so they will remain exempt from this rule. Commercial, public, and institutional swimming pools normally keep their pools heated all year and, therefore, can be significant sources of NO_x emissions. Staff recommends requiring any new heaters sold, offered for sale or installed in the District that are used for commercial, public, and institutional swimming pools (those greater than 400,000 Btu/hr heat input) and spas to meet a NO_x emissions standard of 40 ng/joule, (~55 ppm), effective January 1, 2008. Further, staff recommends that new commercial, public and institutional pool and spa water heaters be required to meet a 14 ng/joule NO_x emission limit by January 1, 2013, consistent with other large commercial water heaters.

Mobile Home Water Heaters

Water heaters used exclusively for mobile homes are similar in design to those with power assist vent systems. Proposed amendments to Rule 9-6 would require any new heaters not to exceed a NO_x emissions standard of 40 ng/joule, effective July 1, 2008.

Commercial Water Heaters

Water heaters larger than 75,000 Btu/hr heat input are currently not regulated by the Air District. The proposed amendments to Regulation 9-6 would impose a NO_x limit of 40

ng/Joule of heat output (~55 ppm) for new water heaters from greater than 75,000 Btu/hr up to 400,000 Btu/hr heat input sold, offered for sale or installed in the District, effective January 1, 2008. Instantaneous water heaters are included here because they have similar rated heat input capacity, since they are designed to heat cold water up to normal hot water temperatures (typically 140 – 160°F) for immediate delivery. Water heaters certified to meet these emissions are currently available in southern California. Staff proposes a 14 ng/joule standard, effective for new heaters on January 1, 2013. New package boilers larger than 400,000 Btu/hr up to 2 million Btu/hr inclusive, will also be regulated by these amendments. Regulation 9-7 currently requires all large boilers to meet a NO_x emissions limit of 20 ng/Joule (~30 ppm). The proposed amendments to Regulation 9-6 would impose a similar NO_x limit of 20 ng/Joule (~30 ppm) of heat output for new water heaters from greater than 400,000 Btu/hr up to 2 million Btu/hr (MMBtu/hr) heat input, effective January 1, 2008. Staff further proposes to require new water heaters with a heat input of 400,000 Btu/hr to 2,000,000 Btu/hr to meet a 14 ng/Joule standard effective January 1, 2013.

All of the NO_x emissions limits proposed for Regulation 9-6 will apply to new units sold, offered for sale or installed in the Bay Area after the effective dates only.

Emission Reductions Expected

Current emissions for residential water heaters in the Bay Area are estimated at 3.29 tons per day (tpd). The proposed amendments will reduce NO_x by 75 percent, or 2.47 tpd. These emission reductions will occur as new water heaters replace the existing higher emissions water heaters. Typical life expectancy for a residential water heater is 12 years. Staff proposes this rule amendment go into effect on January 1, 2009, thus reducing NO_x emissions by a about 0.21 tpd for each of the subsequent 12 years.

Emissions estimates for commercial, institutional, and industrial water heaters from 75,000 to 2 MMBtu/hr heat input total 0.5 tpd. The NO_x emission reductions staff expects will occur in two phases. The first phase is a reduction from uncontrolled NO_x emissions (~74 ng/Joule) to 40 ng/Joule beginning in 2008. The second phase is a reduction from 40 ng/Joule to 14 ng/Joule beginning in 2013. Large water heaters and small boilers also have a longer lifespan – estimated at 25 years, which equates to only 4 percent replacement each year. NO_x reductions are expected to be 0.01 tpd each year beginning in 2008. NO_x reductions are expected increase to 0.016 tpd in 2013. Since this is a relatively small amount of potential NO_x reduction, staff proposes the strategy of replacement with new low emission water heaters and package boilers when they reach their end of useful life, rather than to require a retrofit or accelerated replacement.

Bay Area NO_x reductions may also reduce ambient levels of fine particulate matter (PM_{2.5}) pollution, because a fraction of NO_x emissions is ultimately converted to nitrate particles in the atmosphere. Potential PM reductions resulting from the proposed amendments are estimated to be approximately 0.36 tpd. Burners used to comply with these amendments are included with the water heater redesign for improved efficiency,

and will reduce energy usage. Energy savings from new water heaters are estimated to be from 5 – 10 percent better than existing conventional units.

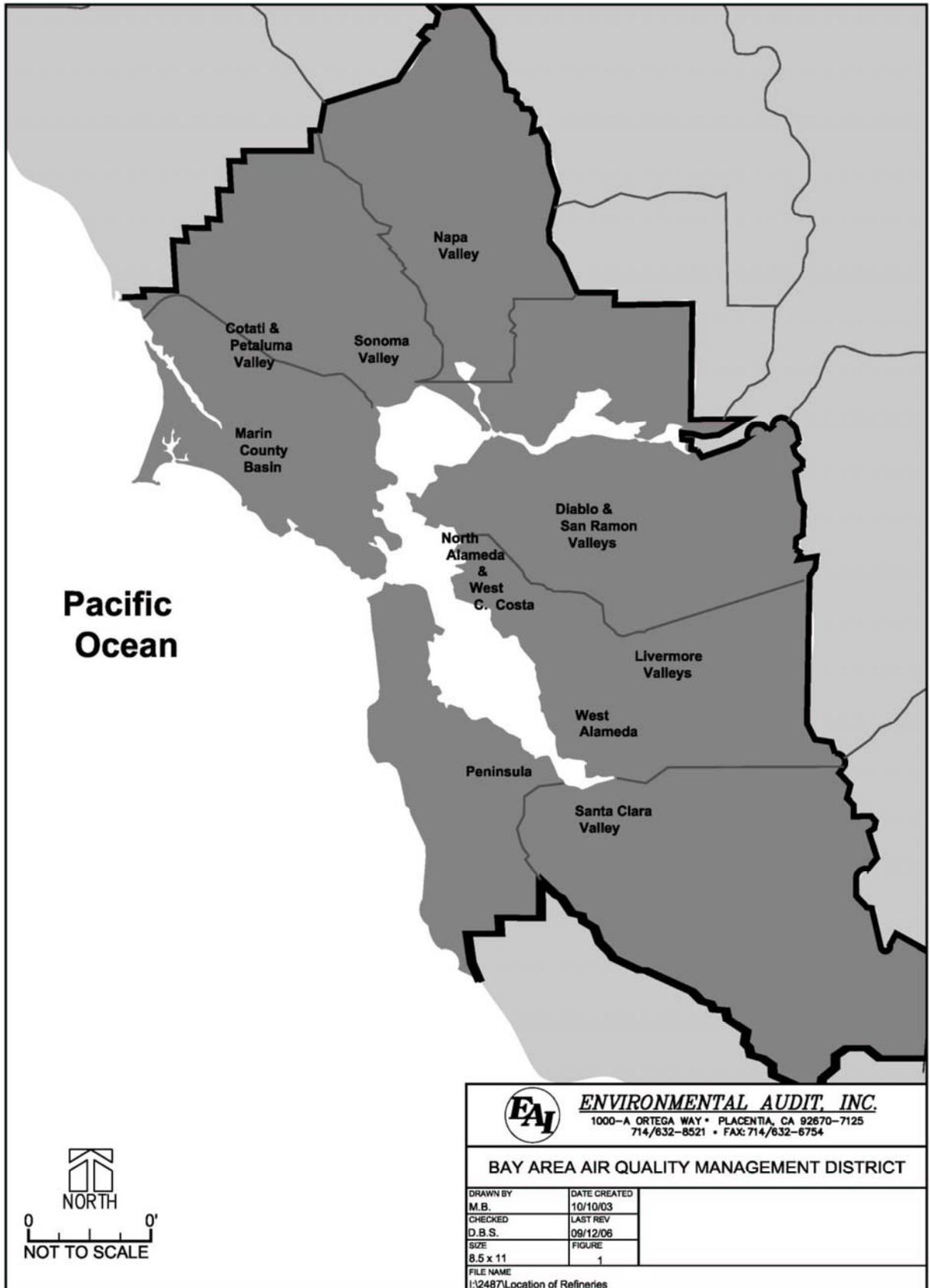
BAAQMD air quality permits are not currently required for water heaters and boilers in this size range, and will not to be required under the proposed amendments. NOx limits for these units would be enforced by requiring certification of any water heaters sold or installed.

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 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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Chapter 3

Environmental Checklist

ENVIRONMENTAL CHECKLIST FORM

- 1. Project Title:** Bay Area Air Quality Management District (BAAQMD)
Proposed Amendments to Regulation 9, Rule 6.
- 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:** Guy Gimlen, Planning and Research Division
415/749-4734 or ggimlen@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 residences with small gas-fired water heaters and commercial applications using large water heaters and small boilers.
- 7. Zoning** The rule amendments apply to water heaters with less than 50 gallon capacity which are found in residential areas, as well as larger water heaters and small boilers which tend to be located in 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.

- | | | |
|--|---|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture Resources | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology/Soils |
| <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Hydrology/Water Quality | <input type="checkbox"/> Land Use/Planning |
| <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise | <input type="checkbox"/> Population/Housing |
| <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation | <input type="checkbox"/> Transportation/Traffic |
| <input type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Mandatory Findings of Significance | |

Determination:

On the basis of this initial evaluation:

- I find the proposed project COULD NOT have a significant effect on the environment, and that a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be significant effects in this case because revisions 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles), so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses.

Some of the proposed rule amendments affect typical tank water heaters with heat input of 75,000 Btu/hr or less. These types of water heaters are most often found in residential applications. Other rule amendments affect large water heaters and small boilers that 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 9-6 would further reduce NOx emissions from natural gas-fired water 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 residences or facilities, and are not expected to result in any adverse aesthetic impacts. Changing to new technology would occur over time as equipment is retired and replaced. Once completed, the modifications are not

expected to be visible. The rule amendment would also not require any new sources of light or glare, since new equipment would replace existing equipment. Therefore, no significant adverse aesthetic impacts are expected from the implementation of the amendments to Regulation 9-6.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
-

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. Some of these agricultural lands are under Williamson Act contracts.

The areas with water heaters and small boilers affected by the proposed rule amendments are primarily located in residential or commercial areas throughout the Bay Area. Agricultural resources are generally not located in the vicinity of residential 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 9-6 would further reduce NOx emissions from small and large natural gas-fired water heaters and small boilers in order to reduce ozone levels in the Bay Area and reduce transport of air pollutants to neighboring air basins. Facilities are expected to comply with Regulation 9-6 by installing low-NOx burners in new water heaters, thus reducing flame temperatures which reduces the production of NOx. The proposed amendment will be implemented over time installing new, and replacing old units which use the new technology. 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 9-6. Therefore, no adverse significant impacts to agricultural resources are expected due to the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
--	--------------------------------	---	------------------------------	-----------

III. AIR QUALITY

When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

Meteorological Conditions

The summer climate of the West Coast is dominated by a semi-permanent high centered over the northeastern Pacific Ocean. Because this high pressure cell is quite persistent, storms rarely affect the California coast during the summer. Thus the conditions that persist along the coast of California during summer are a northwest air flow and negligible precipitation. A thermal low pressure area from the Sonoran-Mojave Desert also causes air to flow onshore over the San Francisco Bay Area much of the summer.

In winter, the Pacific High weakens and shifts southward, upwelling ceases, and winter storms become frequent. Almost all of the Bay Area's annual precipitation takes place in the November through April period. During the winter rainy periods, inversions are weak or nonexistent, winds are often moderate and air pollution potential is very low. During winter periods when the Pacific high becomes dominant, inversions become strong and often are surface based; winds are light and pollution potential is high. These periods are characterized by winds that flow out of the Central Valley into the Bay Area and often include tule fog.

Topography

The San Francisco Bay Area is characterized by complex terrain consisting of coastal mountain ranges, inland valleys, and bays. Elevations of 1,500 feet are common in the higher terrain of this area. Normal wind flow over the area becomes distorted in the lower elevations, especially when the wind velocity is not strong. This distortion is reduced when stronger winds and unstable air masses move over the areas. The distortion is greatest when low level inversions are present with the surface air, beneath the inversion, flowing independently of the air above the inversion.

Winds

In summer, the northwest winds to the west of the Pacific coastline are drawn into the interior through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately to the south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more nearly from the west as they stream through the Golden Gate. This channeling of the flow through the Golden Gate produces a jet that sweeps eastward but widens downstream producing southwest winds at Berkeley and northwest winds at San Jose; a branch curves eastward through the Carquinez Straits and into the Central Valley. Wind speeds may be locally strong in regions where air is channeled through a narrow opening such as the Carquinez Strait, the Golden Gate, or San Bruno Gap.

In winter, the Bay Area experiences periods of storminess and moderate-to-strong winds and periods of stagnation with very light winds. Winter stagnation episodes are characterized by outflow from the Central Valley, nighttime drainage flows in coastal valleys, weak onshore flows in the afternoon and otherwise light and variable winds.

Temperature

In summer, the distribution of temperature near the surface over the Bay Area is determined in large part by the effect of the differential heating between land and water surfaces. This process produces a large-scale gradient between the coast and the Central Valley as well as small-scale local gradients along the

shorelines of the ocean and bays. The winter mean temperature high and lows reverse the summer relationship; daytime variations are small while mean minimum nighttime temperatures show large differences and strong gradients. The moderating effect of the ocean influences warmer minimums along the coast and penetrating the Bay. The coldest temperatures are in the sheltered valleys, implying strong radiation inversions and very limited vertical diffusion.

Inversions

A primary factor in air quality is the mixing depth, i.e., the vertical dimension available for dilution of contaminant sources near the ground. Over the Bay Area, the frequent occurrence of temperature inversions limits this mixing depth and consequently limits the availability of air for dilution. A temperature inversion may be described as a layer or layers of warmer air over cooler air.

Precipitation

The San Francisco Bay Area climate is characterized by moderately wet winters and dry summers. Winter rains (December through March) account for about 75 percent of the average annual rainfall; about 90 percent of the annual total rainfall is received in November to April period; and between June and September, normal rainfall is typically less than 0.10 inches. Annual precipitation amounts show greater differences in short distances. Annual totals exceed 40 inches in the mountains and are less than 15 inches in the sheltered valleys.

Pollution Potential

The Bay Area is subject to a combination of physiographic and climatic factors which result in a low potential for pollutant buildups near the coast and a high potential in sheltered inland valleys. In summer, areas with high average maximum temperatures tend to be sheltered inland valleys with abundant sunshine and light winds. Areas with low average maximum temperatures are exposed to the prevailing ocean breeze and experience frequent fog or stratus. Locations with warm summer days have a higher pollution potential than the cooler locations along the coast and bays.

In winter, pollution potential is related to the nighttime minimum temperature. Low minimum temperatures are associated with strong radiation inversions in inland valleys that are protected from the moderating influences of the ocean and bays. Conversely, coastal locations experience higher average nighttime temperatures, weaker inversions, stronger breezes and consequently less air pollution potential.

Air Quality

Criteria Pollutants

It is the responsibility of the BAAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in its geographical jurisdiction. Health-based air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter less than 10 microns in diameter (PM₁₀), particulate matter less than 2.5 microns in diameter (PM_{2.5}), sulfur dioxide (SO₂) and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. The California standards are more stringent than the federal standards. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride.

The state and national ambient air quality standards for each of these pollutants and their effects on health are summarized in Table 3-1. The BAAQMD monitors levels of various criteria pollutants at 24 monitoring stations. The 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 (NO_x), and sulfur dioxides (SO₂). The Air District is not considered to be in attainment with the State PM₁₀ and PM_{2.5} 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, NO₂, and SO₂. 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 PM_{2.5} 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	0.08 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 µg/m ³ , annarithmic mean > 50 µg/m ³ , 24-hr average>	50 µg/m ³ , annual arithmetic mean > 150 µg/m ³ , 24-hr avg.>	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Suspended Particulate Matter (PM2.5)	12 µg/m ³ , annual arithmetic mean>	15 µg/m ³ , annual arithmetic mean> 35 µg/m ³ , 24-hour average>	Decreased lung function from exposures and exacerbation of symptoms in sensitive patients with respiratory disease; elderly; children.
Sulfates	25 µg/m ³ , 24-hr avg. >=		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/m ³ , 30-day avg. >=	1.5 µg/m ³ , calendar quarter>	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10am – 6pm PST)		Nephelometry and AISI Tape Sampler; instrumental measurement on days when relative humidity is less than 70 percent

**TABLE 3-2
BAY AREA AIR POLLUTION SUMMARY - 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
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	-	18	12	0	0	0	0	0	0	0	0	15	15

* 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

The precursor chemicals that form ozone are VOCs and NO_x. Some of these VOCs are toxic air contaminants (TACs) and some are known carcinogens. The BAAQMD maintains a network of monitoring stations to monitor certain TACs in ambient air. In addition, the California Air Resources Board (CARB) maintains several monitoring stations in the Bay Area as part of a statewide toxics monitoring effort. The mean ambient concentrations of monitored TACs are listed in Table 3-4 based on data from selected monitoring stations.

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
CONCENTRATIONS OF TOXIC AIR CONTAMINANTS
IN THE BAY AREA⁽¹⁾**

CHEMICAL	MONITORING STATION (mean ppb)					
	Crockett	Concord (Treat Blvd)	Richmond	Bethel Island	Concord (Arnold)	Bay Area Mean
Benzene	0.24	0.51	0.44	0.33	0.53	0.47
Carbon Tetrachloride (CCl4)	0.11	0.13	0.11	0.11	0.11	0.11
Chloroform (CHCl3)	0.02	0.03	0.02	0.01	0.02	0.02
Methylene Chloride (DCM)	0.56	0.29	0.27	0.26	0.28	0.38
Ethylene Dibromide	0.01	0.01	0.01	0.01	0.01	0.01
Ethylene Dichloride	0.05	0.05	0.05	0.05	0.05	0.05
MTBE	0.40	0.71	0.61	0.45	0.86	0.75
Perchloroethylene	0.02	0.03	0.06	0.02	0.07	0.05
1,1,1-Trichloroethane (TCA)	0.07	0.05	0.03	0.03	0.12	0.11
Trichloroethylene	0.04	0.04	0.04	0.04	0.04	0.04
Toluene	0.45	1.85	1.16	0.71	1.05	1.48
Vinyl Chloride	0.15	0.15	0.15	0.15	0.15	0.15

(1) BAAQMD, Toxic Air Contaminant, 2002 Annual Report, June 2004.

The BAAQMD is governed by a 22-member Board of Directors composed of publicly-elected officials apportioned according to the population of the represented counties. The Board has the authority to develop and enforce regulations for the control of air pollution within its jurisdiction. The BAAQMD is responsible for implementing emissions standards and other requirements of federal and state laws. It is also responsible for developing air quality planning documents required by both federal and state laws.

Toxic Air Contaminants

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

Title III of the 1990 CAA amendments requires U.S. EPA to promulgate NESHAPs on a specified schedule for certain categories of sources identified by U.S. EPA as emitting one or more of the 189 listed HAPs. Emission standards for major sources must require the maximum achievable control technology (MACT). MACT is defined as the maximum degree of emission reduction achievable considering cost and non-air quality health and environmental impacts and energy requirements. All NESHAPs were to be promulgated by the year 2000. Specific incremental progress in establishing standards 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, which may include 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. The objectives of the proposed rule amendments are to implement Control Measure SS-13 from the Bay Area 2005 Ozone Strategy in order to help reduce emissions of ozone forming compounds (e.g., NO_x), and make Regulation 9-6 more stringent. Because the proposed amendments directly implement the control measure, the proposed amendments are in compliance with the local air quality plan.

III b, c, d, and f. Regulation 9-6 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). Regulation 9-6 was adopted on April 1, 1992. Control Measure SS-13 in the Bay Area 2005 Ozone Strategy required the BAAQMD to determine if further reductions in NOx emissions from natural gas-fired water heaters and small boilers was feasible.

Emissions: Emissions from natural gas-fired water heaters and small boilers include all the products of combustion. The primary concern with emissions from natural gas-fired water heaters and small boilers in the Bay Area is NOx. Natural gas-fired water heaters and small boilers also produce CO, sulfur oxides (SOx), ROG, and particulates (PM) emissions, but the contribution from natural gas-fired water heaters and small boilers 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 natural gas-fired water heaters and small boilers also produces carbon dioxide (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). Most water heaters and boilers in the Bay Area burn only natural gas, which is negligible in nitrogen content. A few water heaters and boilers can also burn liquid fuels (propane, butane, jet fuel or diesel fuel), but the nitrogen content in these fuels is very low. CO comes from incomplete combustion.

Controlling Emissions:

All natural gas fired water heaters and boilers rely on a burner to combust fuel to heat the water. Manufacturers have tested a variety of burner types to achieve low NOx emissions. For residential water heaters, manufacturers have focused on pre-mixed atmospheric burners. These burners mix fuel and air before the mixture is ignited at the surface of the burner. In pre-mixed radiant burners, air and fuel are combusted slowly on the porous surface of the burner at the air/gas interface. Radiant burners are generally made of ceramic or metal fibers. Radiant burners evenly distribute the heat of combustion, which stabilizes the flame and prevents "hot spots." When hot spots are prevented, NOx emissions are minimized.

A number of burner and material manufacturers have developed atmospheric, pre-mixed, ceramic or metal fiber matrix burners. Manufacturers of ceramic and metal fiber radiant burners and other types of gas-fired appliances have developed burners with emission levels at or below the 10 ng/J limits the proposed amendments to Regulation 9, Rule 6 would ultimately require. These low NOx burners are manufactured for a wide range of applications. Available information shows that the interim and final rule limits are achievable in both natural draft and fan-assisted applications. Radiant burners can meet the rule limits within a range of conditions (i.e., amount of excess air) and use a variety of ignition technologies.

The manufacturers of boilers, water heaters and process heaters use similar approaches to achieve low NOx levels. The principle technique involves pre-mixing of fuel and air before combustion takes place. This results in a lower and more uniform flame temperature. A lower flame temperature reduces formation of NOx. Some pre-mix burners also use staged combustion with a fuel rich zone to start combustion and stabilize the flame, and a fuel lean zone to complete combustion and reduce the peak flame temperature. Burners can also be designed to spread flames over a larger area to reduce hot spots and lower NOx emissions. Radiant pre-mix burners with ceramic, sintered metal or metal fiber heads spread the flame and produce more radiant heat. When a burner produces more radiant heat, it can result in less heat escaping the boiler through exhaust gases.

The technology to produce water heaters that emit less than 10 ng/joule is currently available. Manufacturers have integrated these low NOx emissions into re-design of their water heaters, starting with the 50 gallon and smaller water heaters first. The re-design was required to meet U.S. Department of Energy Regulations, and California Energy Commission Appliance Efficiency Standards. These standards require greater than 80 percent efficiency, and enhanced safety requirements including Flammable Vapor Ignition Resistance (FVIR). Each manufacturer is now certifying their parts suppliers and manufacturing process to ensure each water heater meets all requirements.

Manufacturers expect to be able to supply water heaters that meet the efficiency, safety, and NOx standards by September 2007. Manufacturers expect to supply water heaters over 50 gallons that meet all requirements by 2009, and water heaters that require power assisted ventilation by 2010.

Low NOx burners for large heaters and small boilers can achieve NOx emissions of less than 14 ng/joule. Manufacturer certification test results provided to SCAQMD show that manufacturers have made substantial progress in reducing the NOx emissions from large water heaters and small boilers. Approximately 20 percent of the large water heaters providing test results in the 75,001 to 400,000 Btu/hr units size range meet the proposed Regulation 9, Rule 6 limit of 14 ng/joule. Approximately 45 percent of the small boilers and boiler type water heaters in the 400,001 to 2,000,000 Btu/hr size range units tested under the SCAQMD certification program meet the proposed limit. While no residential instantaneous water heaters currently meet the proposed emission limit, manufacturers have reported their progress quarterly to SCAQMD, and indicate they are on-track to achieve these standards by 2012.

Emission Reductions Expected: Current emissions for residential water heaters are estimated at 3.29 tons per day (tpd). The proposed amendments will reduce NOx by 75 percent, or 2.47 tpd. However, these emission reductions will occur as new water heaters replace the existing higher emissions water heaters. Typical life expectancy for a residential water heater is 12 years. Staff proposes this rule amendment go into effect on January 1, 2009, thus reducing NOx emissions by a cumulative 0.21 tpd for each of the subsequent 12 years.

Current emissions inventory information for commercial, institutional, and industrial water heaters from 75,000 to 2 MMBtu/hr heat input is less certain. Current estimates for these NOx emissions in the Air District inventory are a cumulative 0.5 tpd. The NOx emission reductions staff expects will occur in two phases. The first phase is a reduction from uncontrolled NOx emissions (~74 ng/joule) to 40 ng/joule beginning in 2008. The second phase is a reduction from 40 ng/joule to 14 ng/joule beginning in 2013. Large water heaters and small boilers also have a longer lifespan – estimated at 25 years, which equates to only 4 percent replacement each year. NOx reductions will be 0.01 tpd each year beginning in 2008. NOx reductions will increase to 0.016 tpd in 2013. Since this is a relatively small amount of potential NOx reduction, staff proposes the strategy of replacement with new low emission water heaters and package boilers when they reach their end of useful life, rather than to require a retrofit or accelerated replacement. The total NOx emissions reduction from these larger water heaters will be 0.4 tpd.

PM_{2.5} (particulate matter of 2.5 microns diameter or less) is formed from a conversion of NOx to ammonium nitrate (NH₄NO₃). District staff has estimated the ration between NH₄NO₃ formation to NOx emissions to range between 1:6 and 1:10. Assuming an average ration of 1:8 conversion, the 2.9 tpd reduction in NOx emission will reduce PM_{2.5} by 0.36 tpd.

Based on the above, the proposed amendments to Regulation 9-6 are expected to provide a beneficial impact to air quality by reducing NOx emissions in the Bay Area.

III e. The proposed project is not expected to result in an increase in odors. The proposed amendments to Regulation 9-6 propose improved technology for reducing NOx emissions from natural gas-fired water heaters and small boilers. Residences and commercial facilities are expected to comply by replacing existing equipment with low NOx emitting units when existing units are retired. While the new technology for natural gas-fired water heaters and small boilers 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.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. A wide variety of biological resources are located within the Bay Area.

The areas affected by the proposed rule amendments are located in the Bay Area-Delta Bioregion (as defined by the State’s Natural Communities Conservation Program). This Bioregion is comprised of a variety of natural communities, which range from salt marshes to chaparral to oak woodland. The areas affected by the proposed rule

amendments are located in residential and commercial areas throughout the Bay Area. The affected areas have been graded to develop various residential and 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 natural gas-fired water heaters or small boilers. Existing water heaters and small boilers will be replaced as they are retired, and new residences and commercial facilities will install the designated equipment required by the proposed amendments to Regulation 9-6. The areas have been graded and developed, and biological resources, with the exception of landscape species, have generally been removed. There will be no construction activities required due to the adoption of the proposed amendments to Regulation 9-6. Therefore, no adverse significant impacts to biological resources are expected due to the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside a formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural and open space uses. Cultural resources are defined as buildings, sites, structures, or objects which might have historical architectural, archaeological, cultural, or scientific importance.

The Carquinez Strait represents the entry point for the Sacramento and San Joaquin Rivers into the San Francisco Bay. This locality lies within the San Francisco Bay and the west end of the Central Valley archaeological regions, both of which contain a rich array of prehistoric and historical cultural resources. The areas surrounding the Carquinez Strait and Suisun Bay have been occupied for millennia given their abundant combination of littoral and oak woodland resources.

The areas with natural gas-fired water heaters and small boilers affected by the proposed rule amendments are primarily located in residential and commercial areas throughout the Bay Area. These sites have already been graded to develop residences and 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 natural gas-fired water heaters or small boilers. The equipment already exists and is located inside the confines of existing residences or commercial facilities. The existing areas have been graded and developed. No new construction would be required due to the adoption of the proposed amendments to Regulation 9-6. The rule would apply to new equipment as it is installed. Therefore, no significant adverse impacts to cultural resources are expected due to the proposed amendments to Regulation 9-6.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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VI. GEOLOGY AND SOILS.

Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> 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? 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. The facilities affected by the proposed rule amendments are expected to be located primarily in residential and commercial areas throughout the Bay Area.

The affected areas with natural gas-fired water heaters and small boilers 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 water heaters and small boilers affected by the proposed rule amendments already exist and are located within the confines of existing residences and commercial facilities. No new construction activities would be required as a result of adopting the proposed amendments to Regulation 9-6, rather, old equipment would be

required to be replaced with newer technology equipment with lower NOx emissions at the end of its usable life. New residential 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 construction complies with the Uniform Building Code as part of the issuance of the building permits and can conduct inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The Uniform Building Code bases seismic design on minimum lateral seismic forces ("ground shaking"). The Uniform Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site.

New residential and 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 9-6.

VII b. The natural gas-fired water heaters and small boilers which already exist are located within the confines of residences and existing commercial facilities. The specified equipment will be replaced with low NOx emitting equipment when it is retired. No new construction activities would be required due to the adoption of Regulation 9-6. 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 water heaters and small boilers already exist and are located within the confines of existing residences and commercial facilities so no major construction activities are expected. Since the residences and 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 9-6.

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

Residential and commercial facilities do not typically 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 residential 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-b. It is expected that the proposed amendments to Regulation 9-6 will lead to a reduction in NO_x emissions but will not create additional transport, use or disposal of any hazardous materials. The use of lower NO_x emitting natural gas-fired water heaters and small boilers would not result in an increase in hazards associated with their operation. The natural gas-fired water heaters would continue to use natural gas but the proposed amendments to Regulation 9-6 would not increase natural gas hazards or require the use of additional natural gas. Therefore, the impacts of the proposed project on hazards are expected to be less than significant.

VII c. The proposed amendments to Regulation 9-6 are expected to reduce NO_x emissions from existing natural gas-fired water heaters and small boilers. The amendments to the rule will not require or change the use or storage of any hazardous material. Therefore, no increase in the potential for releases of hazardous materials and their related impacts to schools is expected.

VII d. No impacts on hazardous material sites are anticipated from the proposed rule amendments that would typically apply to existing residential areas 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 water heaters and small boilers already exist and are located within the confines of residential and 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 water heaters and small boilers. The natural gas-fired water heaters and small boilers that already exist are located within the confines residences and commercial facilities. No construction activities are expected to result from the adoption of the proposed amendments to Regulation 9-6. New residential and commercial development will be governed by City and/or County General Plans, which generally consider the proximity to airports prior to approval. Therefore, no significant adverse impacts on hazards at airports are expected.

VII g. No impacts on emergency response plans are anticipated from the proposed rule amendments that would apply to existing residences or commercial facilities. The natural gas-fired water heaters and small boilers which already exist are located within the confines of existing residences and commercial facilities. The proposed rule amendments neither require, nor are likely to result in, activities that would impact the emergency response plan and new residential 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 water heaters and small boilers affected by the proposed amendments that already exist are located within the confines of existing residences and commercial facilities. No increase in exposure to wildfires will occur due to the proposed amendments to Regulation 9-6.

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

Would the project:

a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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

Would the project:

e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and affected environment vary substantially throughout the area and include commercial, industrial, residential, agricultural, and open space uses.

The residential and commercial facilities affected by the proposed rule amendments are located throughout the Bay Area. Affected areas are generally surrounded by other residential and 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 residential and 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 9-6.

VIII b. The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residential and commercial facilities. As equipment is retired, new low NOx emitting natural gas-fired water heaters and small boilers will replace them. The 2005 Ozone Strategy addressed the impacts of control measures on water demand. The proposed amendments to Regulation 9-6 are not expected to require additional water use. 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 9-6.

VIII c - f. Residences and commercial facilities are expected to comply with the proposed amendments to Regulation 9-6 by installing low NOx emitting natural gas-fired water heaters and small boilers. All affected equipment is primarily located in residential and commercial areas, where storm water drainage has been controlled and no construction activities 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 residences and commercial facilities affected by the proposed rule amendments are primarily located within residential and commercial areas. No major construction activities are expected due to the adoption of the proposed amendments to Regulation 9-6. Residential 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 residences and commercial facilities affected by the proposed rule amendments are located within residential and commercial areas. No major construction activities are expected due to the adoption of the proposed amendments to Regulation 9-6. 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.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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IX. LAND USE AND PLANNING. Would the project:

a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to a general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses vary greatly and include commercial, industrial, residential, agricultural, and open space uses. The facilities affected by the proposed rule amendments are primarily located in 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 water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. Residences and commercial facilities are expected to comply with Regulation 9-6 by installing low NOx emitting natural gas-fired water heaters and small boilers when old heaters and boilers are at the end of their useful life. No new construction would be required due to the adoption of the proposed amendments to Regulation 9-6. Therefore, no adverse significant impacts to land use are expected due to the proposed project.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The facilities affected by the proposed rule amendments are primarily located in 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 water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residential and commercial facilities. No new construction activities are expected due to the adoption of the proposed amendments to Regulation 9-6. 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.

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Expose persons to or generate of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be located within the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The facilities affected by the proposed rule amendments are primarily located in residential and commercial areas throughout the Bay Area. A majority of the affected areas are surrounded by other residences and 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-f. The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. The rule amendments impose limitations on the NOx emissions from this equipment. Compliance will be achieved by installing low NOx emitting natural gas-fired water heaters and small boilers when old heaters and boilers are at the end of their useful life. No new construction activities would be required due to the adoption of the proposed amendments to Regulation 9-6. 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.

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The areas affected by the proposed rule amendments are 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. The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. Facilities are expected to comply by replacing retired and installing new natural gas-fired water heaters and small boilers at the end of their useful life with low NOx emitting units. No new construction activities would be required due to the adoption of the proposed amendments to Regulation 9-6. Since no new construction activities are expected, there would be no need to increase the existing labor pool within the Bay Area. The rule amendment is not expected to have any impact requiring additional permanent workers in the Bay Area. Therefore, no adverse significant impacts to population or housing are expected due to the proposed project.

XII b-c. The natural gas-fired water heaters and small boilers already exist and are primarily located within the confines of existing residences and commercial facilities. No housing would be impacted or removed by the proposed rule amendments and no displacement of housing would occur. Therefore, no significant adverse impacts on population/housing are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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XIII. PUBLIC SERVICES. Would the project:

- a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area. The areas affected by the proposed rule amendments are primarily located in residential and 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. The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. Compliance with the proposed rule amendments is expected to be achieved by replacing old natural gas-fired water heaters and small boilers at the end of their useful life with low NOx equipment. No new construction activities would be required due to the adoption of proposed amendment to Regulation 9-6. The proposed rule amendments are not expected to require additional fire protection or police protection as the affected residences and commercial facilities are within the confines of existing residential and commercial areas. The rule amendments would not require the use of any new chemicals or create new hazards. Therefore, no increase in the need for fire or police protection is required.

The proposed rule amendments are not expected to require additional workers in the Bay Area or result in population growth, so no impacts on schools or parks are expected. Therefore, no significant adverse impacts on public services are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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.? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that there are numerous areas for recreational activities. The facilities areas affected by the proposed rule amendments are located in residential 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. The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. No new construction activities would be required due to the adoption of the proposed amendments to Regulation 9-6 negating the need to increase the existing construction workers labor pool in the Bay Area. The proposed rule amendments are not expected to require additional permanent workers in the Bay Area or result in population growth so no impacts on recreation are expected. Therefore, no significant adverse impacts on recreation are expected.

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
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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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|
| d) Substantially increase hazards because of a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in inadequate emergency access? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Result in inadequate parking capacity? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles). 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. The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. No new construction activities would be required due to the adoption of proposed amendments to Regulation 9-6. While natural gas will be used in the low NO_x emitting natural gas- fired water heaters and small boilers, natural gas is delivered mostly by pipeline, so no additional truck traffic will be required to deliver natural gas. In addition, the newer type equipment is more efficient, so will use less natural gas as the units being replaced during operation. Therefore, no adverse impacts to traffic are expected.

XV c. The proposed rule amendments require replacing retired equipment over an extended number of years. The proposed rule amendments are not expected to involve the delivery of materials via air so no increase and no adverse impacts on air traffic are expected.

XV d - e. The proposed rule amendments are not expected to increase traffic hazards or create incompatible uses at or adjacent to residential or commercial areas. Emergency access provided in these areas will continue to be maintained and will not be impacted by the proposed rule amendments.

XV f. The natural gas-fired water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. No new construction activities would be required due to the adoption of the proposed amendments to Regulation 9-6 negating any need for additional parking for construction workers. No increase in permanent workers is expected. Therefore, the proposed rule amendments will not result in significant adverse impacts on parking.

XV g. The proposed rule amendments are not expected to result in any noticeable increase in traffic. Therefore, the proposed rule amendments are not expected to conflict with adopted policies, plans, or programs supporting alternative transportation modes (e.g., bus turnouts, bicycle racks).

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Setting

The BAAQMD covers all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa Counties and portions of southwestern Solano and southern Sonoma Counties. The area of coverage is vast (about 5,600 square miles) so that land uses and the affected environment vary greatly throughout the area.

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 water heaters and small boilers affected by the proposed rule amendments already exist and are primarily located within the confines of existing residences and commercial facilities. The proposed rule amendment is not expected to generate additional wastewater generated by the affected residences or commercial facilities. Additionally, no increase in water consumption would be associated with low NOx emitting equipment. Therefore, no impacts on wastewater treatment requirements or wastewater treatment facilities is expected.

XVI c. Residences or commercial facilities are expected to comply by installing low NOx emitting equipment. No new construction would be required due to the adoption of the proposed amendments to Regulation 9-6. Storm water management would not be affected due to the replacement of retired equipment in these areas. Therefore, no changes to or increases in storm water are expected due to the proposed rule amendments.

XVI f and g. The proposed rule amendments would not affected the ability of residences or 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 replace old equipment at the end of its useful life.

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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 residences and commercial facilities with natural gas-fired water heaters and small boilers, 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 residences and commercial facilities with natural gas-fired water heaters and small boilers, 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 impacts are expected.

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Chapter 4**References**

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